



Excel 2021

Intermediate

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Charts

Charts present data, relationships, or trends graphically. Illustrating information with charts can help with data comprehension as well as interpretation and analysis. Excel offers several chart options to suit various types of data sets and design preferences.

In this module, learn how to create, edit, and format professional-looking charts so you can present complex data in a way that is meaningful to your audience.

Objectives










- Create Charts
- Move and Resize
- Chart Types
- Layout and Style
- Titles and Legends
- Gridlines, Labels, and Data Tables
- Emphasize Chart Data
- Modify Chart Data
- Filter Charts
- Trendlines
- Dual Axis Charts
- Chart Templates
- Sparklines

Create Charts

Charts are a great way to share data and information in a graphical way. The foundation of charts is the data they illustrate. Choosing the right data is the first and most important step in creating a chart.

Choose the Right Chart

Once you've determined the results you want your chart to display, choose the chart that best suits this purpose. The most popular charts are column, line, pie, and bar charts.

Chart Types in Excel		
	Column	Column charts are used when you want to compare different values vertically side-by-side. Each value is represented in the chart by a vertical bar. If there are several series, each series is represented by a different color.
	Line	Line charts are used to illustrate trends over time. Each value is plotted as a point on the chart and is connected to other values by a line. Multiple items are plotted using different lines.
	Pie	Pie charts are useful for showing values as a percentage of a whole. The values for each item are represented by different colors. Limit pie charts to eight sections.
	Bar	Bar charts are just like column charts, except they display information in horizontal bars rather than in vertical columns.
	Area	Area charts are the same as line charts, except the areas beneath the lines are filled with color.
	XY (Scatter)	Scatter charts are used to plot clusters of values using single points. Multiple items can be plotted by using different colored points or different point symbols.
	Stock	Stock charts are effective for reporting the fluctuation of stock prices, such as the high, low, and closing points for a certain day.
	Surface	A surface chart is useful for finding optimum combinations between two sets of data. Colors and patterns indicate values that are in the same range.
	Radar	Radar charts compare the aggregate values of multiple data series.

Create a Chart

- 1 Select the data you want to include in your chart.

Make sure to include your column names if you want them to be in the chart.

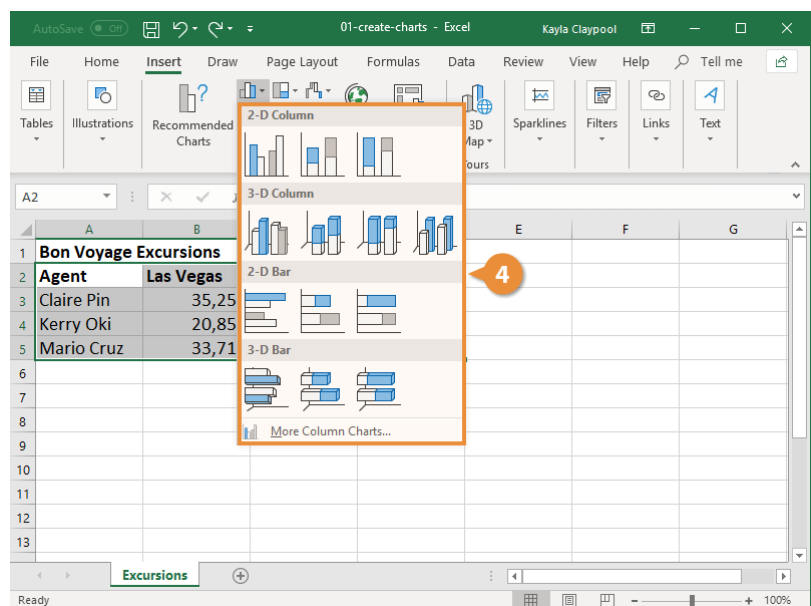
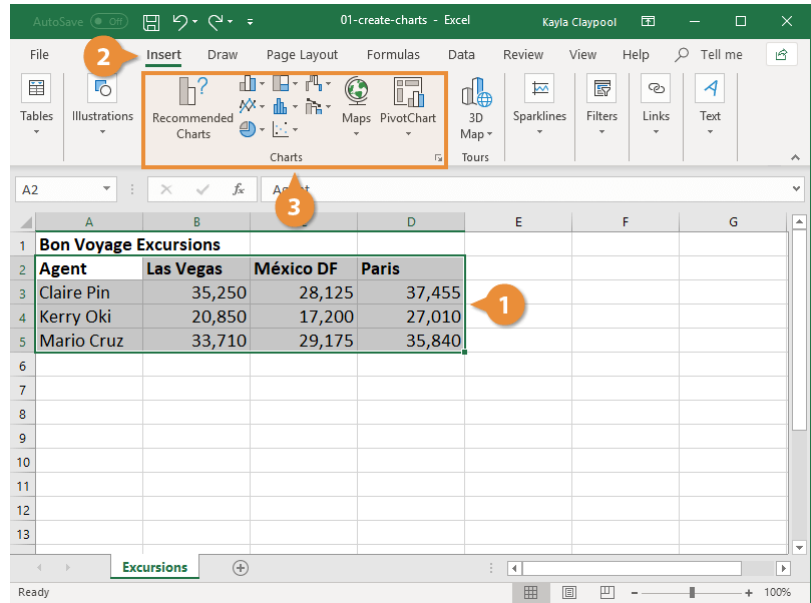
- 2 Click the **Insert** tab.

- 3 Select a chart type in the Charts group.

Tip: To see all available chart types click the **Charts** dialog box launcher. The Insert Chart dialog box appears, displaying every chart type that is available.

- 4 Click a chart subtype.

The chart appears in the worksheet and the Chart Tools appear on the Ribbon. The Chart Tools include three new tabs—Design, Layout and Format—that help you modify and format the chart.

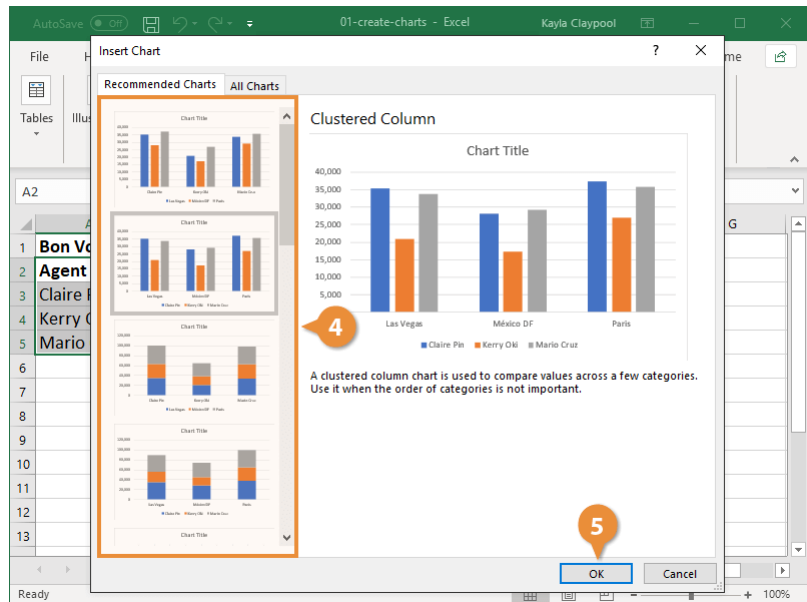
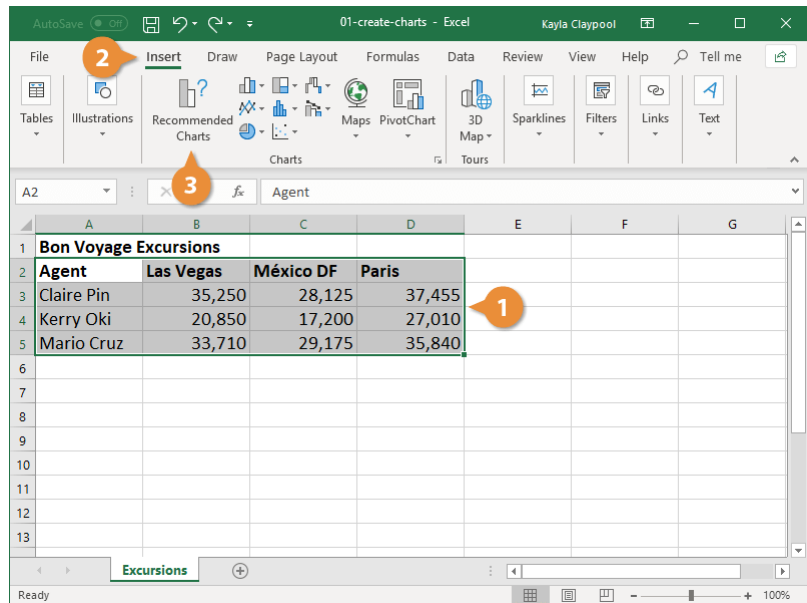


Create a Recommended Chart

Many times, it's hard to tell what type of chart will best illustrate your data. To help make your decision easier, Excel offers Recommended Charts. This tool looks at the data you have selected and suggests a few charts that will represent it well.

- 1 Select the data you want to include in your chart.
- 2 Click the **Insert** tab.
- 3 Click **Recommended Charts**.
Excel recommends charts based on the data you selected.
- 4 Select the type of chart you want to use.
Once you select a chart, a preview and description appear at the right.
- 5 Click **OK**.

The recommended chart is inserted into the worksheet.



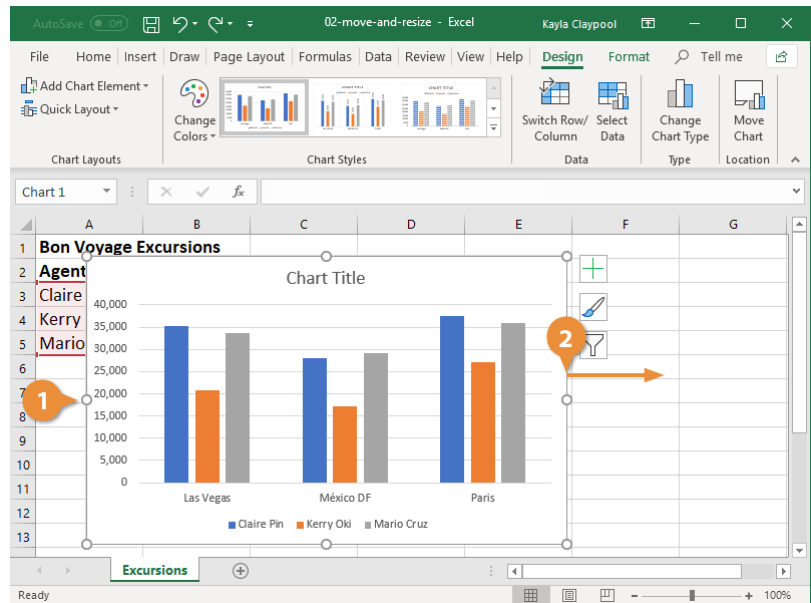
Move and Resize

Usually, you will have to adjust a chart after it is inserted to ensure it doesn't cover up data on the worksheet. You can resize a chart, move it within the worksheet, or move it to another worksheet.

Move a Chart

- 1 Click the chart to select it.
 - 2 Click the chart's border and drag it to the new location.
- Tip:** Make sure the four-headed arrow is activated before clicking and dragging.

The chart is moved to where you dragged it.

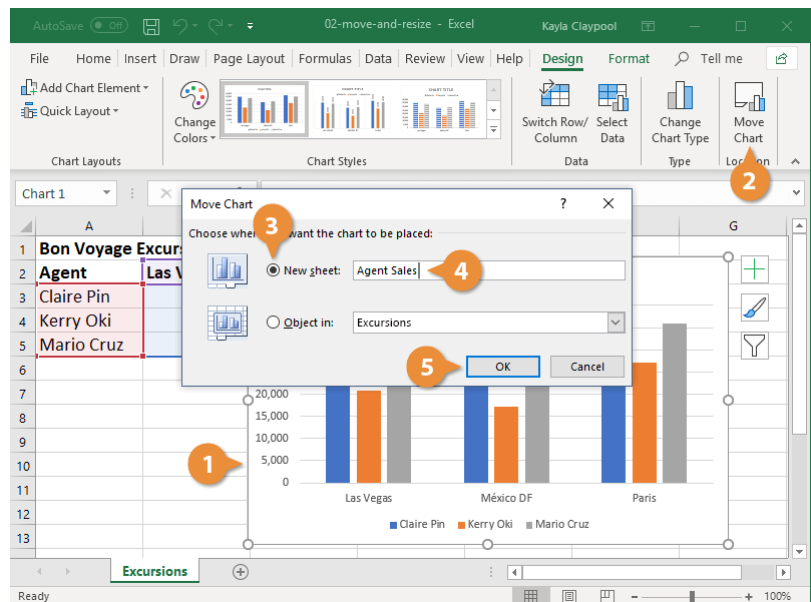


Move Charts to a Chart Sheet

If you don't want your chart on the same sheet as the data, you can move it to its own worksheet.

- 1 Select the chart you want to move.
- 2 Click the **Move Chart** button on the Design tab.
- 3 Select **New sheet**.
- 4 Type a name for the sheet.
- 5 Click **OK**.

The chart is moved to its own worksheet.



Resize a Chart

Eight sizing handles appear along the chart edges once it is selected. Sizing handles are used to change the size of charts and other objects.

- 1 Click the chart to select it.
- 2 Click and drag the chart's sizing handle.

Tip: Make sure the two-headed arrow is activated before clicking and dragging.

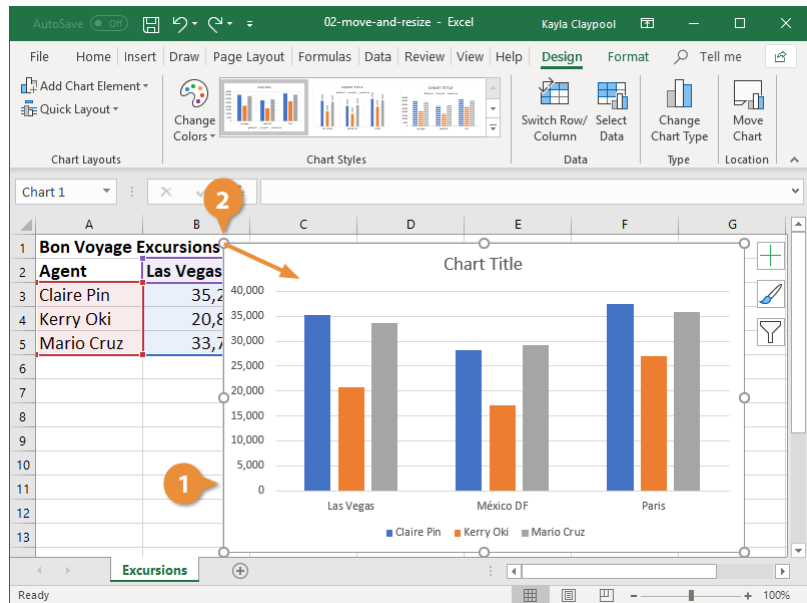


Chart Types

Different types of charts are better for presenting different types of information. For example, a column chart is great for comparing values of different items, but not for illustrating trends or relationships. If you find that a chart you've created isn't the best fit for your data, you can switch to a different chart type.

Change the Chart Type

1 Select the chart you want to change.

2 Click the **Design** tab.

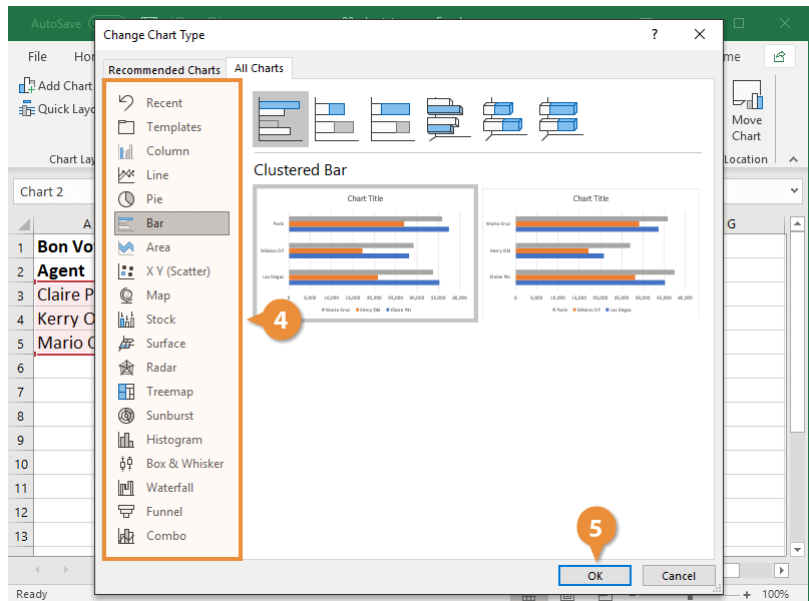
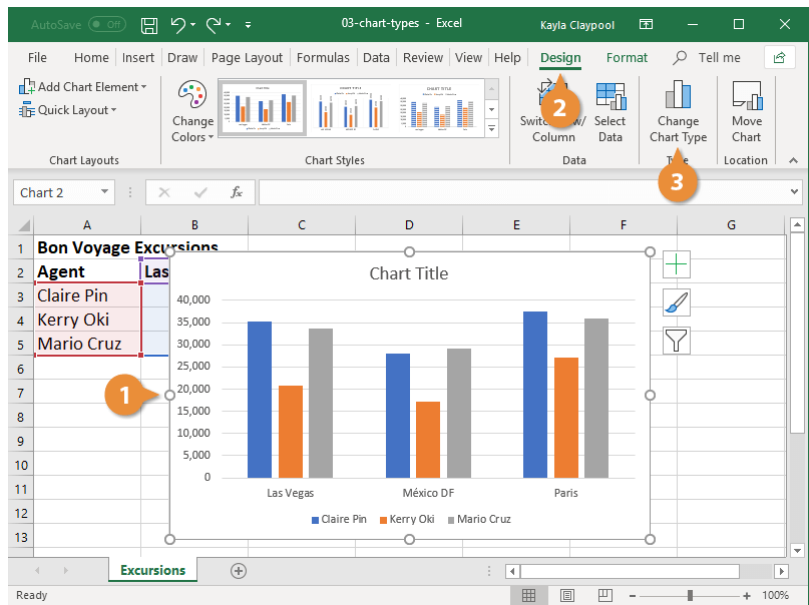
3 Click **Change Chart Type**.

Shortcut: Right-click a chart and select **Change Chart Type** from the menu.

The Change Chart Type dialog box appears. It shows the different types of charts available.

4 Select a different chart option.

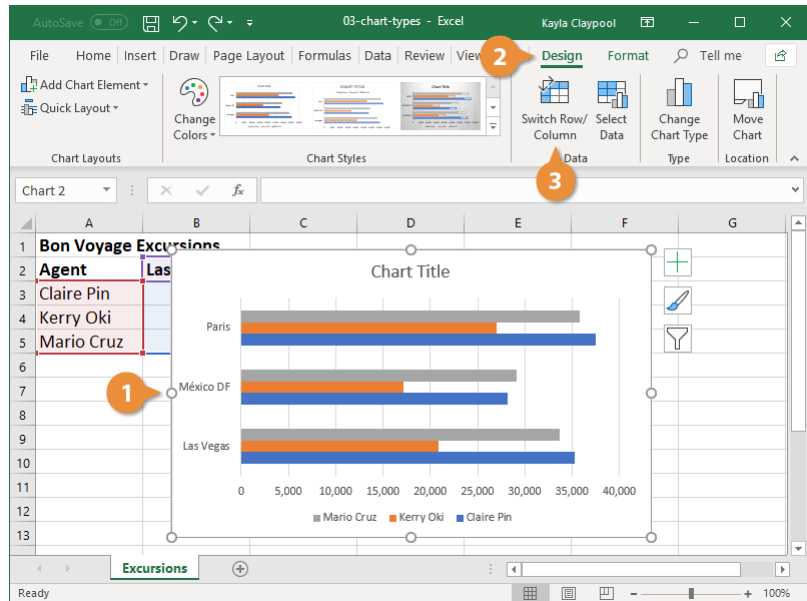
5 Click **OK**.



Switch Row/Column Data

You can switch the rows and columns of data in a chart so they appear in opposite positions.

- 1 Select the chart.
- 2 Click the **Design** tab.
- 3 Click the **Switch Row/Column** button.



Layout and Style

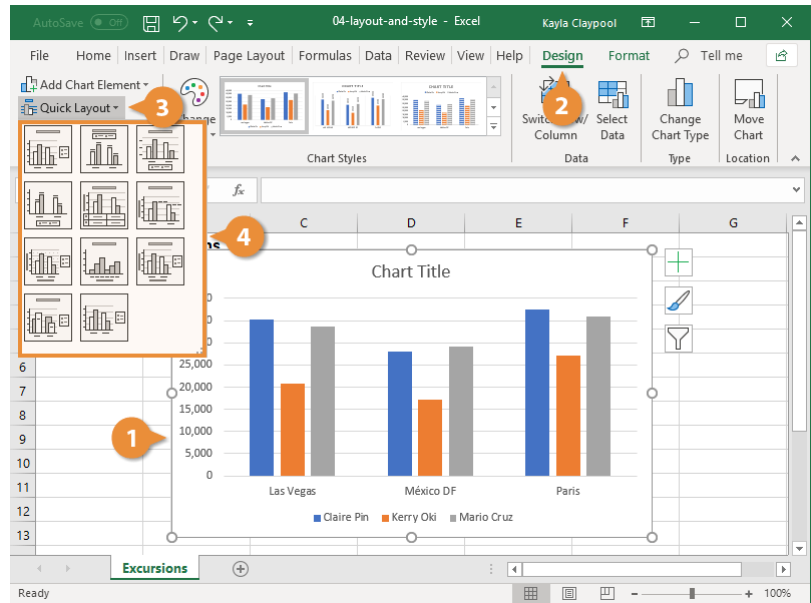
An easy way to change the look and feel of a chart is by applying one of the built-in layouts or styles that are available in Excel.

Apply a Chart Layout

Built-in chart layouts can quickly adjust the overall layout of a chart with different combinations of titles, labels, and chart orientations.

- 1 Select the chart you want to format.
- 2 Click the **Design** tab.
- 3 Click the **Quick Layout** button.
- 4 Select the layout you want to use.

The selected layout is applied to the chart.



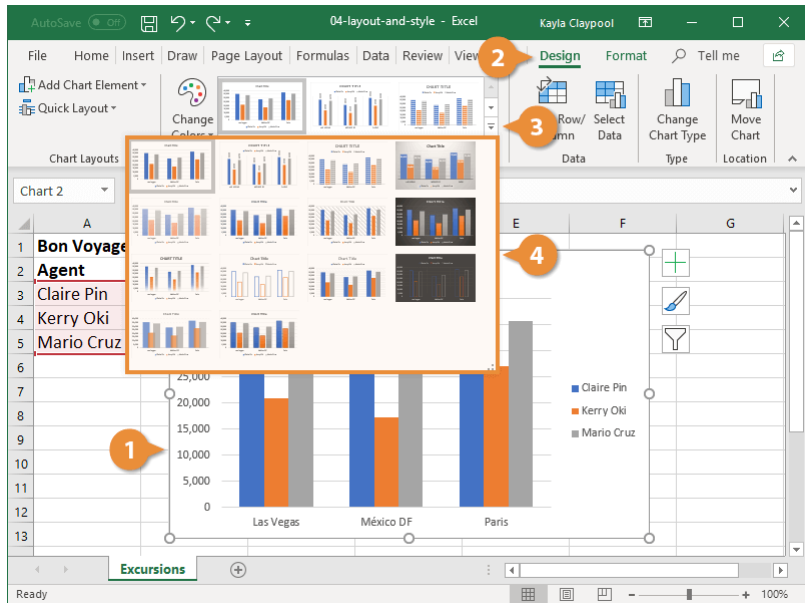
Apply a Chart Style

Built-in chart styles allow you to adjust the format of several chart elements all at once. Styles quickly change colors, shading, and other formatting properties.

- 1 Select the chart.
- 2 Click the **Design** tab.
- 3 Click the **Chart Styles More** button.

Tip: If the style you want to use is already displayed in the gallery, there is no need to expand the menu, just select it.

- 4 Select a new style.

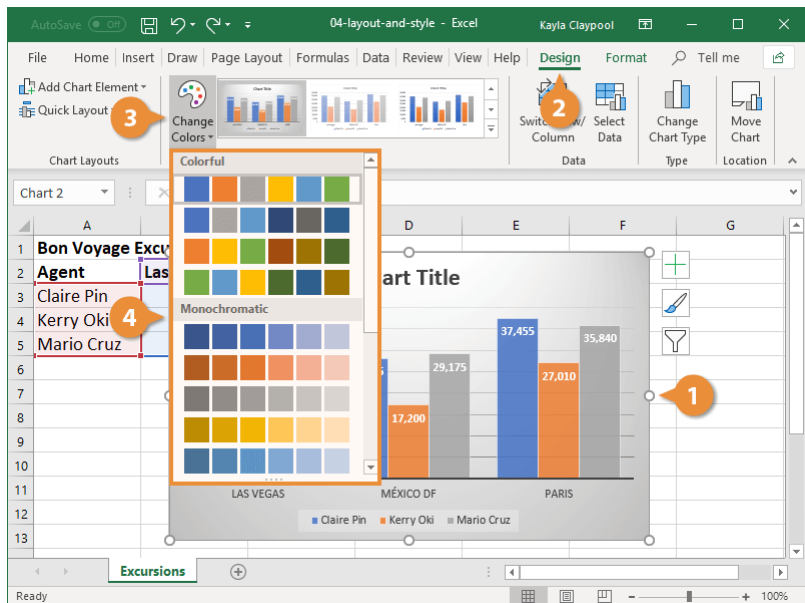


Change Colors

You can maintain the general look of a style while updating just the colors to better suit your needs.

- 1 Select the chart.
- 2 Click the **Design** tab.
- 3 Click the **Change Colors** button.
- 4 Select a new color set.

The new color set is applied to the chart.



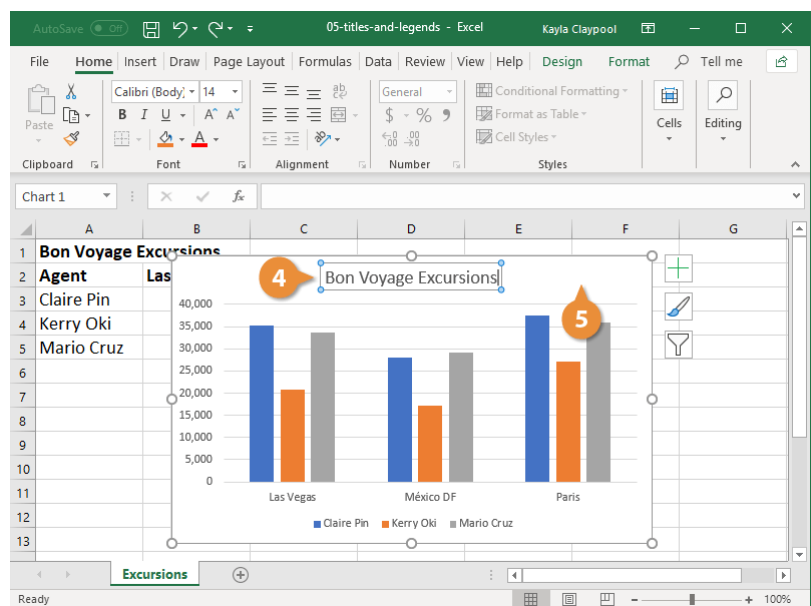
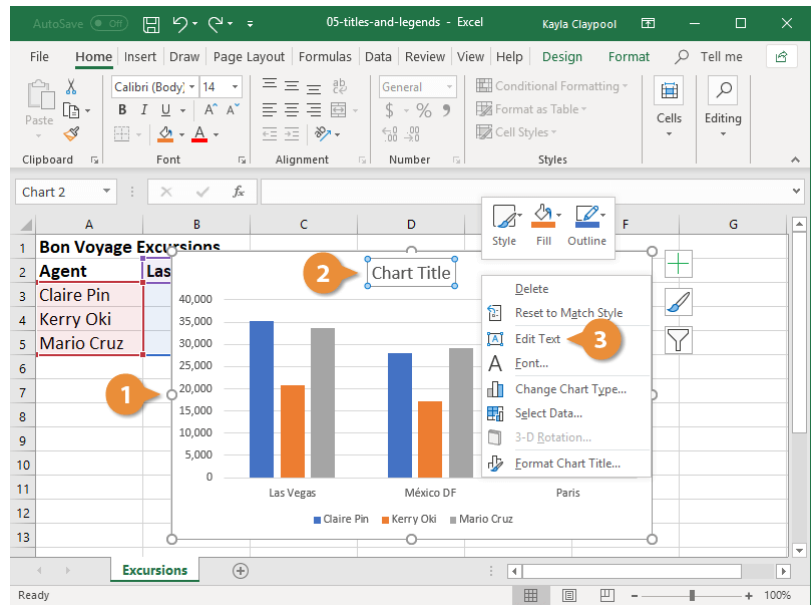
Titles and Legends

Besides using built-in chart layouts, you can manually add or edit individual chart labels such as the chart title or axis titles.

Change the Chart Title

The chart title often appears above the chart and is used to describe the data that's being presented. You can add a completely new chart title or simply change the text of an existing one.

- 1 Select the chart.
- 2 Right-click the chart title.
- 3 Click the **Edit Text** button.
Shortcut: Double-click the chart title to make it editable.
- 4 Enter the new chart title.
- 5 Click anywhere outside the title area.



Add Axis Titles

The axis titles describe for viewers the category of data that's being represented. Without them, it can be difficult to accurately portray information.

1 Select the chart.

2 Click the **Chart Elements** button.

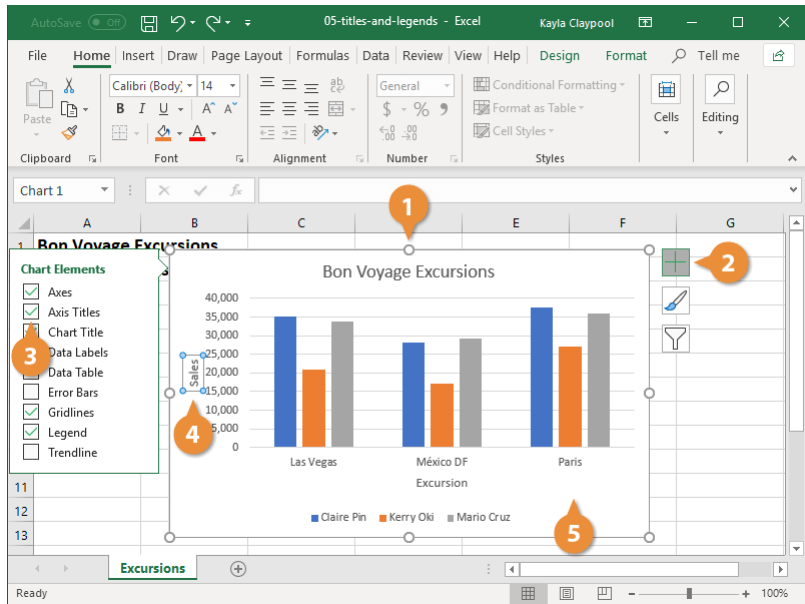
Tip: Hover the mouse over the label options in the list to preview them on your chart before making your selection.

3 Select the **Axis Titles** check box.

A text box is added for both the vertical and horizontal axes.

4 Enter descriptive axis titles.

5 Click outside the title area.



Position the Chart Legend

Usually when a chart is created, a legend is added automatically. The legend identifies what information is portrayed in the chart's plot area.

1 Select the chart.

2 Click the **Chart Elements** button.

3 Click the **Legend** list arrow.

Be careful not to click the word "Legend" or it will turn it off, just hover over it until the list arrow appears.

4 Select a position for the legend.

Tip: You can also click the **Add Chart Element** button on the Design tab.

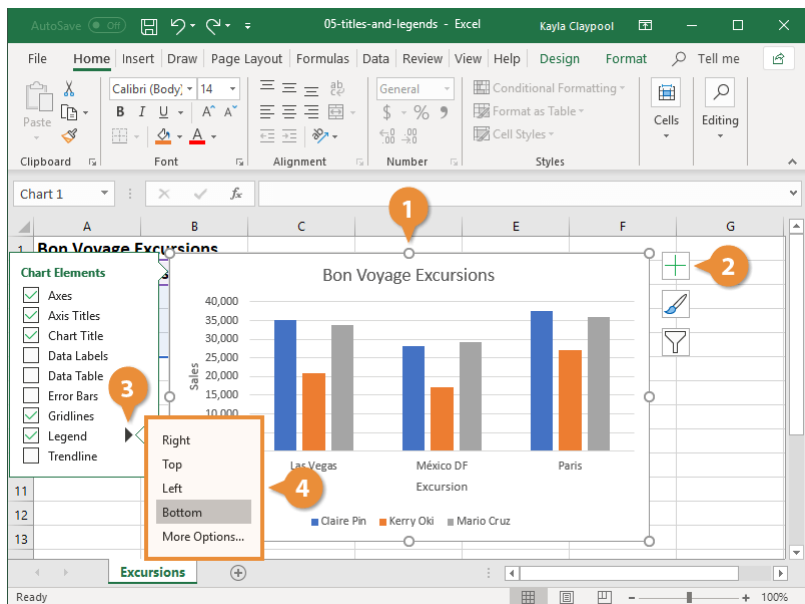


Chart Elements

Chart and axis titles are just a couple of the chart elements that are customizable. This table describes everything you can modify.

Chart Element	Description
Axes	Identifies the values being charted. Most charts have a vertical and horizontal axis.
Axis Titles	Provides a descriptive label for the data being charted on the axis.
Chart Title	Describes the data being presented in a chart.
Data Labels	Displays data from the cells of the worksheet on the plot area of the chart.
Data Table	A table added next to the chart that shows the worksheet data the chart is illustrating.
Error Bars	Helps you quickly identify standard deviations and error margins.
Gridlines	Horizontal and/or vertical lines added to a chart to make data easier to read.
Legend	The chart's key. Describes the data being presented in the plot area of the chart.
Trendline	Identifies the trend of the current data, not actual values. Can also identify forecasts for future data.

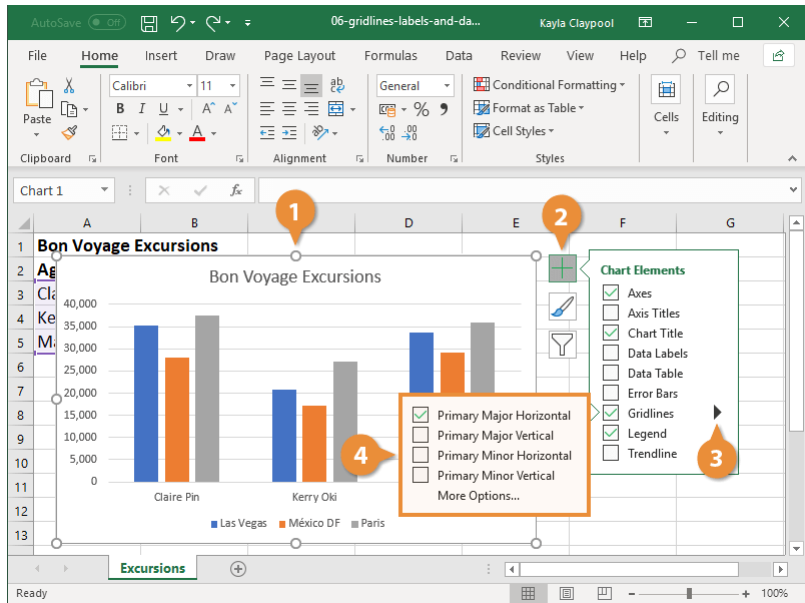
Gridlines, Labels, and Data Tables

Adding elements like gridlines, labels, and data tables help viewers more easily identify what's being presented.

Show Chart Gridlines

Gridlines are the lines in the background of a chart that correspond to the values in the chart. In column and bar charts, gridlines make it easier to compare the values in the chart.

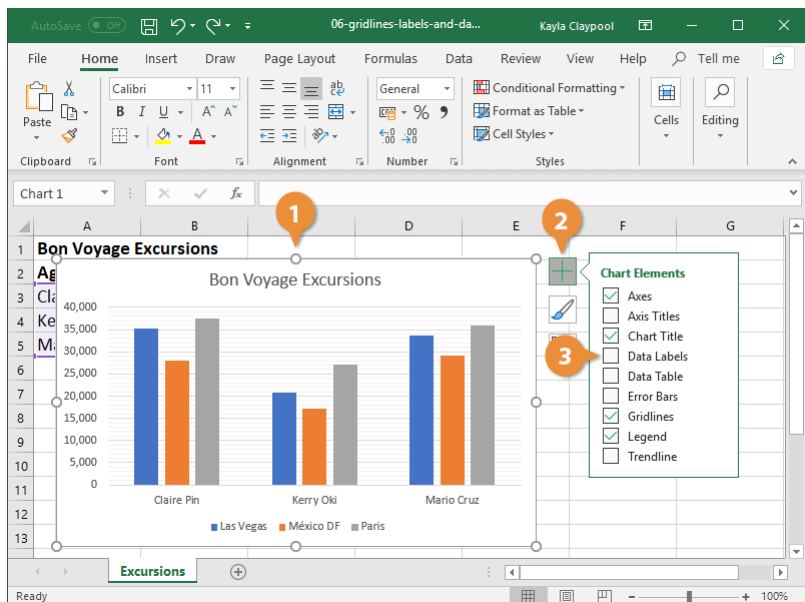
- 1 Select the chart you want to format.
- 2 Click the **Chart Elements** button.
- 3 Click the **Gridlines** list arrow.
Be careful not to click the word **Gridlines** or all the gridlines will turn off, just hover over it until the list arrow appears.
- 4 Select the set of gridlines you want to show.



Add Data Labels

Use data labels to label the values of individual chart elements.

- 1 Select the chart.
 - 2 Click the **Chart Elements** button.
 - 3 Click the **Data Labels** check box.
- Tip:** In the Chart Elements menu, click the **Data Labels** list arrow to change the position of the data labels.



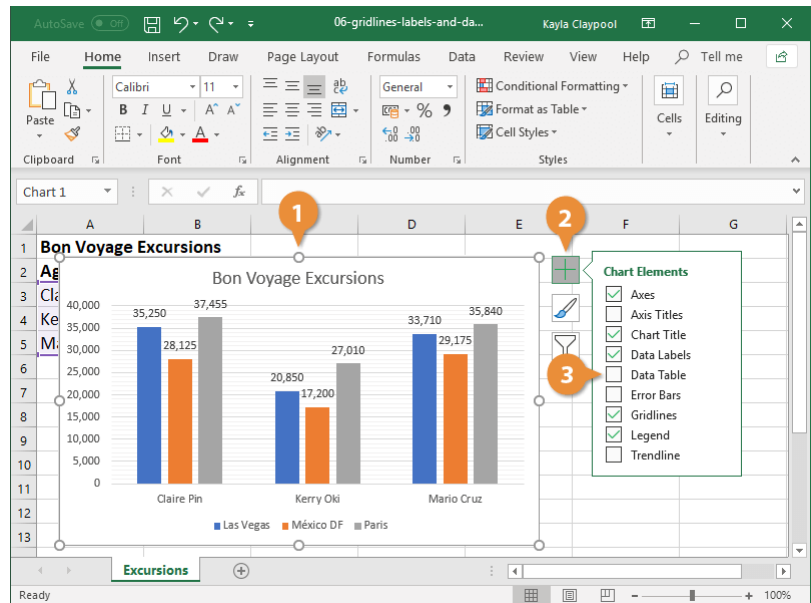
Display a Data Table

A data table is a table that contains the data and headings from your worksheet that comprises the chart data.

- 1 Select the chart.
- 2 Click the **Chart Elements** button.
- 3 Select the **Data Table** check box.

Tip: To edit the data table settings, hover over **Data Table** in the Chart Elements menu, click the list arrow, and select **More Options**.

A table with all the data represented in the chart is added below the chart's plot area.



Emphasize Chart Data

One way to emphasize data is to change the formatting of a specific piece of data or a data series so it stands out from the rest of the chart.

Change the Color of a Data Series

You can make a data series stand out by applying a different color to the series.

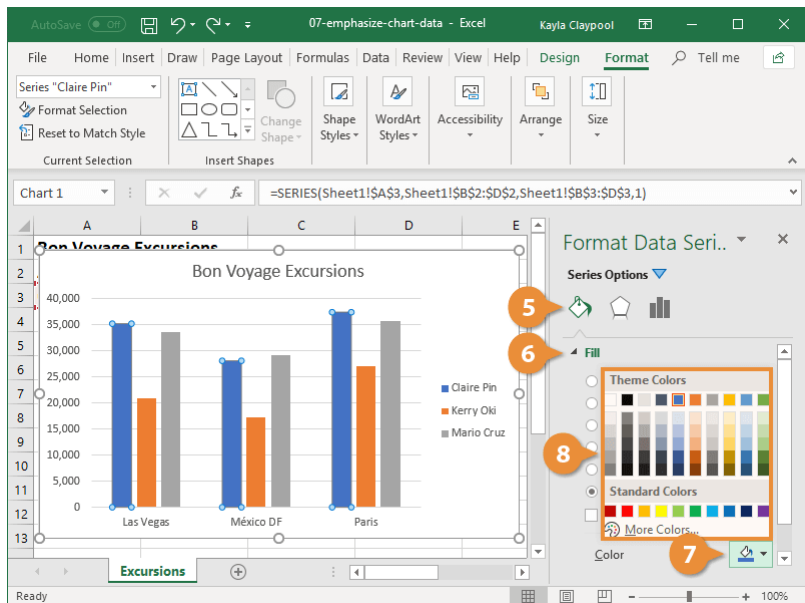
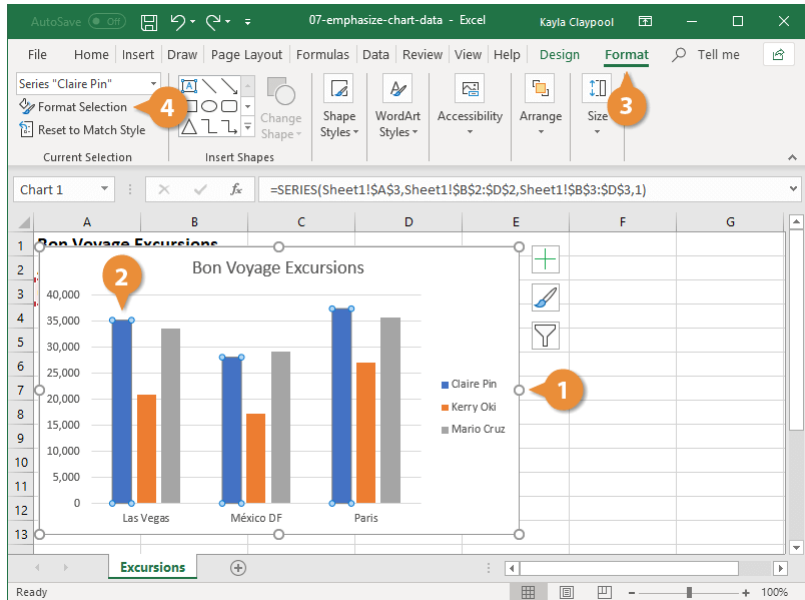
- 1 Select the chart you want to format.
- 2 Select the data series you want to format.
- 3 Click the **Format** tab.
- 4 Click **Format Selection**.

Shortcut: Right-click a data series and select **Format Data Series** from the contextual menu.

The formatting pane appears at the right.

- 5 Click the **Fill & Line** button.
- 6 Click **Fill** to expand the section.
- 7 Click the **Fill Color** button.
- 8 Select a color.

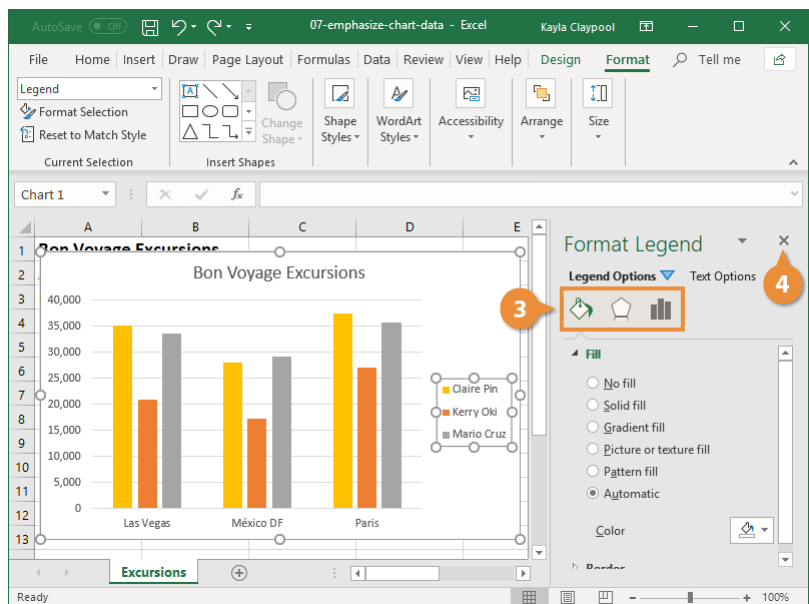
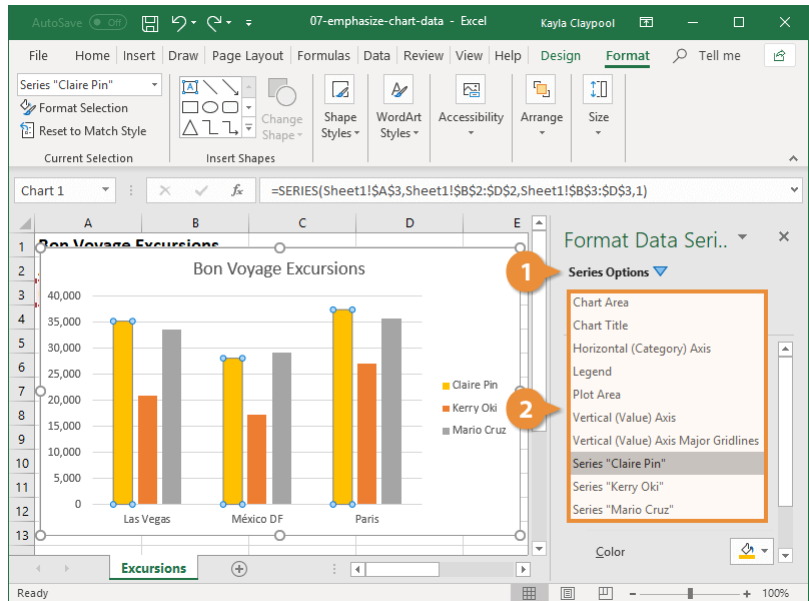
The formatting is applied to the entire data series.



Format Other Chart Areas

You can also switch the chart element you want to format from right within the formatting panel.

- 1 Click the **Series Options** menu arrow.
- 2 Select a chart area to format.
- 3 Select a type of format you want to apply.
- 4 Close the Format pane.



Modify Chart Data

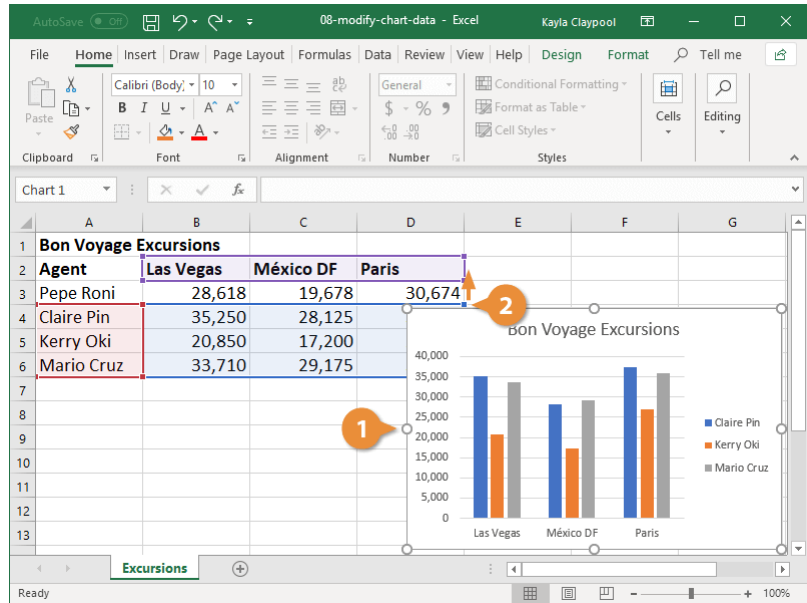
Once you see data in a chart, you may find there are some tweaks and changes that need to be made. Here are a few ways to change the data in your chart.

Add a Data Series

If you need to add additional data from the spreadsheet to the chart after it's created, you can adjust the source data area.

- 1 Select the chart.
- 2 In the worksheet, click a sizing handle for the source data and drag it to include the additional data.

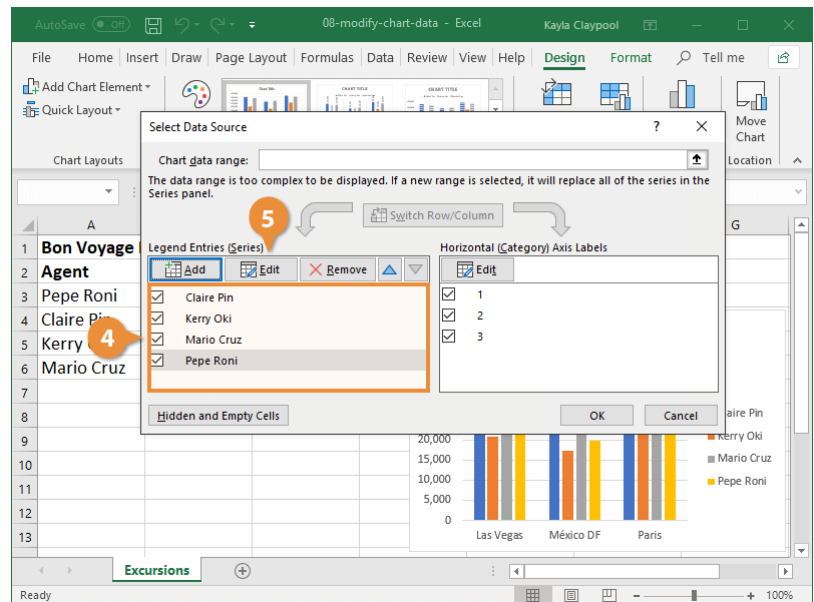
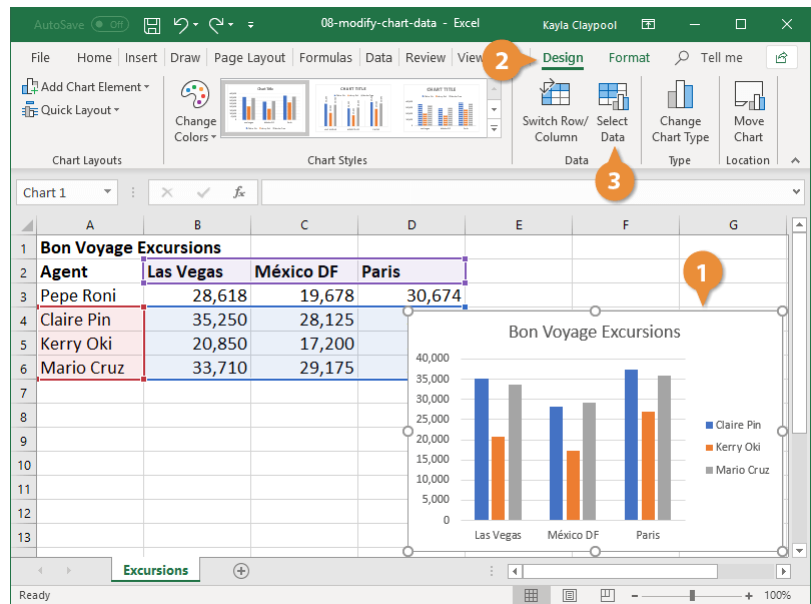
Tip: The new data needs to be in cells adjacent to the existing chart data.



Rename a Data Series

Charts are not completely tied to the source data. You can change the name and values of a data series without changing the data in the worksheet.

- 1 Select the chart.
- 2 Click the **Design** tab.
- 3 Click the **Select Data** button.
- 4 Select the series you want to change under Legend Entries (Series).
- 5 Click the **Edit** button.

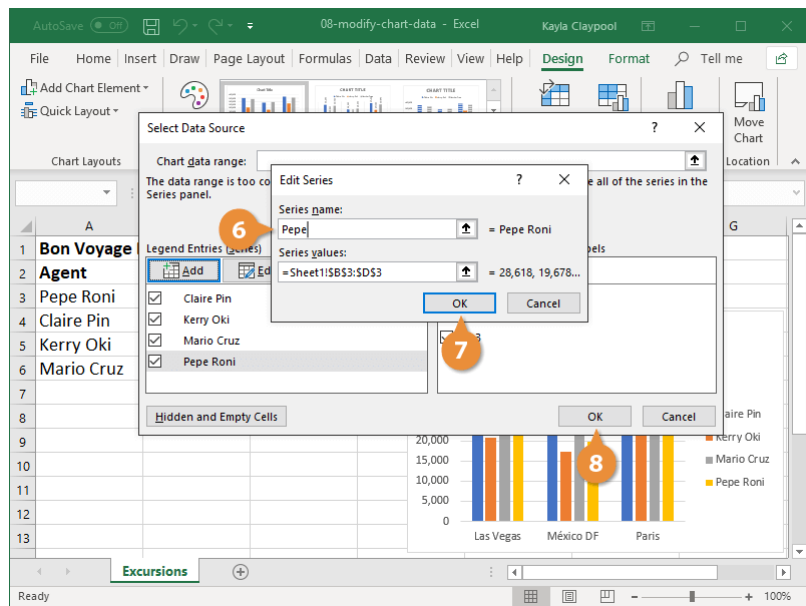


6 Type the label you want to use for the series in the Series name field.

7 Click **OK**.

8 Click **OK** again.

The name is updated in the chart, but the worksheet data remains unchanged.

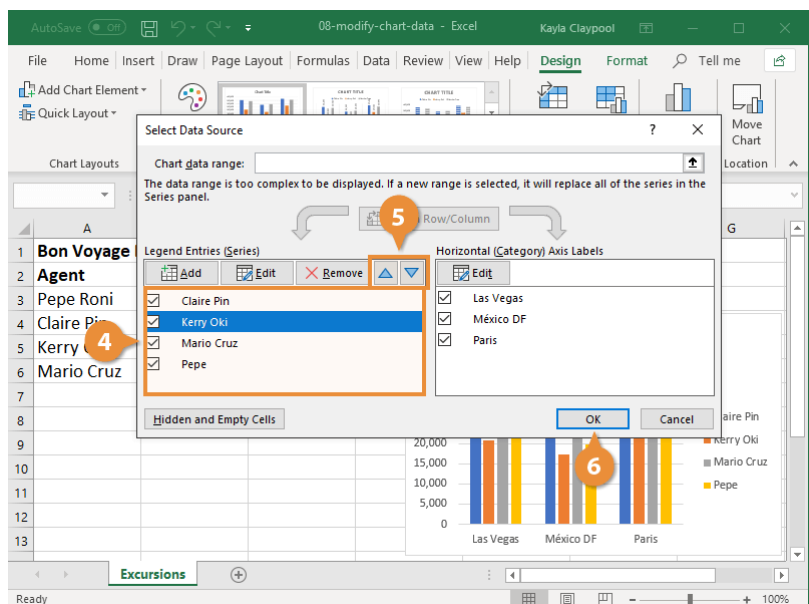
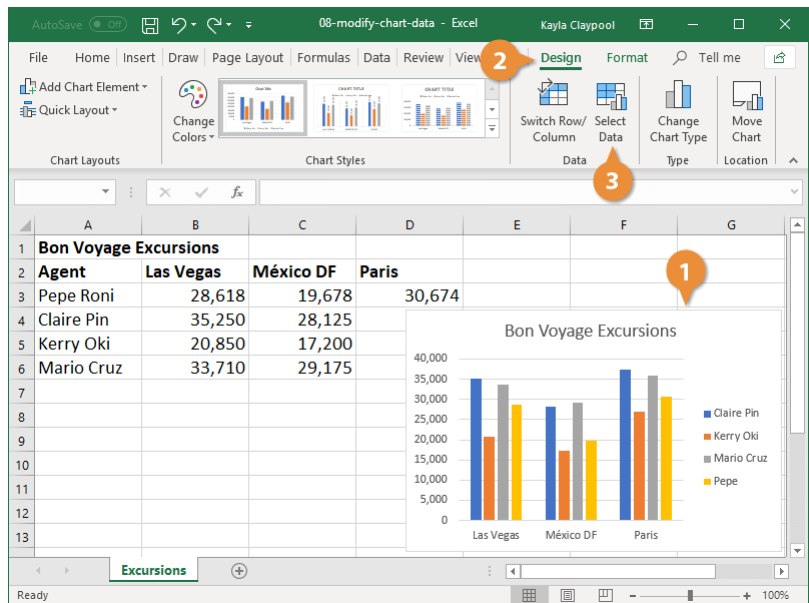


Reorder a Data Series

You can also change the order of data in the chart without changing the order of the source data.

- 1 Select the chart.
- 2 Click the **Design** tab.
- 3 Click the **Select Data** button.
- 4 From the Select Data Source dialog box, select the data series you want to move.
- 5 Click the **Move Up** or **Move down** button.
- 6 Click **OK**.

The chart is updated to display the new order of data, but the worksheet data remains unchanged.



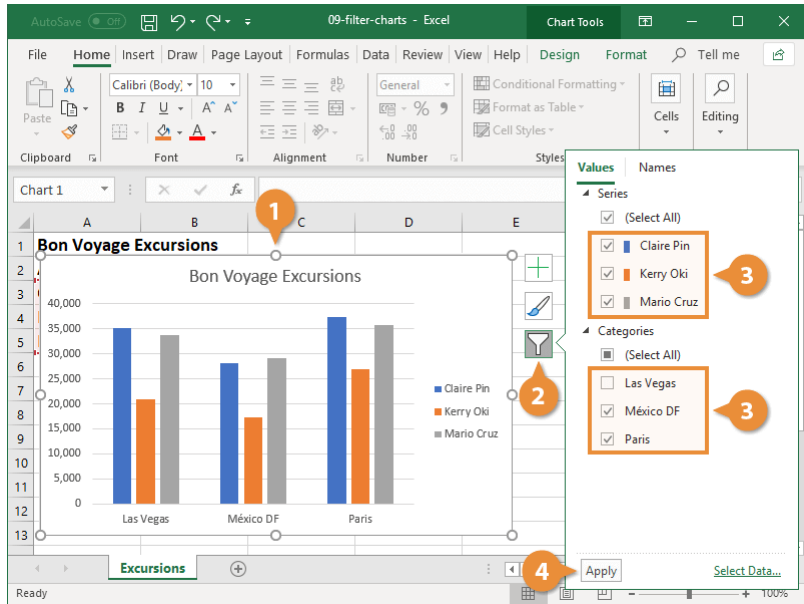
Filter Charts

You may occasionally want to turn off certain parts of your chart, to focus in on specific data. This can be accomplished with filtering.

Filter a Chart

- 1 Select the chart you want to filter.
- 2 Click the **Chart Filters** button.
- 3 Select the item(s) you want to display or hide.
- 4 Click **Apply**.

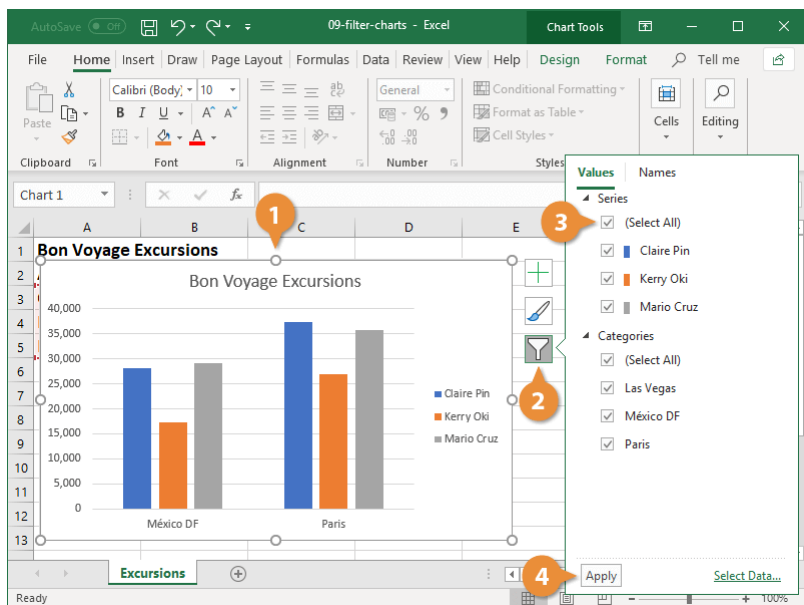
All the data remains in the worksheet, but only the selected values appear in the chart.



Remove a Filter

When you need to see all your data again, clear the filter.

- 1 Select the chart with the filter you want to remove.
- 2 Click the **Chart Filters** button.
- 3 For the data that's filtered, click the **Select All** check box twice.
Tip: Clicking the check box once deselects everything. Clicking it again turns everything on again.
- 4 Click **Apply**.



Trendlines

Trendlines help you see an overall picture of data over time. They can even be used to forecast future trends and make predictions.

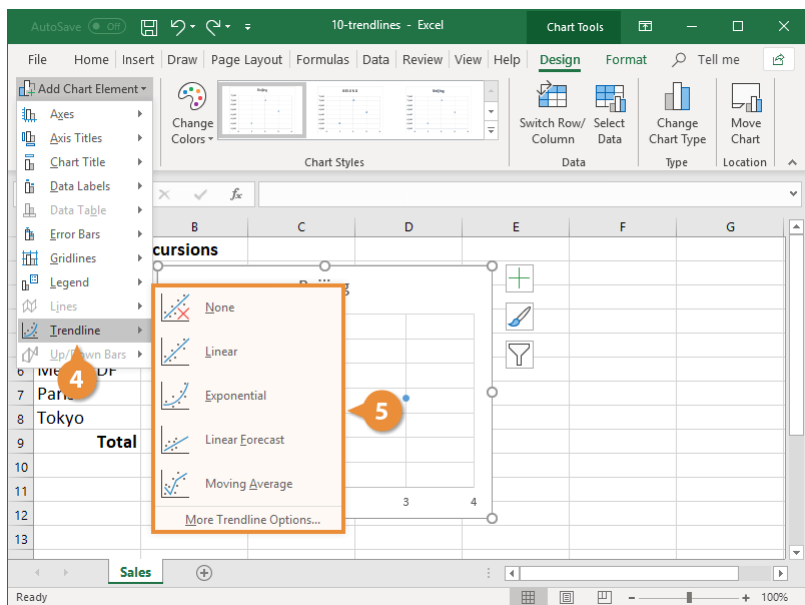
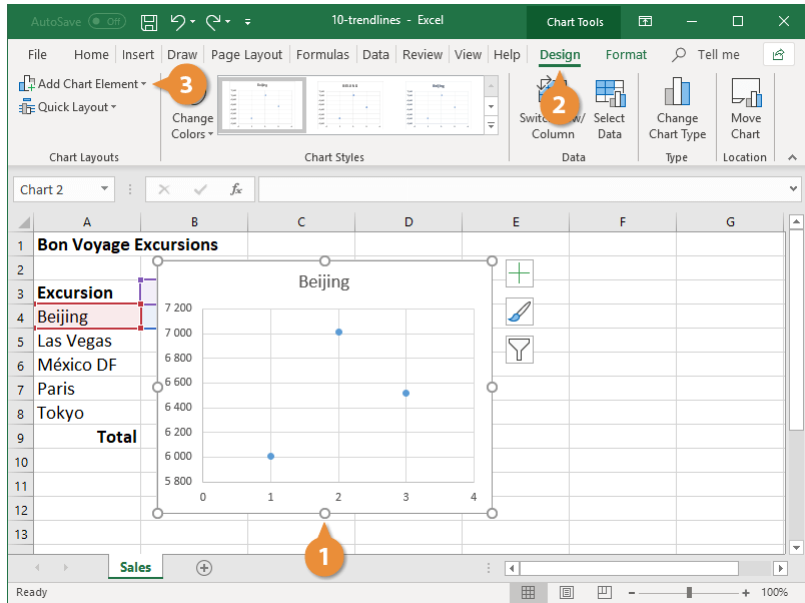
Choose a Trendline

Trendlines aren't available with all types of charts. However, if you are using an area, bar, line, column, stock, scatter, or bubble chart that's 2-dimensional, a trendline can be applied. There are six different types available. Use the table below to determine the right type of trendline for your chart and data.

Chart Types in Excel	
Exponential	Exponential trendlines work only for data sets with positive values. They're best for data that increases or decreases at a quick rate.
Linear	Linear trendlines are best for simple sets of data where the data points are in a line that increase or decrease at a steady rate.
Logarithmic	If your data increases or decreases quickly and then evens out, a logarithmic trendline is the best to use. They are curved trendlines and can be used for charts with both positive and negative values.
Polynomial	Polynomial trendlines are curved lines for data with positive values. Use these if your data set fluctuates and you need to assess the ups and downs of a large set of data.
Power	Power trendlines are also curved lines for data with positive values. If your data increases at a specific rate, power trendlines are the best to use.
Moving Average	If your data has large fluctuations, a moving average trendline is best. They help neutralize variations to give you a better idea of the underlying trend.

Add a Trendline

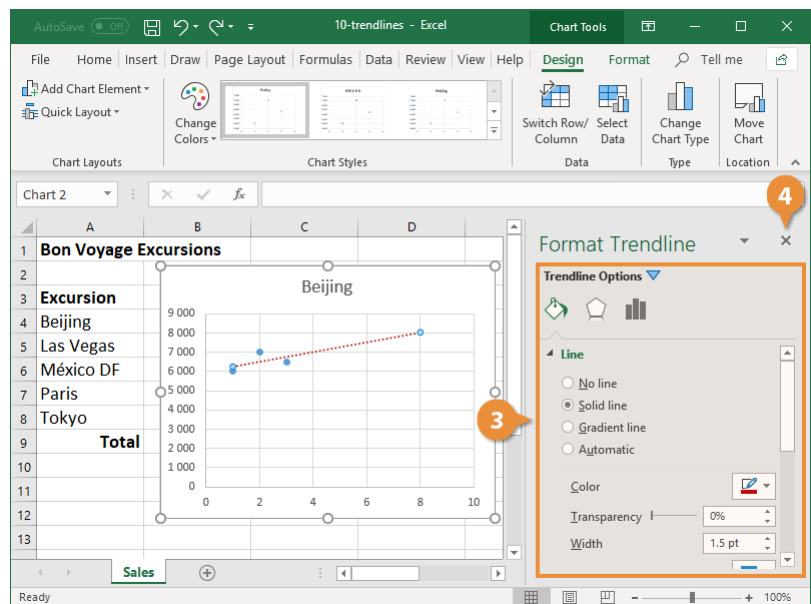
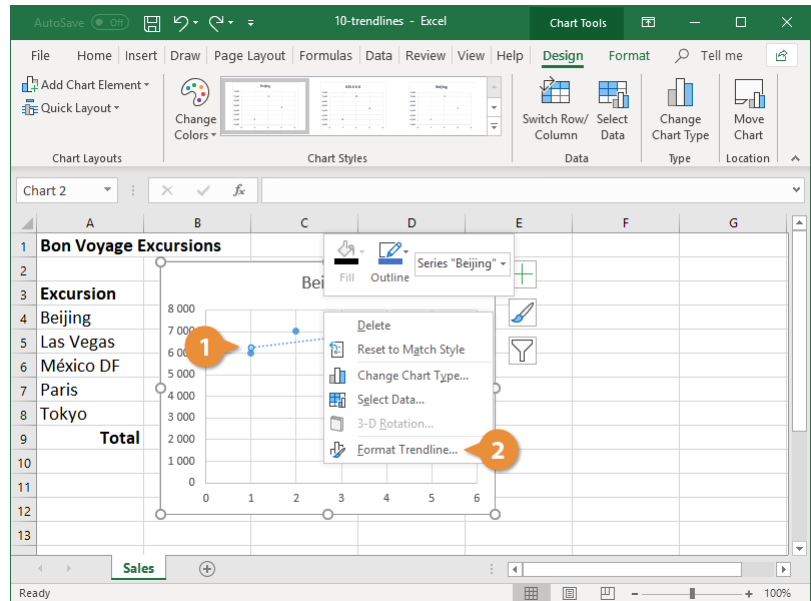
- 1 Select the chart where you want to add a trendline.
- 2 Click the **Design** tab.
- 3 Click **Add Chart Element**.
- 4 Select **Trendline**.
- 5 Select the type of trendline you want to apply to the chart.



Edit a Trendline

If the trendline doesn't give you all the information you need, there are some ways you can modify it.

- 1 Right-click the trendline.
- 2 Select **Format Trendline**.
The Format Trendline pane opens on the right. Here, you can modify the settings for the current trendline, change the trendline type, and control formatting options.
- 3 Modify the trendline options to suit your needs.
- 4 Click the Format Trendline pane's **Close** button.



Dual Axis Charts

Dual axis charts, also called combo charts, are great when you have two different kinds of information to present in the same chart. For example, you can have a column chart representing sales data and a line chart representing commission amounts displayed together.

Create a Dual Axis Chart

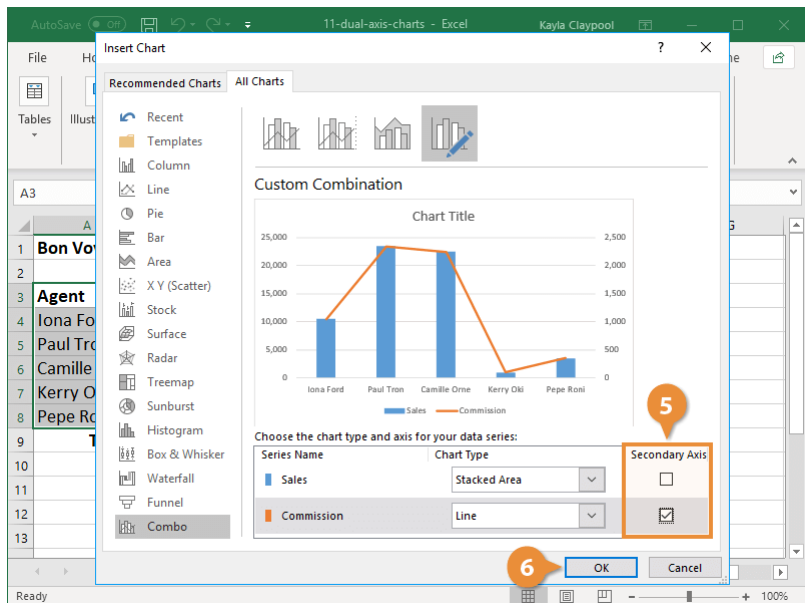
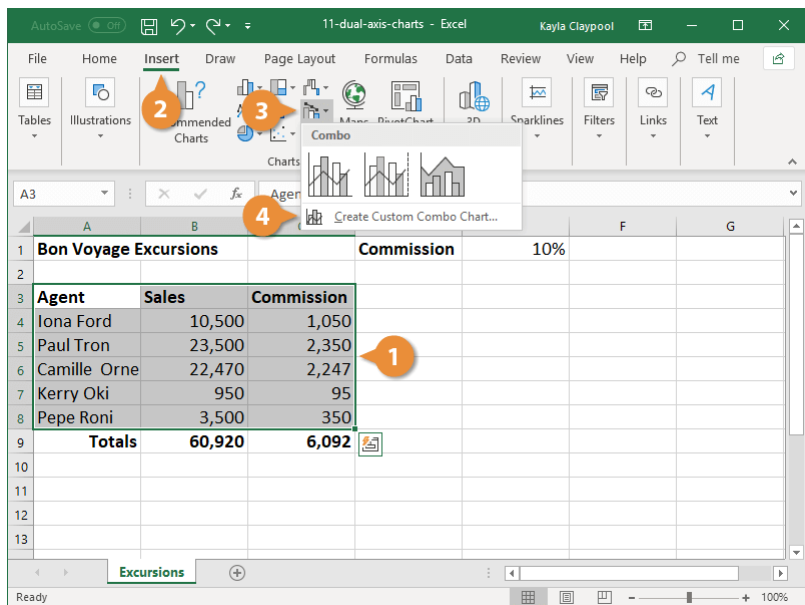
- 1 Select the data you want to include in the chart.
- 2 Click the **Insert** tab.
- 3 Click the **Combo** button.
- 4 Select **Create Custom Combo Chart**.

The default combo chart doesn't include a secondary axis to label the values of the second data set. It's best to turn this on to make the data clear for chart viewers.

- 5 Click the **Secondary Axis** box for the data you want to display on the alternate axis.

Tip: You can change the chart type for each series to anything you want. Use the menus in the Chart Type column to select the chart types you want to use.

- 6 Click **OK**.



Add Secondary Axis Titles

By default, the primary and secondary axis values are not labeled in the chart. Adding labels helps clarify the data being presented.

- 1 Select the dual axis chart.
- 2 Click the **Chart Elements** button.
- 3 Select the **Axis Titles** check box.
- 4 Type a name in each axis text box.

The primary and secondary axis titles are added to the chart.

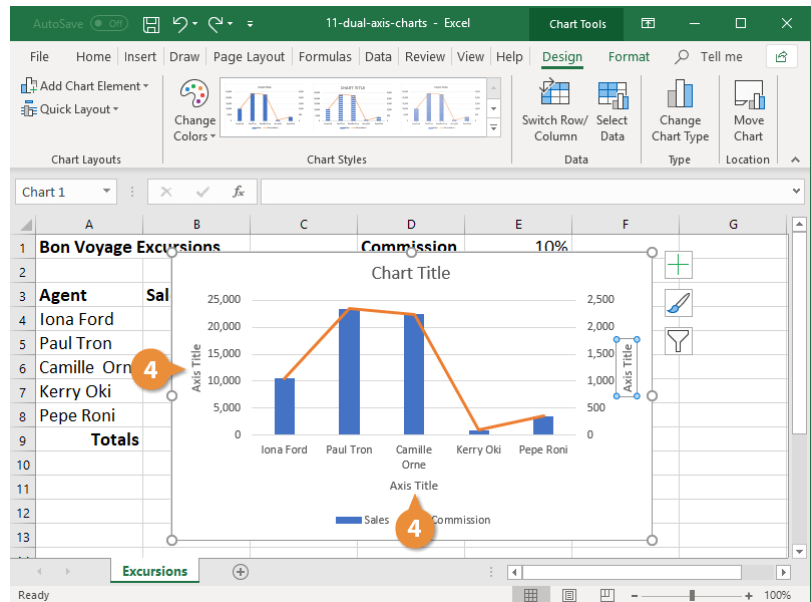
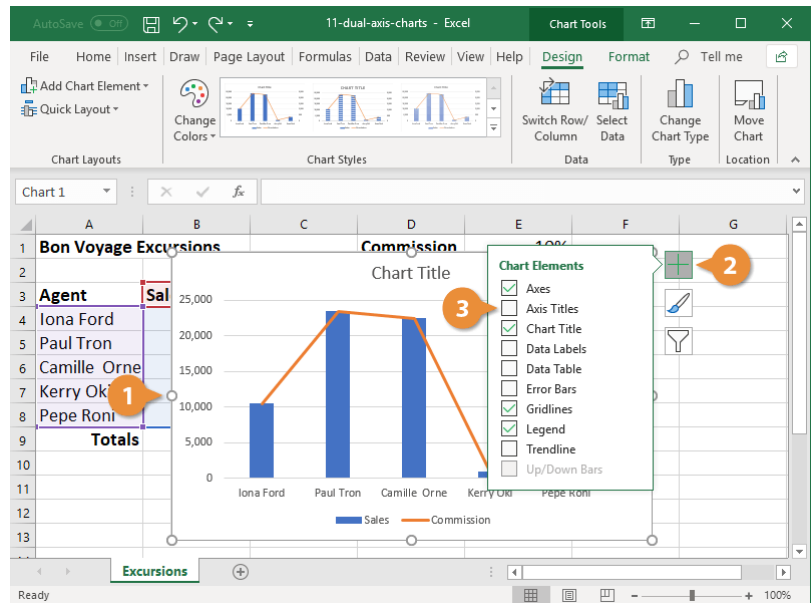


Chart Templates

If you find you are frequently creating the same type of charts with customized layouts and formatting, save yourself some time and create a chart template to reuse in the future.

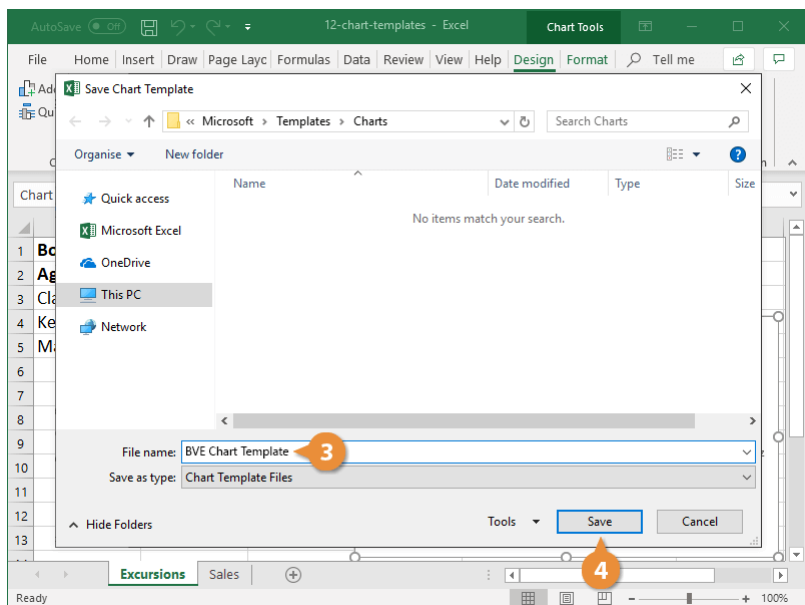
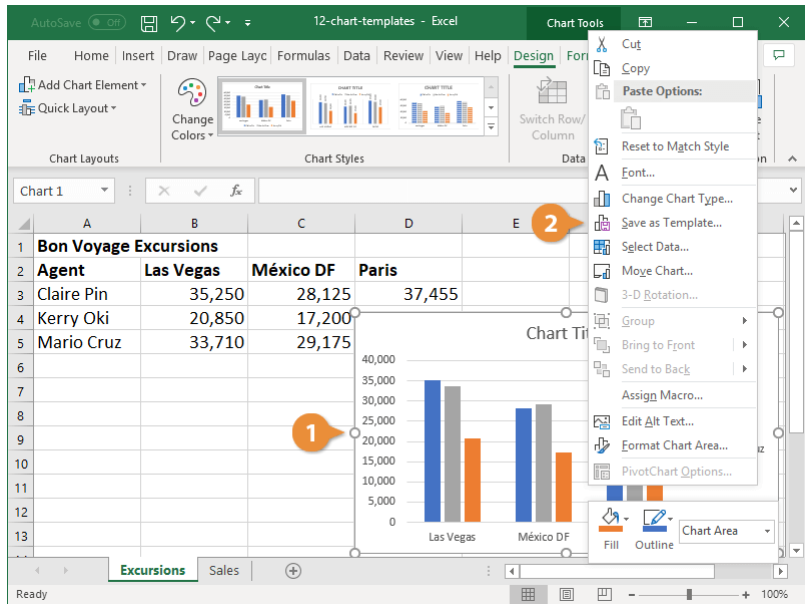
Save a Chart as a Template

When you save a chart as a template, that chart's properties are saved for easy future use.

- 1 Right-click the chart you want to save as a template.
- 2 Select **Save as Template**.
- 3 Type a file name for the template.

When Excel is installed on your computer, it automatically creates a special folder to store the templates you create, but you can select a different folder if you'd like.

- 4 Click **Save**.



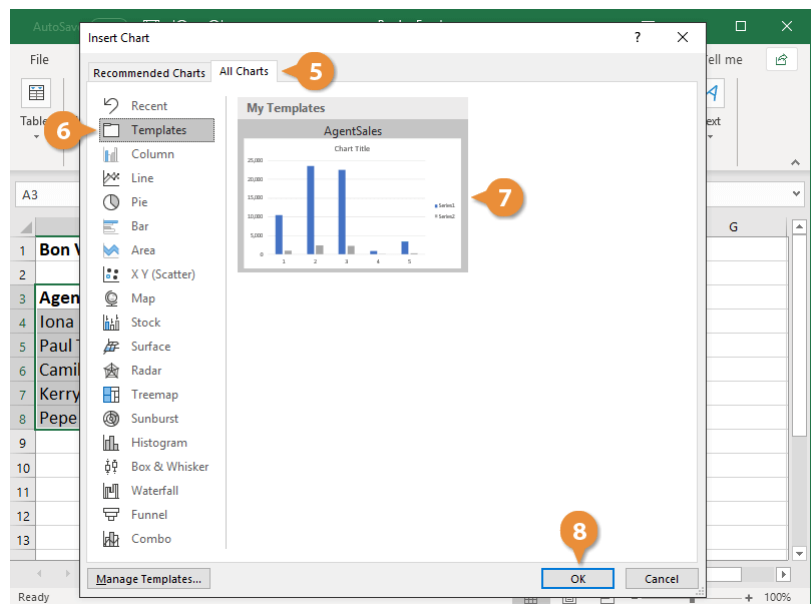
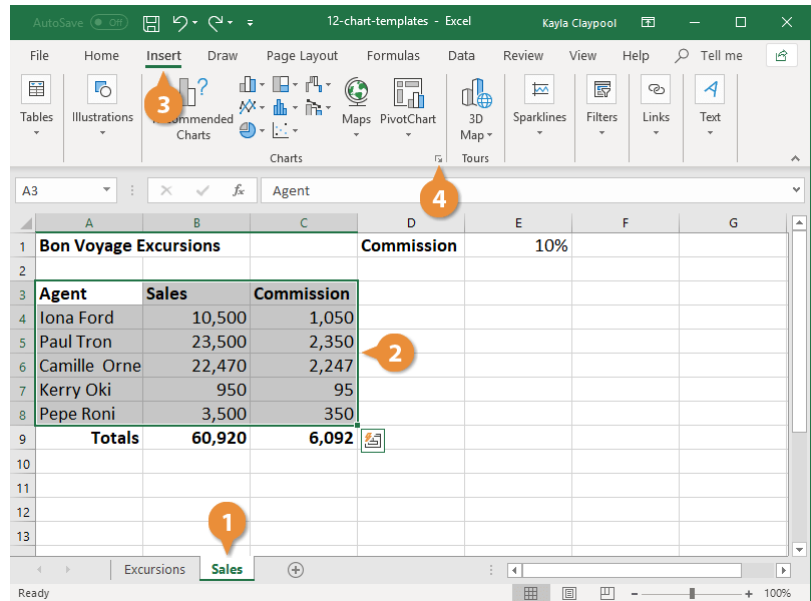
Create a New Chart from a Template

Once you've saved a template, you can use that template to create a new chart.

- 1 Navigate to the sheet where you want to use the chart template.
- 2 Select the data you want to chart.
- 3 Click the **Insert** tab on the Ribbon.
- 4 Click the **Charts** dialog box launcher.
- 5 Click the **All Charts** tab.
- 6 Select the **Templates** folder in the list on the left.
- 7 Select a template to use.

Tip: If you no longer need a template, click the **Manage Templates** button to delete it.

- 8 Click **OK**.



Sparklines

Sparklines provide a way to chart information in the individual cells of a worksheet. They are a great way to show a snapshot of the worksheet data.

Insert Sparklines

- 1 Select the cells you want to summarize.
- 2 Click the **Insert** tab.
- 3 Click the **Sparklines** button.
- 4 Select a sparkline type.

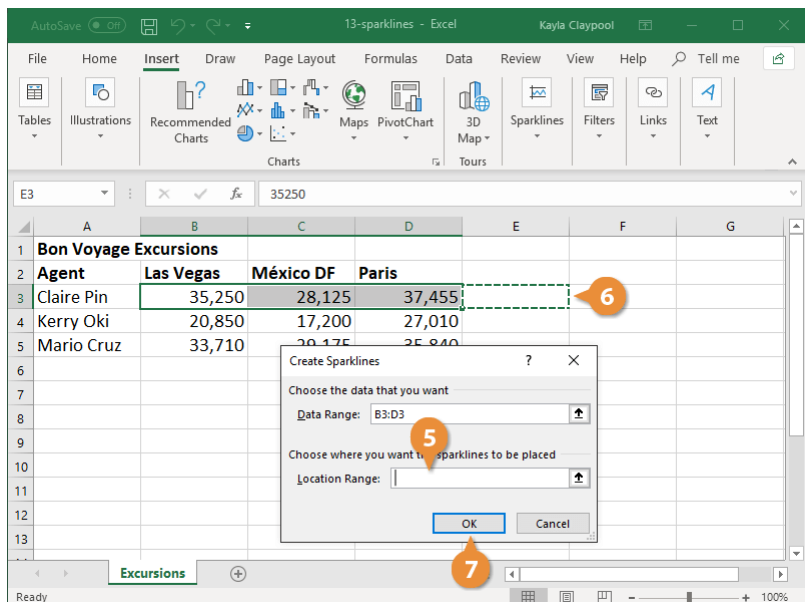
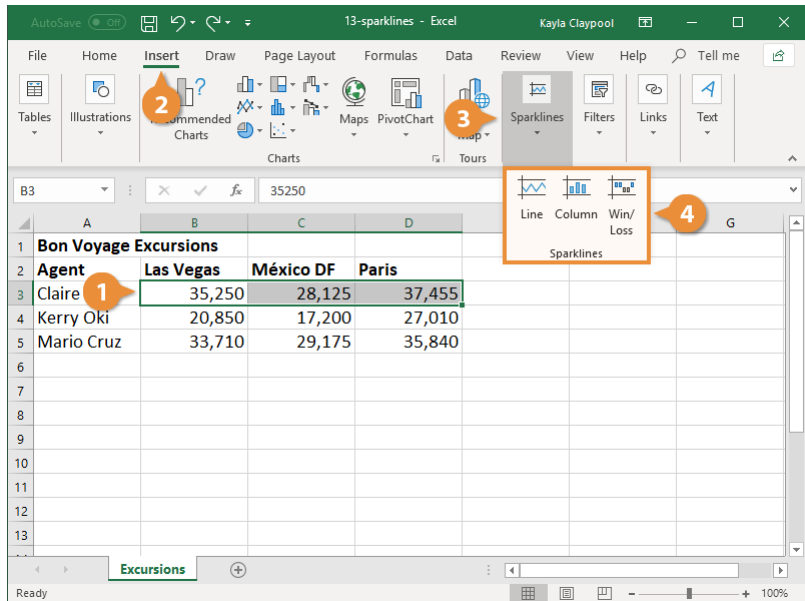
- **Line:** Shows trends in the data over time.
- **Column:** Shows differences in quantity.
- **Win/Loss:** Shows gains or losses.

The Create Sparklines dialogue box appears. When a cell range is already selected, the Data Range field is automatically populated. If you didn't select a range previously, enter it in the Data Range field.

- 5 Click in the **Location Range** field.
- 6 Select the cell where you want the sparkline to appear.
- 7 Click **OK**.

Tip: You can change the sparkline's style by selecting it, clicking the **Design** tab, and selecting a style from the Style Gallery.

A Sparkline is added to the worksheet.



Print and Distribute

At times, the best way to share your Excel data with others is to print it. You can configure your workbook to only print specific portions of your data. In addition, you can adjust the print scale to the right zoom level so your data set properly fills the space of a given paper size. If you choose to distribute your file electronically, there are steps you can take to ensure your document is optimized for others to consume. This module covers the options that are most important when printing or electronically distributing data from Excel.

Objectives

Page Size and Scale

Print Area

Page Breaks

Print Titles, Gridlines, and Headings

Headers and Footers

Margins and Orientation

Inspect for Issues

Page Size and Scale

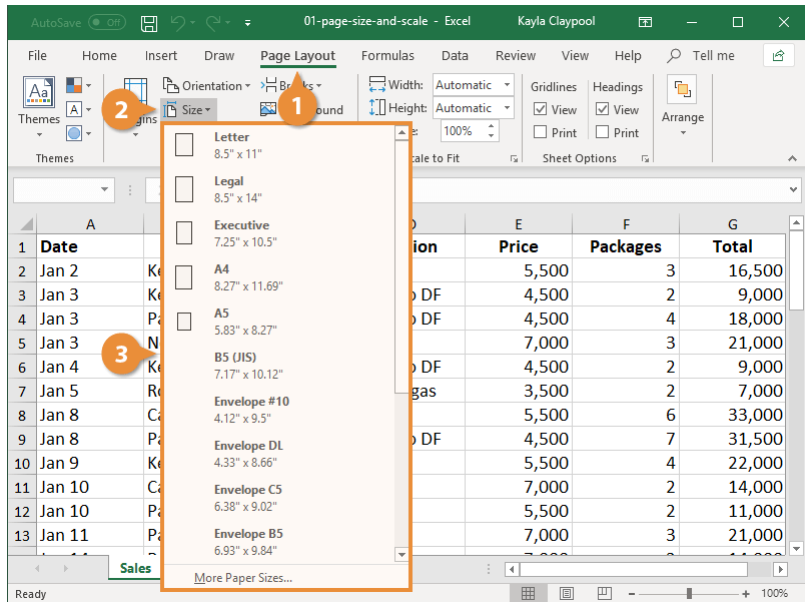
If you plan to print a worksheet on paper that isn't letter size, you'll need to select a different paper size in Excel. You can choose to adjust the scale of your printed worksheet so that the printed data stretches or shrinks to fit the number of pages you specify.

Change Page Size

Most people normally print on standard letter-sized (8.5" x 11") paper, but Excel can print on many other paper sizes.

- 1 Click the **Page Layout** tab.
- 2 Click the **Size** button.
- 3 Select a paper size.

Tip: If you don't see the paper size you need, select **More Paper Sizes**.



Change Print Scale

If you have a data range that's too wide or tall for a page, scale it to ensure it fits correctly.

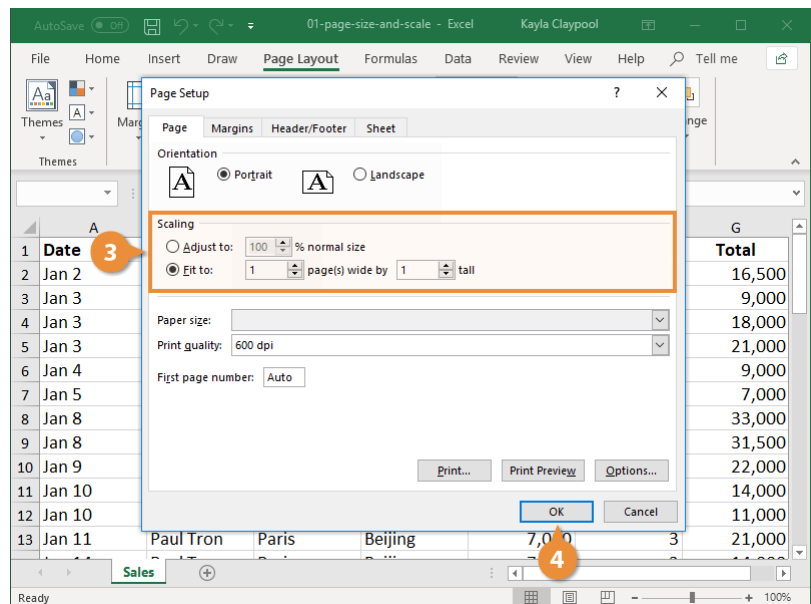
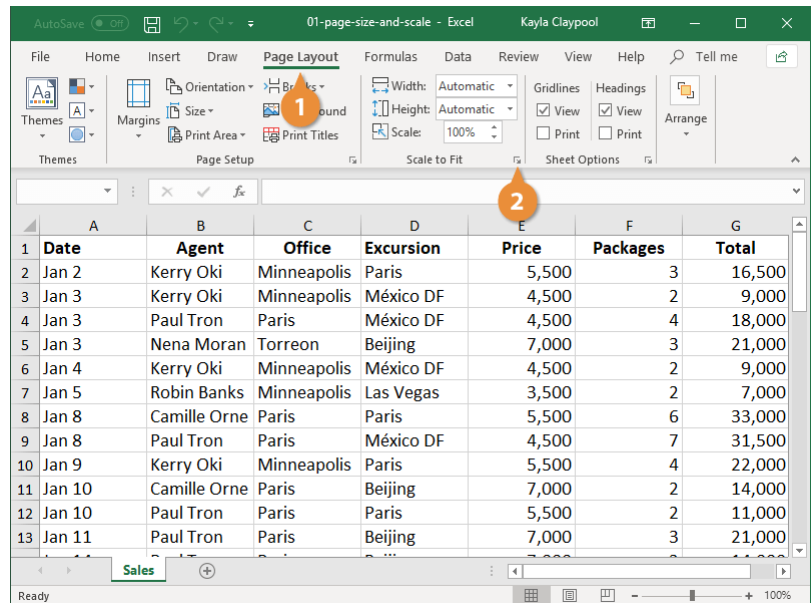
- 1 Click the **Page Layout** tab.
- 2 Click the **Scale to Fit** dialog box launcher.

The Scaling section has two options you can choose from to adjust the worksheet's scale for printing:

- **Adjust to:** Enter a percentage or use the arrow buttons to stretch or shrink the printed output to a percentage of its actual size.
- **Fit to:** Specify the number of pages wide and tall you want the printed data to occupy. Excel will either shrink the data to fit on fewer pages or expand it to fill additional pages.

- 3 Specify the scaling options you want to use.

- 4 Click **OK**.



Print Area

There are two ways to specify the workbook data that is printed: setting the print area and adjusting the page breaks.

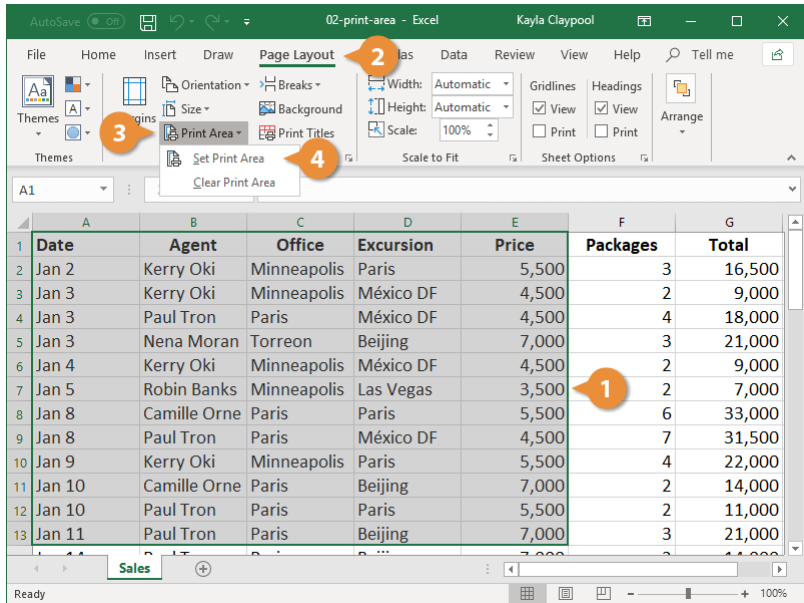
Set the Print Area

Sometimes you may only want to print part of a worksheet. You can define an area so that any time you print, only that cell range is printed.

- 1 Select the cells you want to print.
- 2 Click the **Page Layout** tab.
- 3 Click the **Print Area** button.
- 4 Select **Set Print Area**.

Tip: Once a print area is set, add additional print areas by selecting the additional cells, clicking the **Print Area** button, and selecting **Add to Print Area**.

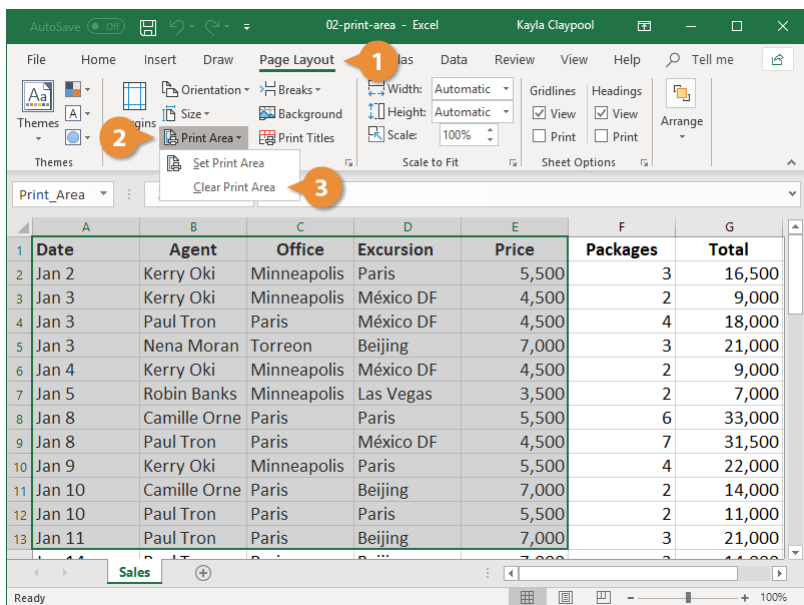
A dark gray border appears around the print area. When you print, only the cells within that range appear on the page.



Remove a Print Area

- 1 Click the **Page Layout** tab.
- 2 Click the **Print Area** button.
- 3 Select **Clear Print Area**.

The print area is cleared and the entire worksheet will print once again.



Page Breaks

Excel automatically breaks up the page based on the margins and other page settings, but it's also possible to adjust these page breaks or add alternative breaks to divide a worksheet into separate pages for printing.

Adjust Page Breaks

1 Click the **View** tab.

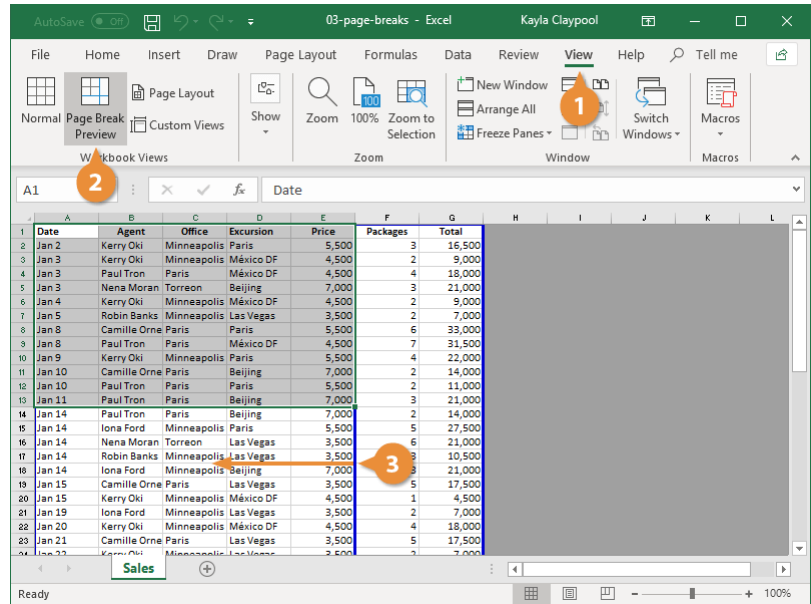
2 Click the **Page Break Preview** button.

Shortcut: Click the **Page Break Preview** button on the status bar.

The worksheet appears in Page Break Preview view.

3 To move a page break, click and drag it to a new location.

Tip: Dashed lines indicate automatic page breaks, while solid lines represent page breaks that you have changed or added.



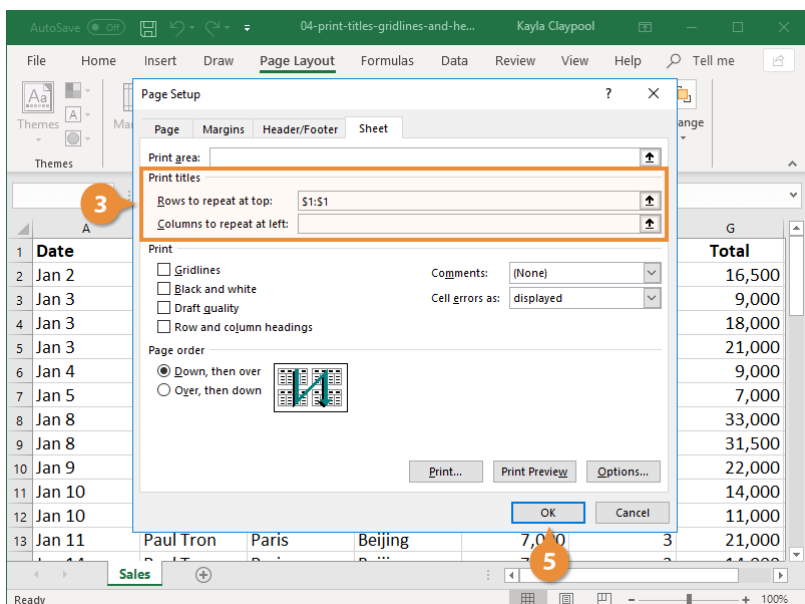
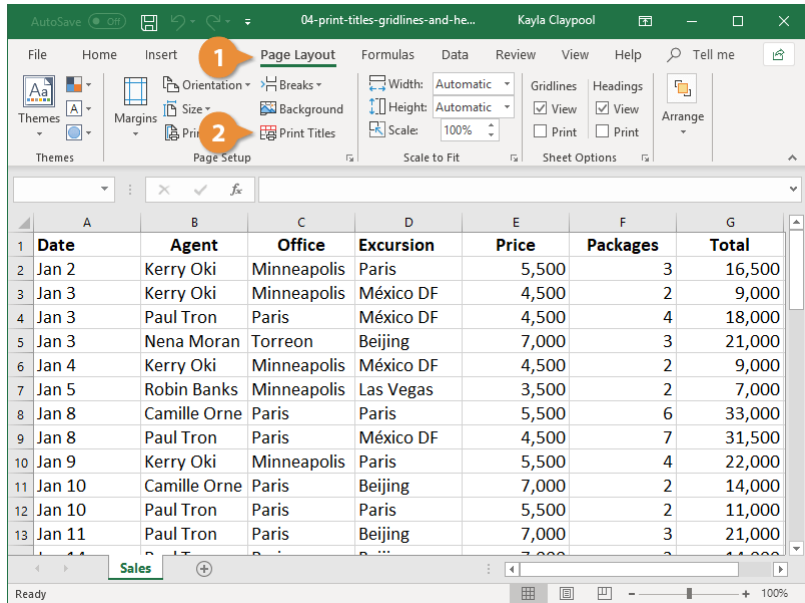
Print Titles, Gridlines, and Headings

You can specify rows and columns to repeat on each printed page. You can also select whether you want to print cell gridlines and row and column headings.

Print Row or Column Titles

The Print Titles command allows you to designate certain rows and columns to repeat on every printed page.

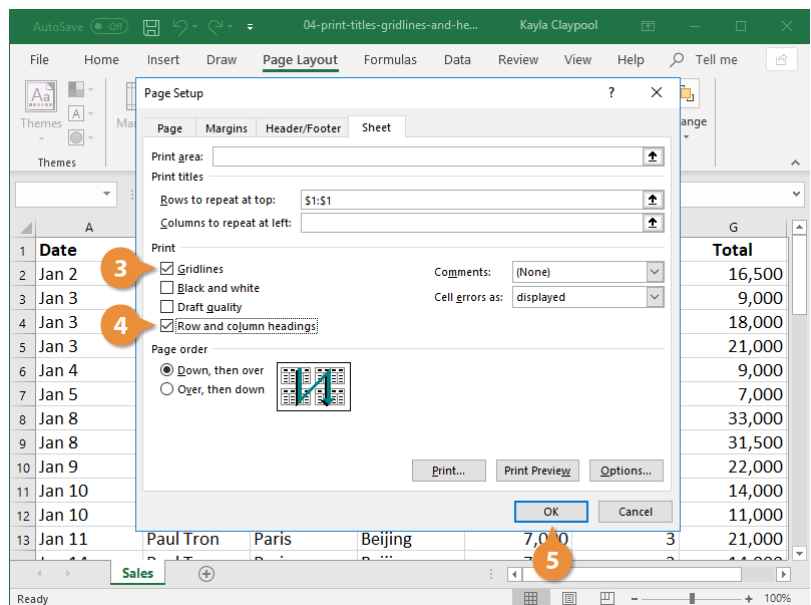
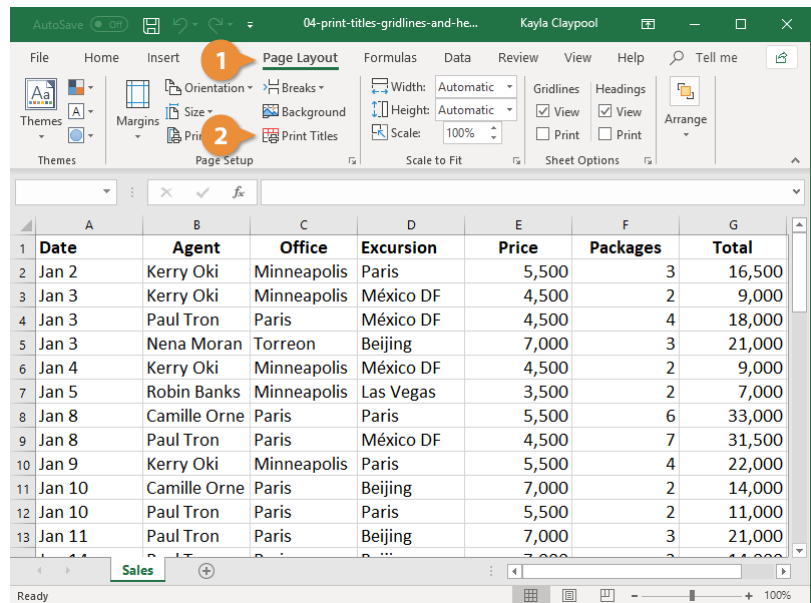
- 1 Click the **Page Layout** tab.
- 2 Click the **Print Titles** button.
- 3 Click in either the **Rows to repeat at top** or **Columns to repeat at left** field.
- 4 Select the row or column you want to print on each page.
- 5 Click **OK** when you're finished.



Print Gridlines and Headings

The letters and numbers that serve as the row and column headings don't print by default. Neither do the worksheet gridlines. You can turn them on for printing if needed.

- 1 Click the **Page Layout** tab.
- 2 Click the **Print Titles** button.
- 3 Under Print, click the **Gridlines** check box to show or hide gridlines.
- 4 Select the **Row and column headings** check box to show or hide row and column headings.
- 5 Click **OK** when you're finished.



Headers and Footers

You can use a header to include the same information at the top of every printed page or a footer to include information at the bottom of every page. You can enter your own headers or footers, insert built-in ones, or insert specific elements such as pictures or page numbers.

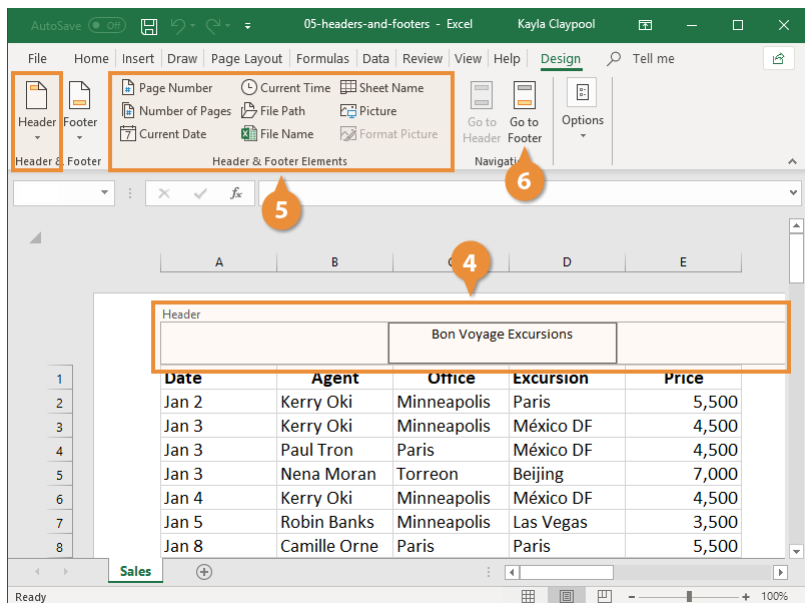
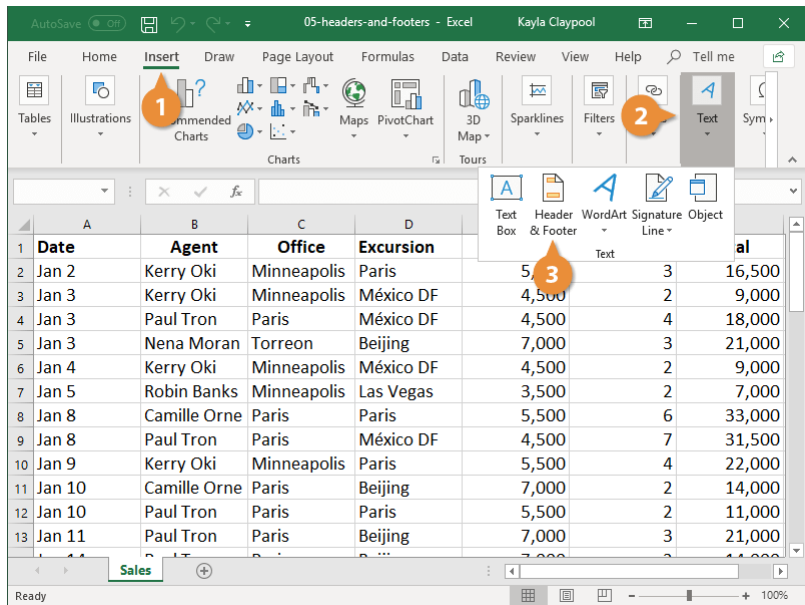
Add a Header or Footer

- 1 Click the **Insert** tab.
- 2 Click the **Text** button.
- 3 Select **Header & Footer**.

The Header & Footer view displays and the header is active.

Tip: You can also access the header and footer by clicking the **View** tab and clicking the **Page Layout View** button.

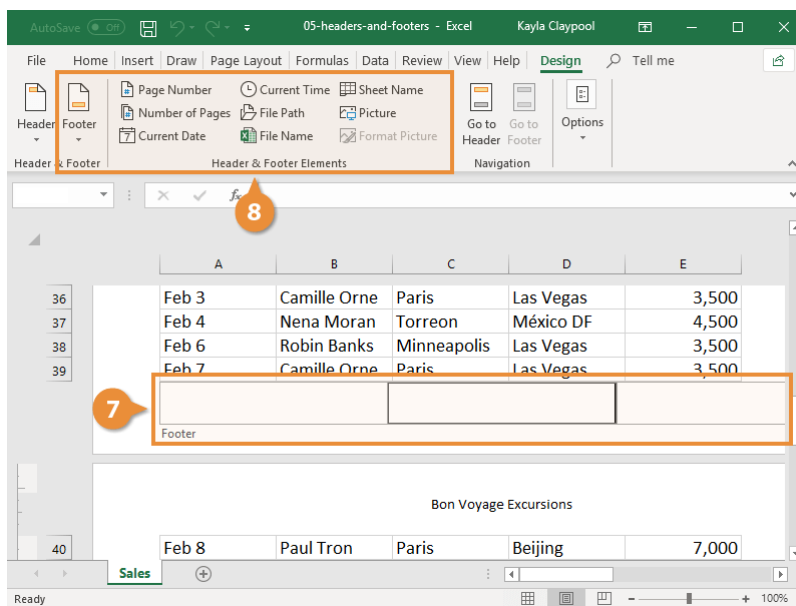
- 4 Click in the header section where you want to add text.
- 5 Enter custom text or select a pre-defined header from the Header & Footer Elements group or Header menu.
- 6 To view the footer, click the **Go to Footer** button.



7 Click in the footer section where you want to add text.










8 Enter custom text or select a pre-defined footer from the Header & Footer Elements group or Footer menu.

Tip: Headers and footers can be formatted using the commands in the Font group on the Home tab.



Header & Footer Elements Group Options

The Header & Footer Elements group has a variety of pre-defined options you can use.

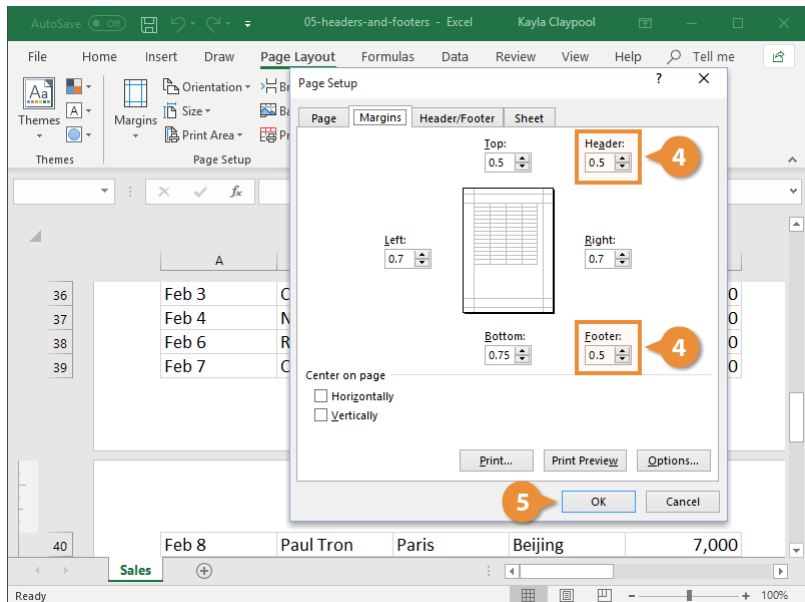
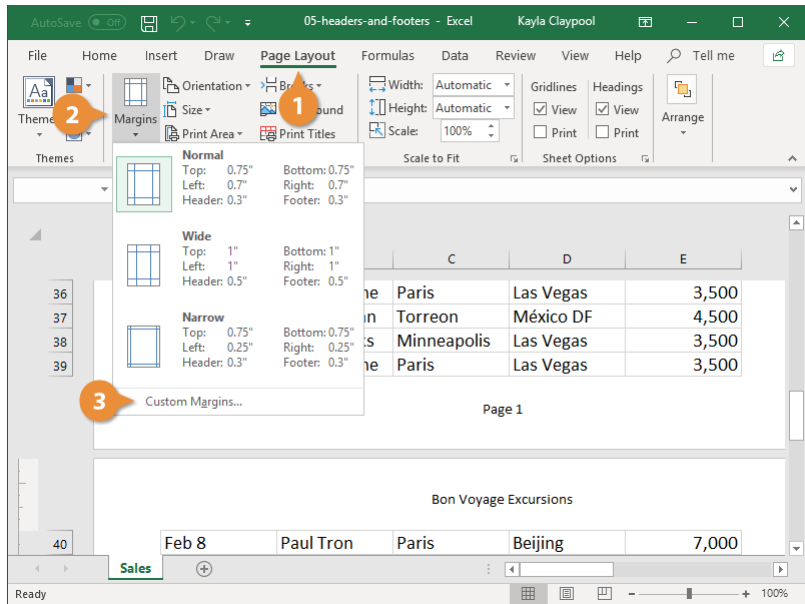
Button	Description
 Page Number	Displays the correct page number for each page.
 Number of Pages	Displays the total number of pages in the worksheet.
 Current Date	Displays the current date.
 Current Time	Displays the current time of day.
 File Path	Displays the workbook's name and file path.
 File Name	Displays the workbook's name.
 Sheet Name	Displays the worksheet's name.
 Picture	Opens the Insert Picture dialog box, where you can browse for and insert a picture file.
 Format Picture	Is only available once a picture has been inserted; this button allows you to adjust the picture's size, brightness or contrast.

Adjust the Header and Footer Height

Since the amount of content entered in a header or footer can vary, the height may need to be adjusted to fit all the text.

- 1 Click the **Page Layout** tab.
- 2 Click the **Margins** button.
- 3 Select **Custom Margins**.
- 4 Enter a new height for the header or footer.
- 5 Click **OK**.

The header and footer heights are adjusted and to accommodate the amount of content entered.



Margins and Orientation

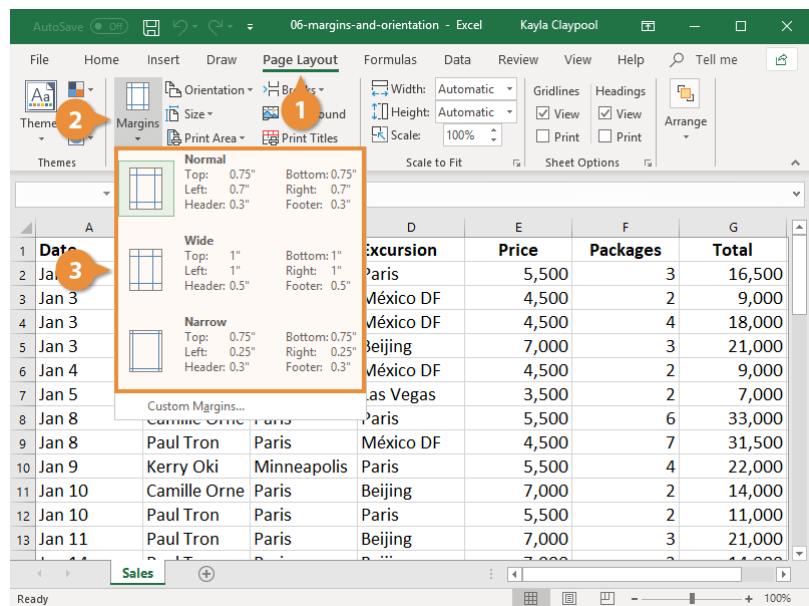
Margins are the empty space between the worksheet data and the left, right, top, and bottom edges of the printed page. You can manually adjust them to add more or less space around your worksheet data.

Set Print Margins

By default, the margins are 0.75 inches at the top and bottom, and 0.70 inches to the left and right.

- 1 Click the **Page Layout** tab.
- 2 Click the **Margins** button.
- 3 Select the margin size you want to use from the list.

Tip: If you don't see a margin size that works, select **Custom Margins** to display the Page Setup dialog box. Here you can set your own custom margins.

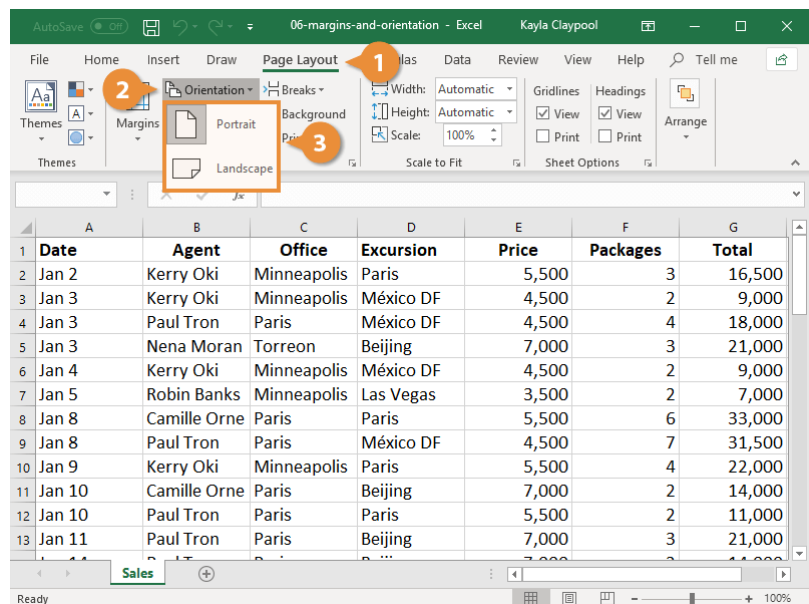


Set Page Orientation

Portrait orientation is the default setting for printing worksheets, but you may want to use landscape orientation instead.

- 1 Click the **Page Layout** tab.
- 2 Click the **Orientation** button.
- 3 Select an orientation option:

- **Portrait:** In Portrait orientation, the paper is taller than it is wide—like a portrait painting.
- **Landscape:** In Landscape orientation, the paper is wider than it is tall—like a landscape painting.



Inspect for Issues

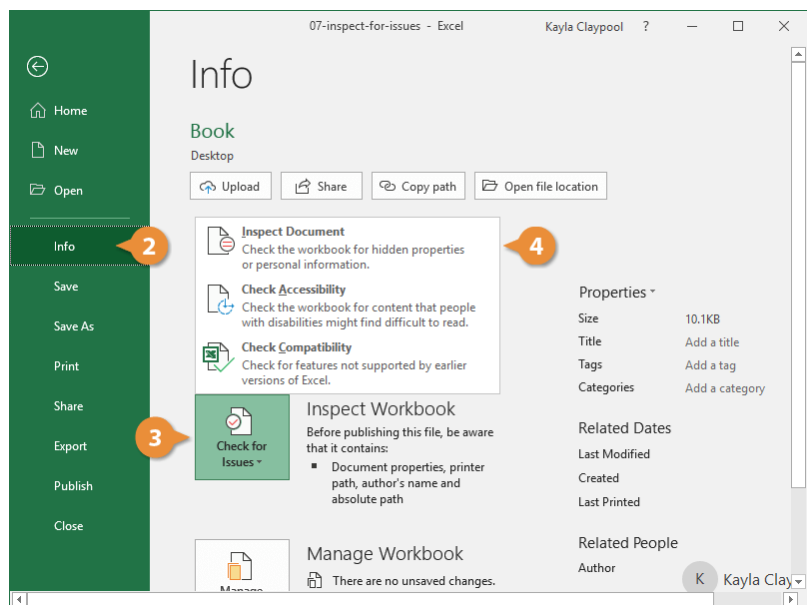
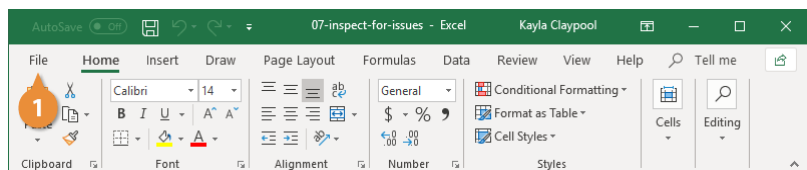
Excel has several features that help you make sure workbooks look and work the way you want them to before you distribute them to others.

Excel comes with many options that help you prepare a workbook for distribution.

Inspect a Workbook

Check the workbook for hidden information, such as personal information; custom XML data; and other hidden or embedded information. This hidden information has the potential to reveal details about your organization or about the workbook itself that you might not want to share publicly. You can remove this hidden information before you share the workbook with other people.

- 1 Click the **File** tab.
- 2 Click **Info**.
- 3 Click **Check for Issues**.
- 4 Select **Inspect Document**.



5

Click **Yes**.

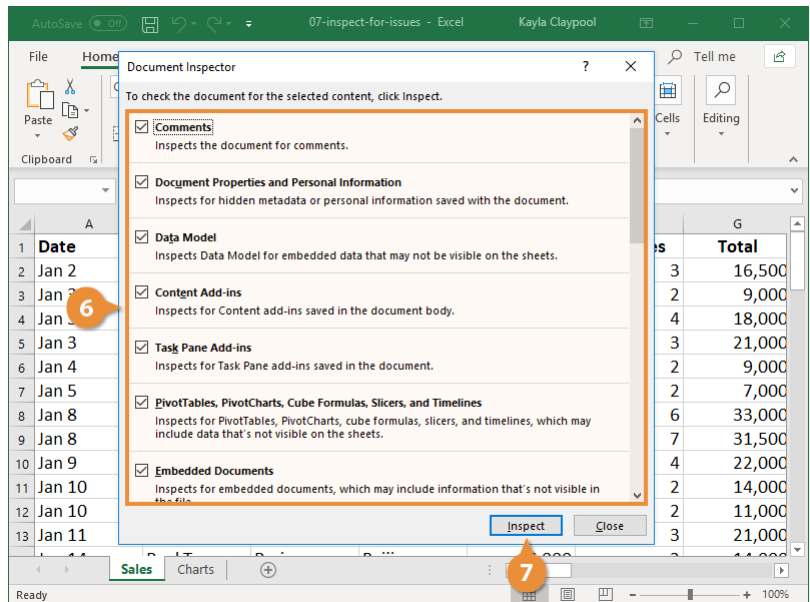
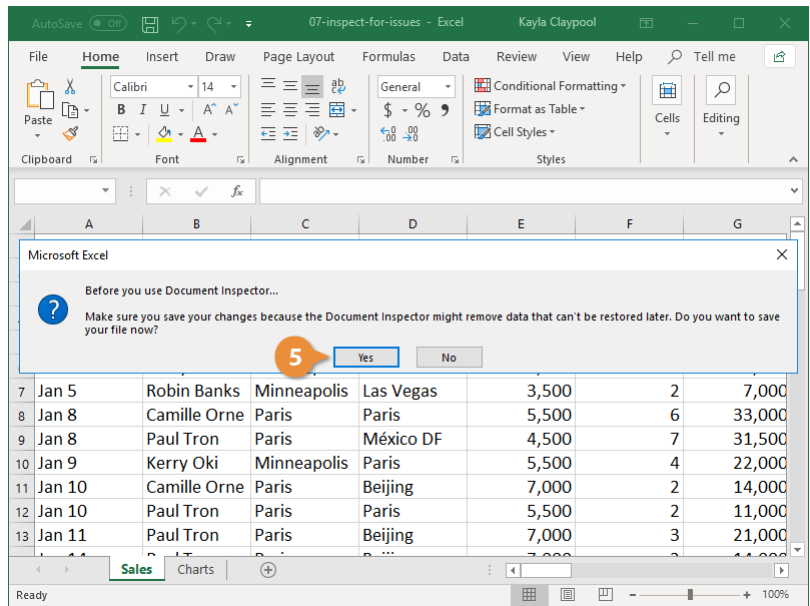
There's a variety of items you can check for within your workbook. Look through the list and identify the hidden content you want to inspect.

6

Check the box for the items you want to inspect.

7

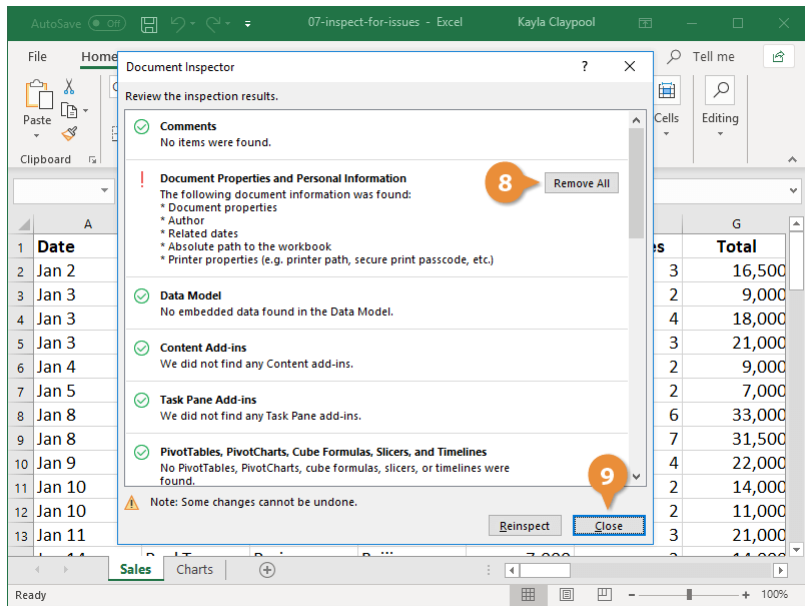
Click **Inspect**.



8 Click **Remove All** next to the Items you want to remove.

9 Click **Close**.

The hidden data is removed from the workbook and will not be seen by others.



Accessibility Issues

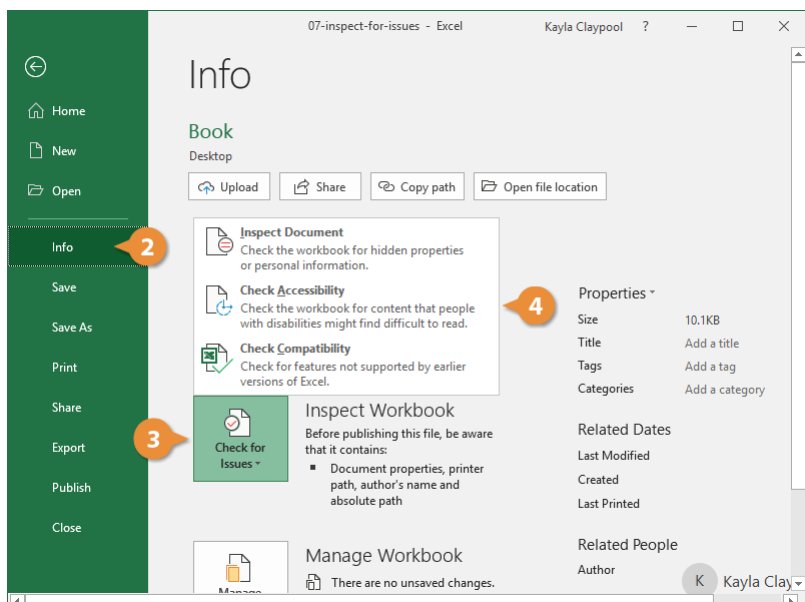
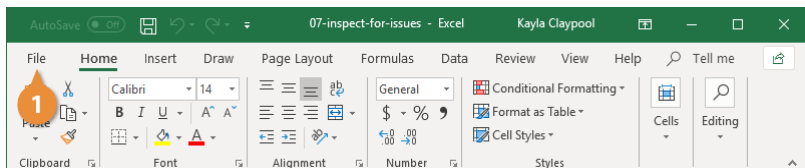
The Accessibility Checker looks for anything that people with disabilities might find difficult to read. It even tells you why you'd want to fix the detected issue.

1 Click the **File** tab.

2 Click **Info**.

3 Click **Check for Issues**.

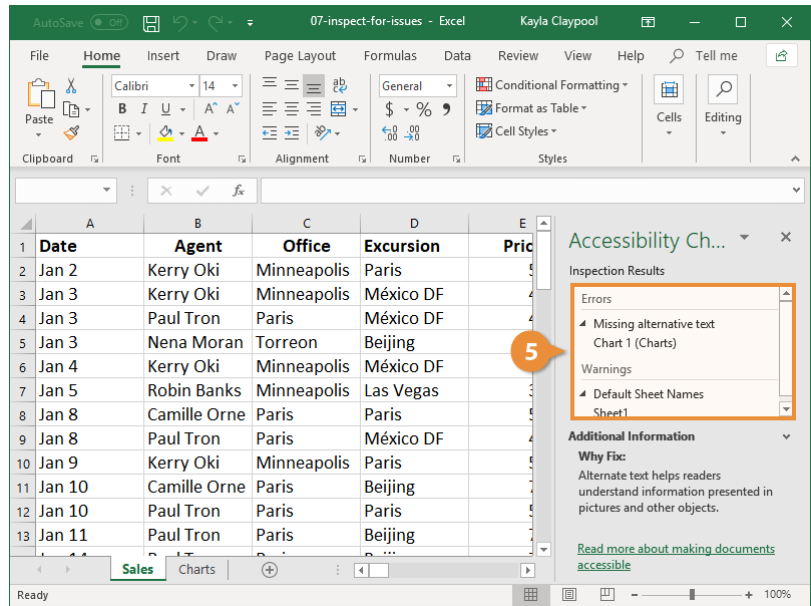
4 Select **Check Accessibility**.



5

Click an item in the Accessibility Checker pane.

Excel jumps to the sheet with the problematic object and selects it so you can easily make changes.



Compatibility Issues

If you'll be sharing your workbook with others who have an earlier version of Excel, you'll want to run the Compatibility Checker to detect any information that may not be available to those individuals.

1

Click the **File** tab.

2

Click Info.

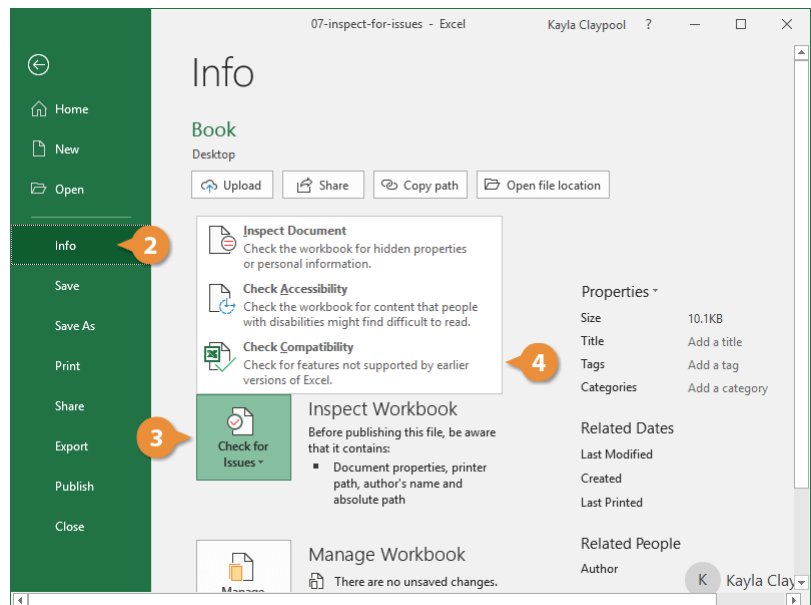
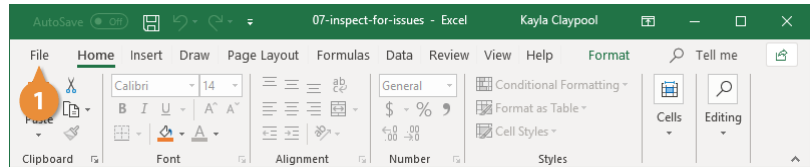
3

Click **Check for Issues**.

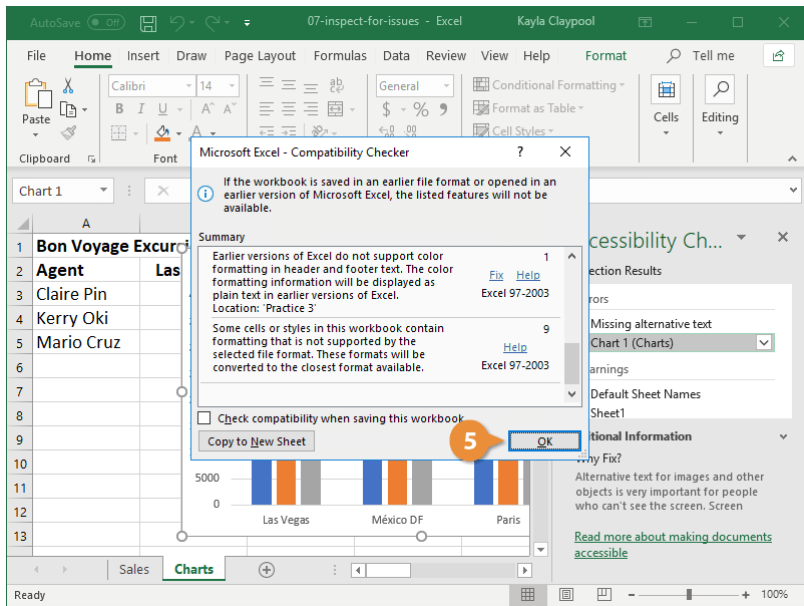
4

Select **Check Compatibility**.

Excel 2019 has some features that aren't available in earlier versions of the software. The Compatibility Checker identifies these and lets you know what will happen to the worksheet elements if the file is opened in another version of Excel.



5 Click OK.



Intermediate Formulas

In Excel, you can add references to data from another worksheet, whether it exists in your current workbook or an external workbook. While absolute references remain constant, relative references are contextual to the location of the cell that contains the formula.

The formulas covered in this module will help you simplify tedious or complex tasks. Learn how to merge text from multiple cells into one using the CONCATENATE function or calculate monthly payments for a large purchase using the PMT function. Dates and times can also be used in formulas to make calculations dealing with time a breeze.

Objectives

- Reference External Worksheets
- Absolute and Relative References
- Order of Operations
- Cell and Range Names
- Insert Functions
- CONCAT Function
- PMT Function
- Display Formulas
- Date Formulas

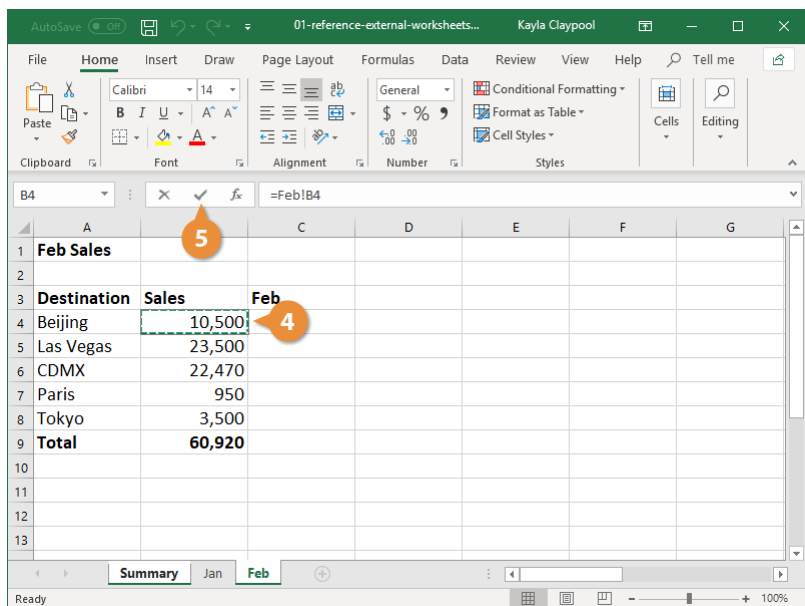
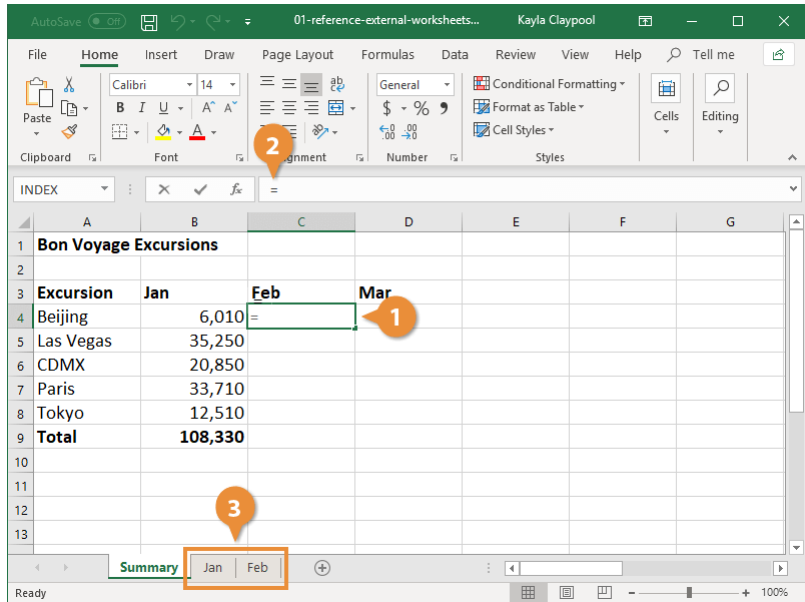
Reference External Worksheets

References to cells or cell ranges in other worksheets are called external references. One of the most common reasons for using external references is to create a worksheet that summarizes the totals from other worksheets. For example, a workbook might contain twelve worksheets—one for each month—and an annual summary worksheet that references and totals the data from each monthly worksheet.

Reference Another Worksheet

- 1 Click the cell where you want to insert the reference.
- 2 Type = to start building the reference.
- 3 Select the worksheet that contains the cell you want to reference.
Tip: A worksheet reference in a formula has an exclamation point (!) after the sheet name.
- 4 Select the cell you want to reference.
- 5 Click or press **Enter**.

The value from the other worksheet appears in the selected cell.



Reference Another Workbook

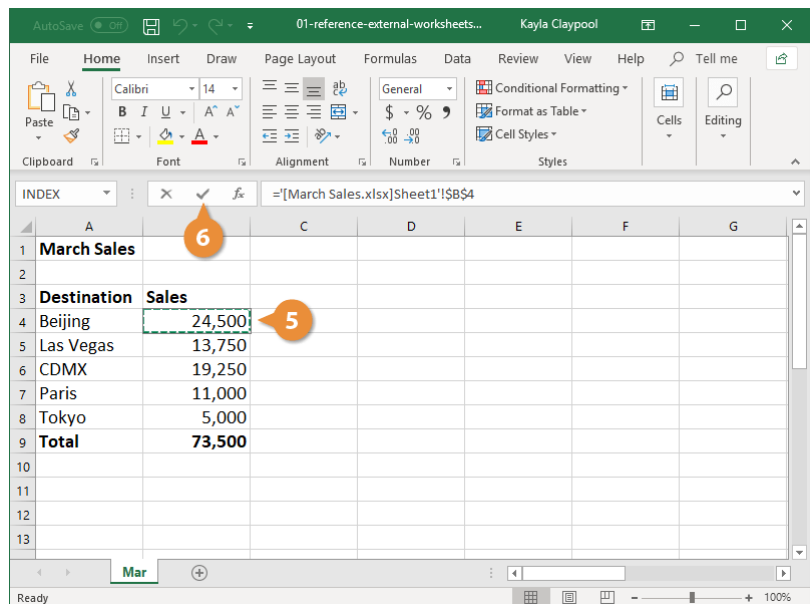
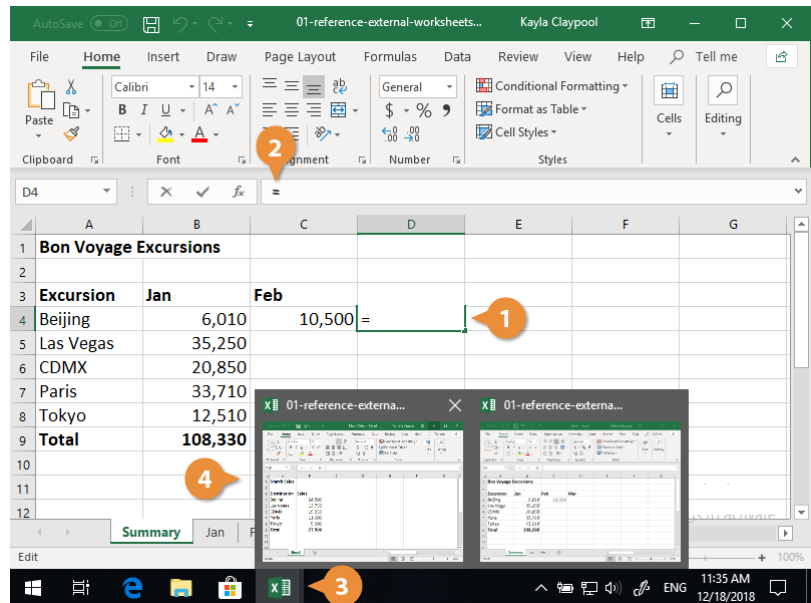
You can also reference cells from completely different files.

- 1 Click where you want to insert the reference.
You'll need to open the workbook that contains the data you want to reference before entering the formula.
- 2 Type = and start building the reference.
- 3 Click on the **Excel** icon in the task bar.
- 4 Select the workbook with the cell(s) you want to reference.
- 5 Select the cell(s) you want to reference.
- 6 Click or press **Enter**.

Tip: If you move, delete, or rename the file you referenced, your formula will break.

The value from the other workbook appears in the worksheet.

When another workbook is referenced in a formula, the file name appears in brackets like these: [].



Absolute and Relative References

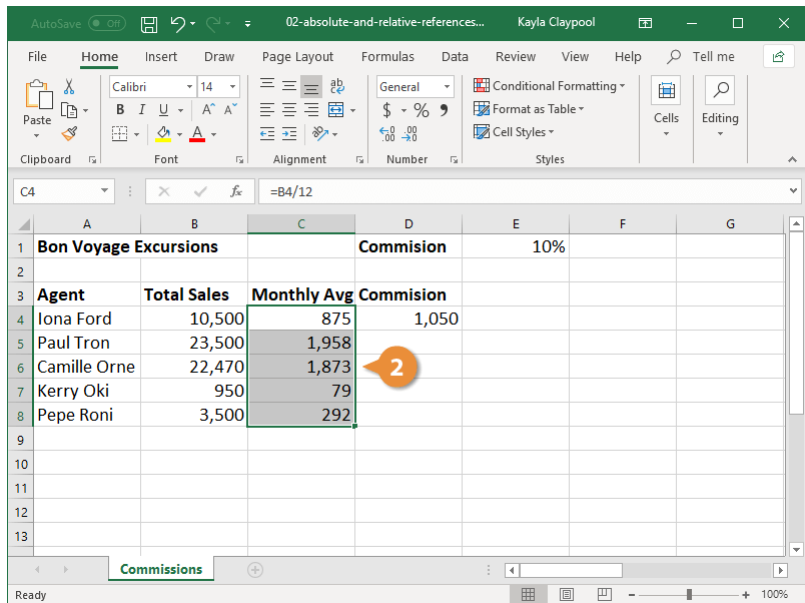
Formulas can contain numbers, like 5 or 8, but more often they reference the contents of cells. A cell reference tells Excel where to look for values you want to use in a formula. For example, the formula $=A5+A6$ adds the values in cells A5 and A6.

Using cell references is useful because if you change the values in the referenced cells, the formula result automatically updates using the new values. There are two types of cell references: relative and absolute.

Relative References

Relative references refer to cells in relation to the location of the cell that contains the formula. When the formula is moved, it references new cells based on their location. Relative references are the default type of references in Excel.

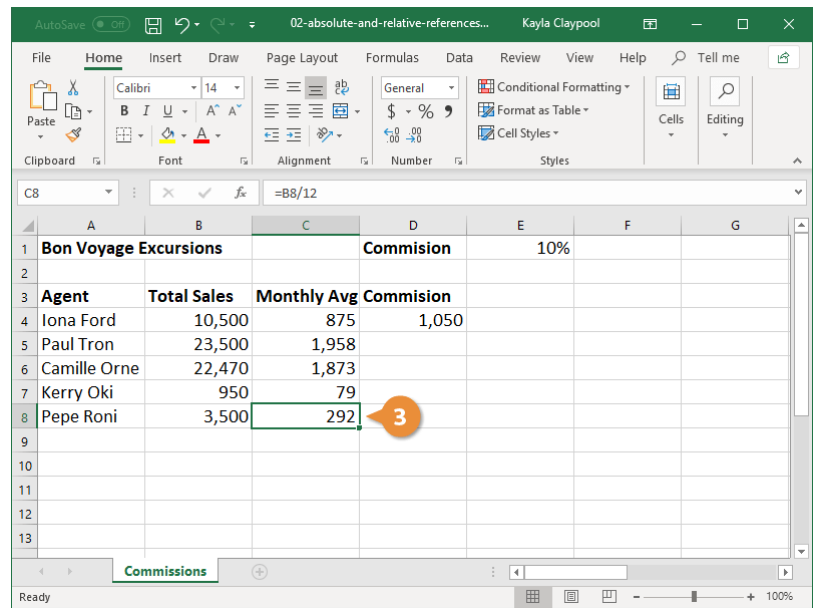
- 1 Copy the formula in an existing cell that you want to paste elsewhere in the worksheet.
- 2 Paste the formula in the desired cells.



3

Select a cell that contains the pasted formula. Use the formula bar to verify the cell references have updated relative to where the formula was pasted.

In the cell(s) where the formula was pasted, the cell reference updates for the current row and/or column.



Absolute References

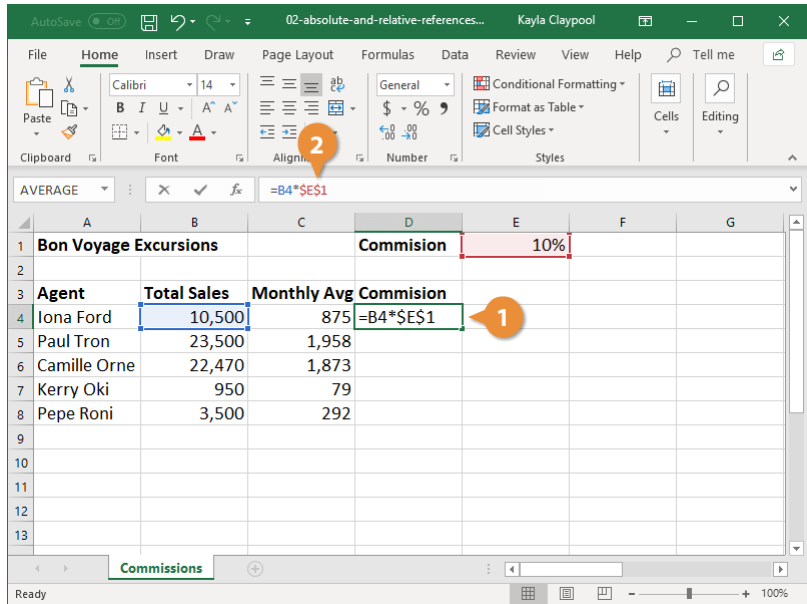
Absolute references always refer to the same cell, even when the formula is copied and pasted. Absolute references are indicated with dollar signs in formulas (e.g. \$A\$1).

1 Select the cell that contains a cell reference you want to convert to an absolute reference.

2 In the formula bar, add dollar signs (\$) to the reference you want to remain absolute.

- **Absolute column and row reference (\$A\$1):** The column and row remain constant no matter where the formula is pasted.
- **Absolute column reference (\$A1):** The column remains absolute no matter where the formula is pasted, but the row updates relatively.
- **Absolute row reference (A\$1):** The row remains absolute no matter where the formula is pasted, but the column updates relatively.

Shortcut: Click in any cell reference in the formula bar and press **F4** to convert it to an absolute reference. Continue to press **F4** to change the type of absolute reference.



Order of Operations

Formulas can contain several values, such as 81 and 3.5; cell references, such as B5 and C1:D11; operators, such as * (multiplication) and + (addition); and functions, such as SUM and AVERAGE. When you combine several operations and functions into a single formula, Excel performs the operations in a predetermined order, known as the order of operations.

When a formula contains several operators with the *same* precedence, Excel calculates the formula from left to right. You can change the order by enclosing the part of the formula you want Excel to calculate first in parentheses.

How Excel Performs the Order of Operations

The table below explains the order in which Excel performs calculations in a formula. A mnemonic device you can use to remember the order of operations is 'Please Excuse My Dear Aunt Sally'.

Operation	Example	Memory Device
Parentheses	$10 + (6-2) / 2^2$	Please
Exponents	$10 + 4 / 2^2$	Excuse
Multiplication and Division	$10 + 4/4$	My Dear
Addition and Subtraction	$10 + 1$	Aunt Sally
Result	11	

Cell and Range Names

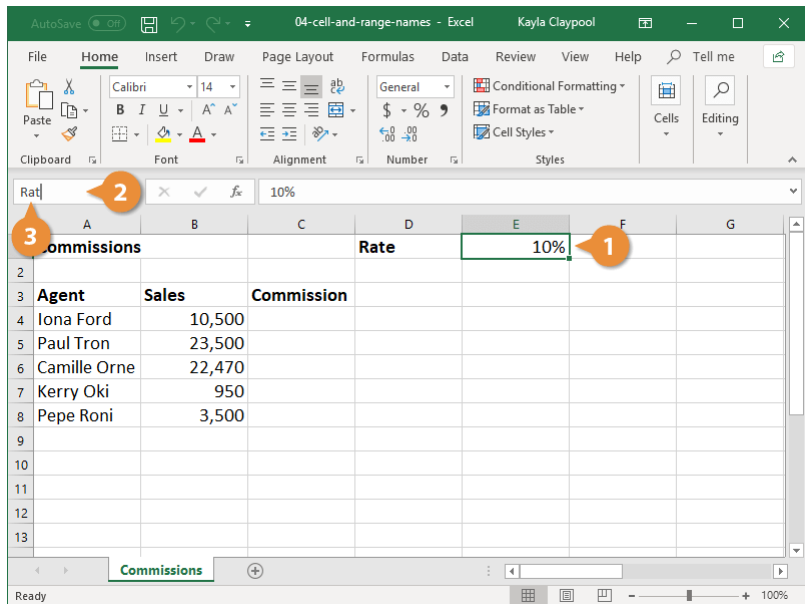
Cell references can be confusing, especially when you're working with formulas. However, cell and range names can help. You can define a name for a cell, cell range, non-adjacent cells, formula, constant, or table.

For example, you could name the cell range B16:H16 "Total Sales." Then, instead of totaling sales with the formula =SUM(B16:H16), you could use the defined name to create the more readable formula, =SUM(TotalSales).

Create a Name

- 1 Select the cell(s) you want to name.
- 2 Click the **Name** box in the Formula bar.
- 3 Type the name you want for the cell or range.
Tip: A cell or range name cannot include spaces. Use a period or underscore instead.
- 4 Press **Enter**.

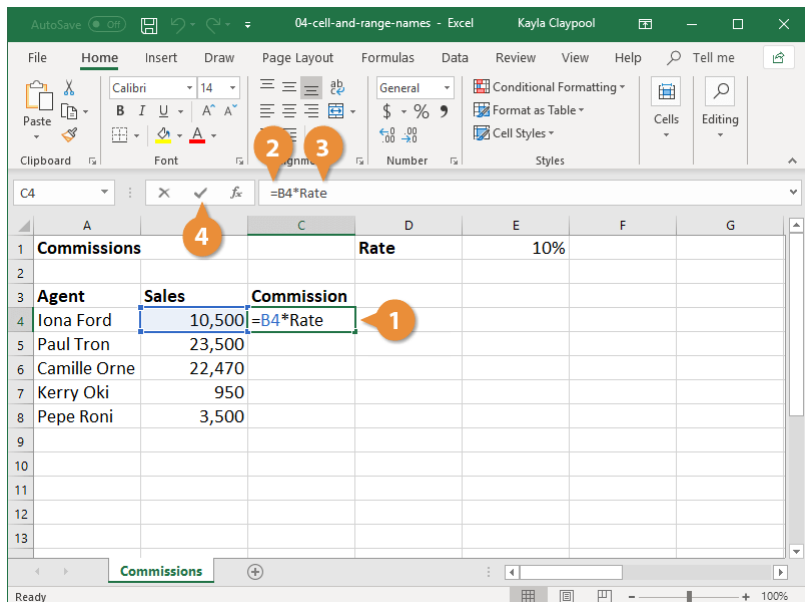
Now, when you create a formula, use the name to reference the cell(s) instead.



Use a Cell or Range Name in a Formula

- 1 Click the cell where you want to add the formula.
- 2 Type = followed by the formula you want to use.
- 3 When you want to use a name, just type it.
- 4 Click **Enter** when you're finished.

Tip: You can also click the **Formulas** tab on the Ribbon, click the **Use in Formula** button, and select a name from the list.

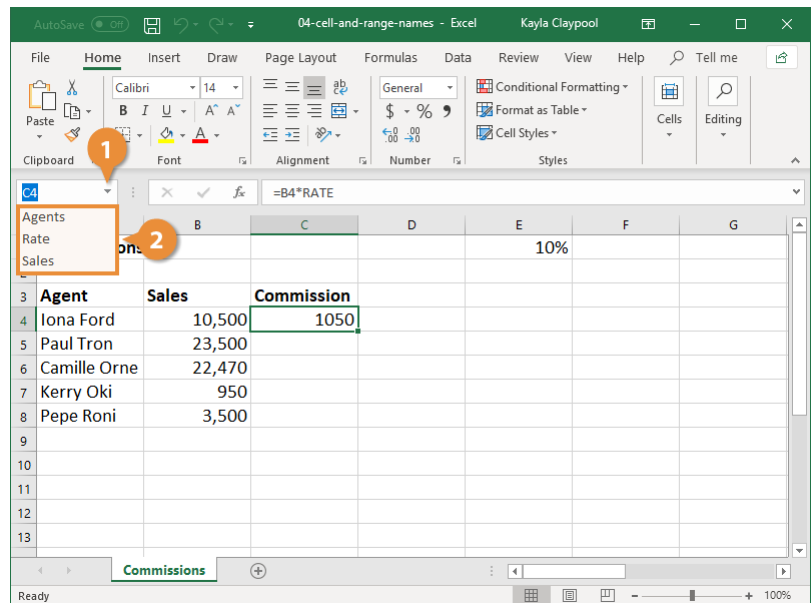


Go to a Name

Cell and range names also make it easier to navigate a workbook. You can select a range name to jump to it in the workbook.

- 1 Click the **Name** box list arrow.
A list of all the named ranges in the workbook appears.
- 2 Select the name you want to go to.

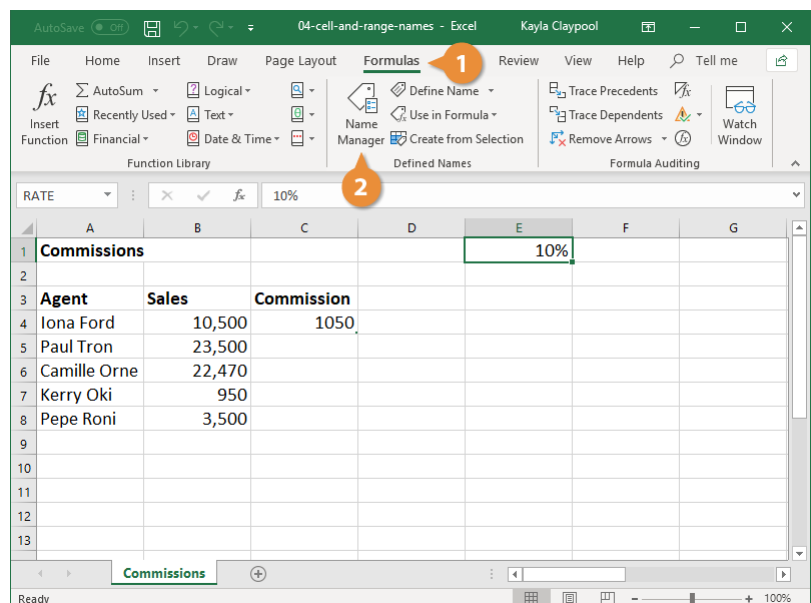
Excel takes you to your named cell or cell range.



Edit and Delete Cell or Range Names

When you need to change or remove a named range, use the Name Manager.

- 1 Click the **Formulas** tab.
- 2 Click the **Name Manager** button.



3

Select the name you want to edit or delete.

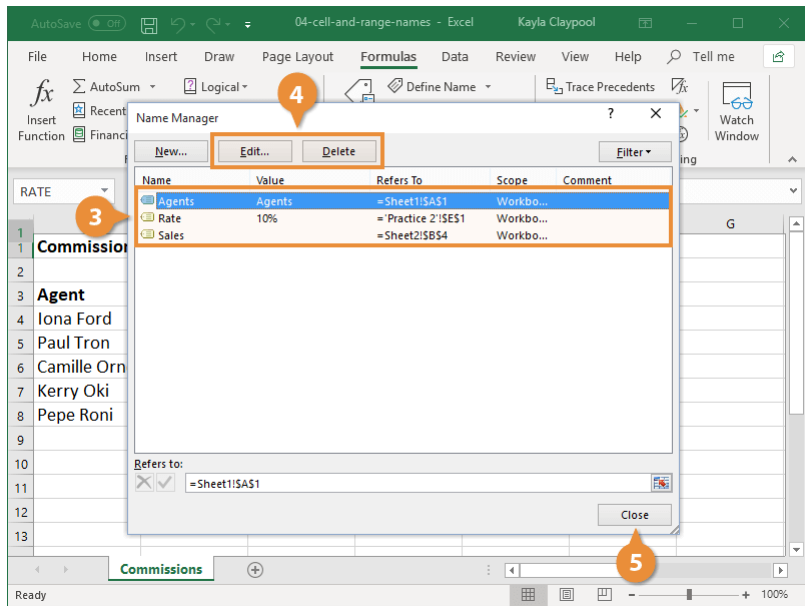
4

Click **Edit** or **Delete**.

- Use **Edit** to change the name or update which cell or range the name refers to.
- Use **Delete** if you no longer need the named cell or range.

5

Click **Close** when you're finished.



Insert Functions

Excel has over 450 functions you can use to perform just about any kind of calculation. If you're having trouble finding the right function, the Insert Function command lets you search for the function you want. It also guides you through inserting the arguments, which is helpful for complex functions.

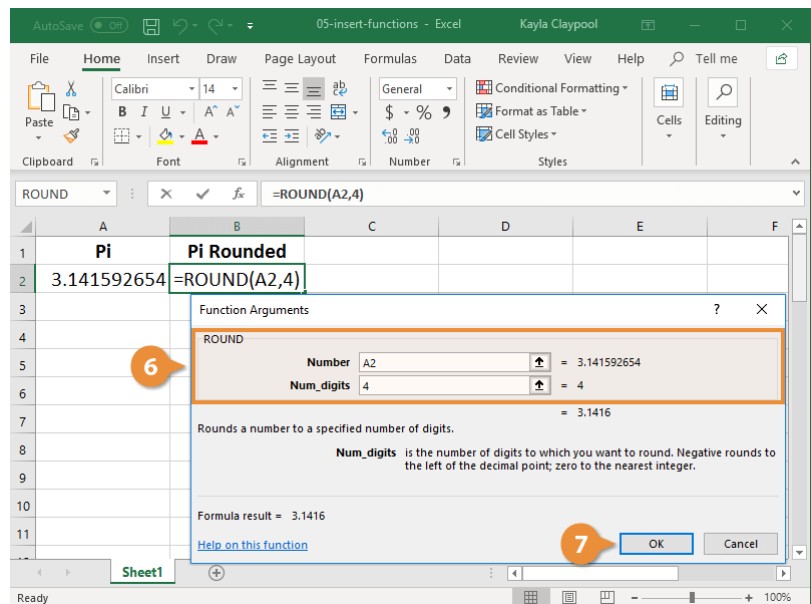
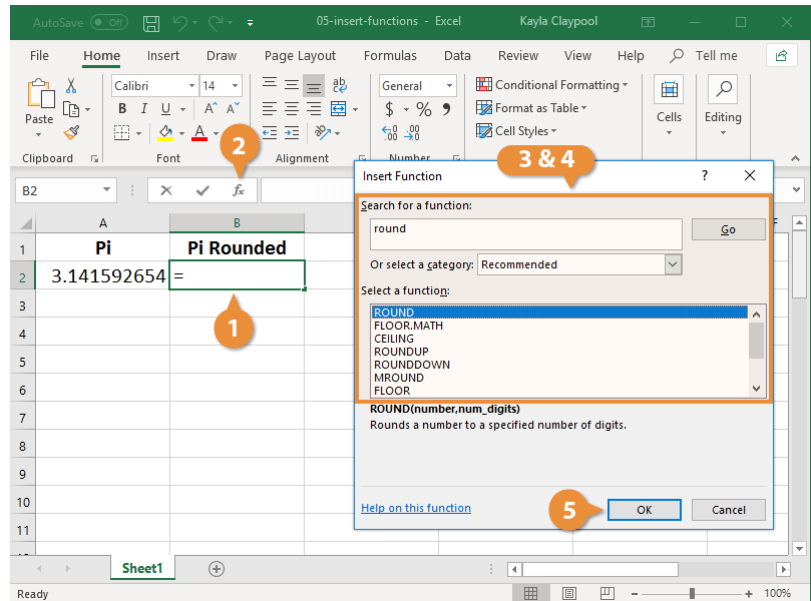
- 1 Click the cell where you want to add a formula.
- 2 Click the **Insert Function** button.
- 3 Search for a function using one of these methods:
 - Type a few keywords that describe the function you want and click **Go**.
 - Select a **category** from the list arrow menu.
- 4 Select the desired function.
- 5 Click **OK**.

The Function Arguments dialog box appears. Here you need to specify the arguments for the function you selected. In Excel, an argument can be a range of data, a specified output, or other parameters.

If you're ever confused about what an argument is, just check the description down here.

- 6 Enter the formula arguments.
- 7 Click **OK**.

The dialog box closes and Excel displays the results of the inserted formula.



CONCAT Function

The concatenate function is used to combine text from multiple cells into a single cell. It can be a very helpful tool if you don't want to manually manipulate existing Excel data.

Concatenate Text

- 1 Click where you want to insert the formula.
- 2 Click the **Formulas** tab.
- 3 Click the **Text Function** button.
- 4 Select **CONCAT**.

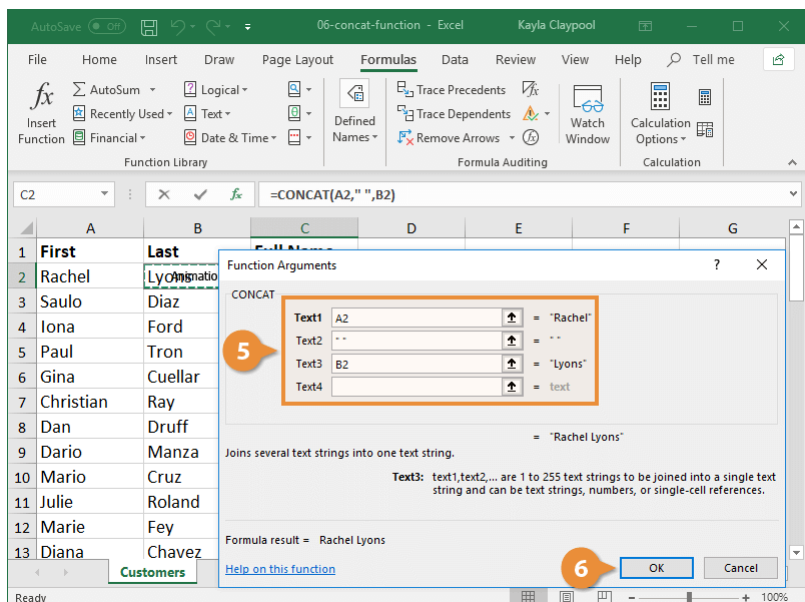
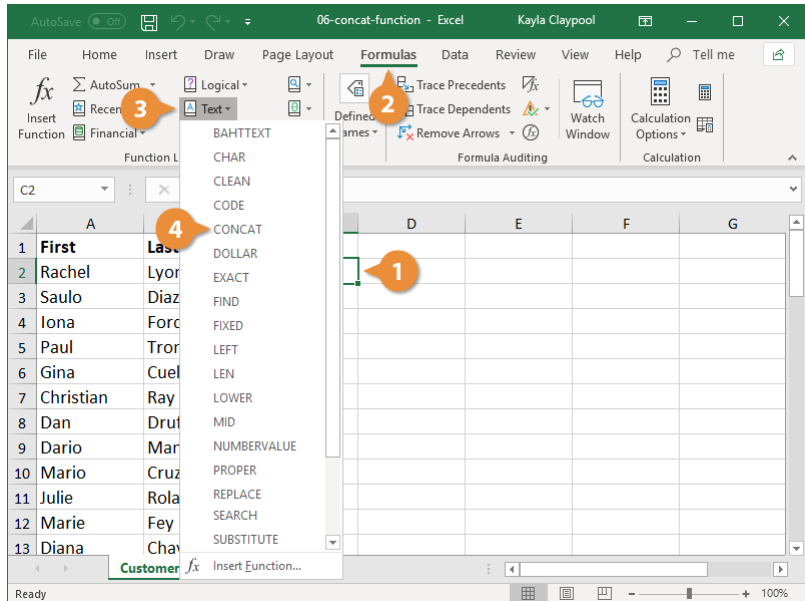
The concatenate function combines text exactly as it appears in a cell. If you want to add spaces or punctuation, you do so by putting the value you want to add in quotes (" ") in a separate text field in the Function Arguments dialog box.

- 5 Specify the text and any additional characters you want to join.

The formula result appears at the lower-left corner of the dialog box. Verify it's correct before completing the formula.

- 6 Click **OK**.

The concatenate function looks at the values in the arguments and combines the specified text into one cell.



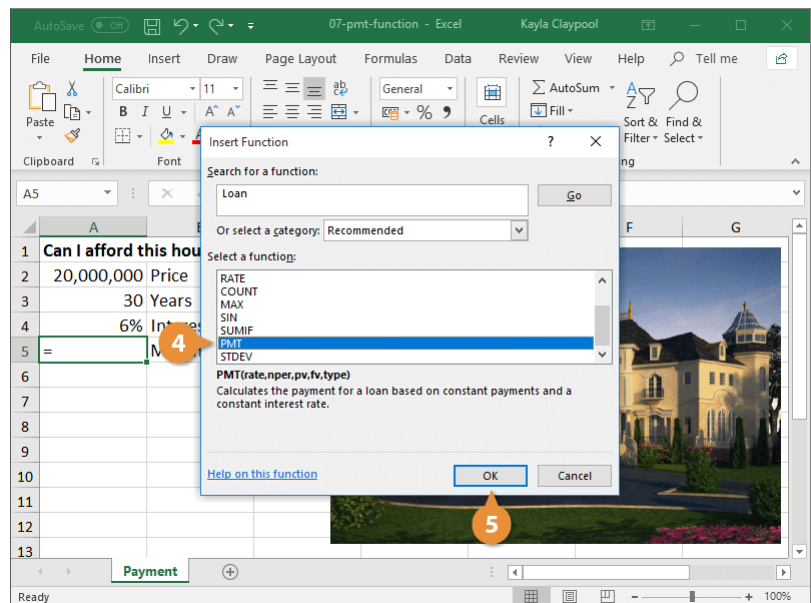
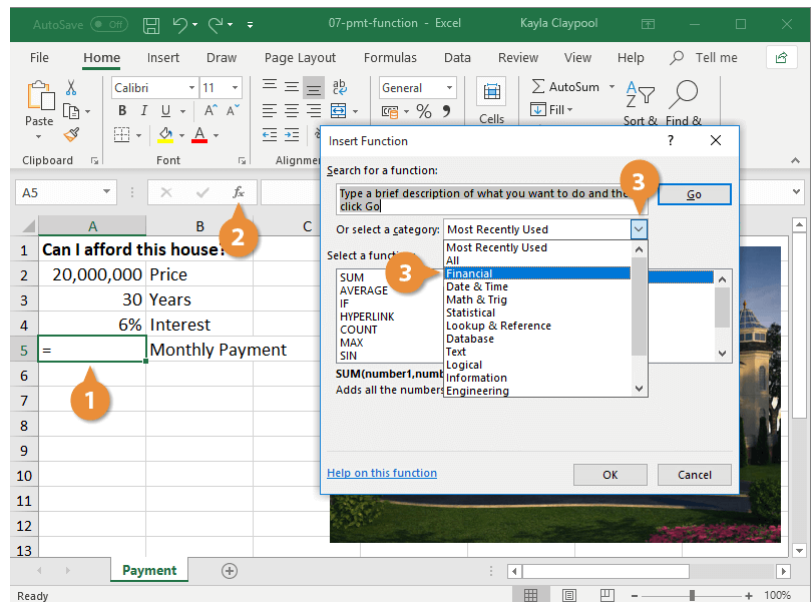
PMT Function

Financial functions let you calculate things like interest, payments, and future values.

One of the most useful financial functions, the PMT function, calculates the payment for a loan based on periodic payments and a constant interest rate. For example, if you are taking out a \$10,000 car loan at 8% interest and know that the loan would have to be paid off in four years, you could use the PMT function to calculate that the monthly payments for such a loan would be \$244.13.

PMT Function

- 1 Select the cell where you want to add the result of the payment function.
- 2 Click the **Insert Function** button.
- 3 Select **Financial** from the list of function categories.
- 4 Select the **PMT** function.
A description appears below the list describing what the PMT function calculates.
- 5 Click **OK**.



6

Fill in the function arguments.

Pay attention to the argument notes below the argument fields. These give details about what to enter for the argument.

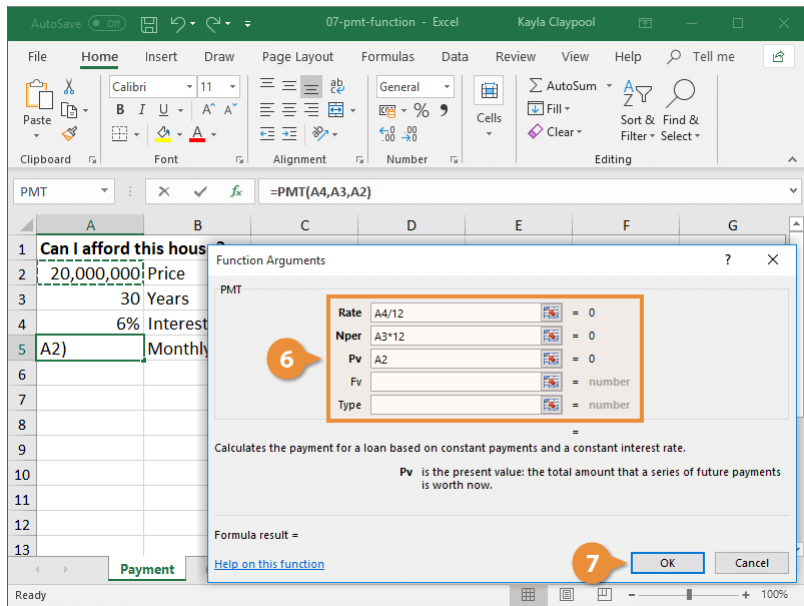
The arguments in bold are required; the others are optional.

Shortcut: Instead of typing argument values, click in an argument field, then select a cell or cell range in the worksheet.

7

Click **OK** when you're finished.

The payment function calculates all the arguments and puts the result in the selected cell.



Display Formulas

You can better understand what's going on in your workbooks by showing and highlighting all the formulas in a sheet.

Show/Hide Formulas

By default, Excel displays the results of formulas in the worksheet instead of showing the actual formulas. However, you can choose to have Excel display the formulas so you can see how they're put together.

1 Click the **Formulas** tab.

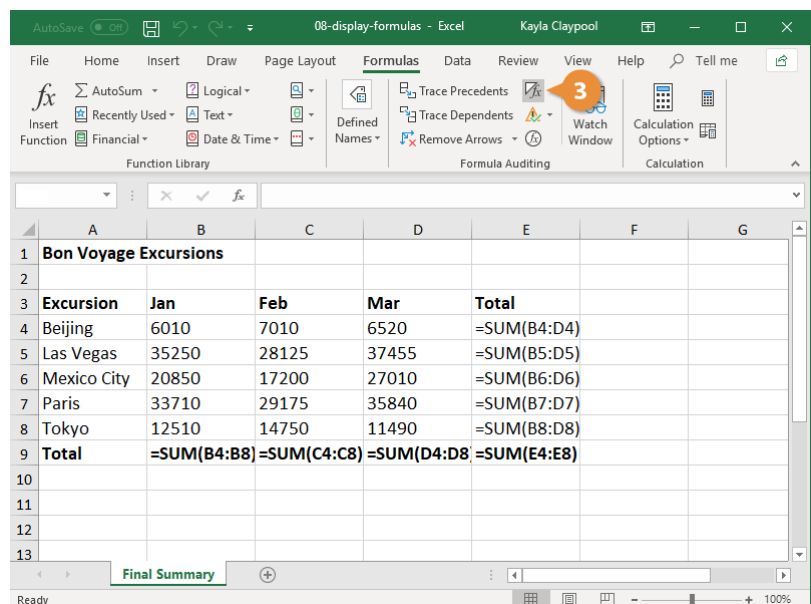
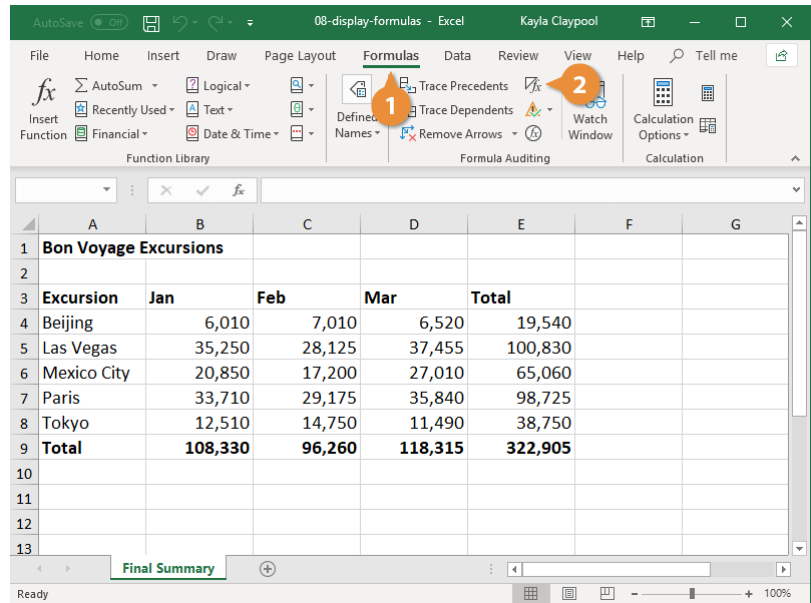
2 Click the **Show Formulas** button.

Formulas are displayed in the worksheet and the columns widen to accommodate the formulas, if necessary.

Tip: If you display formulas and then select a cell that contains a formula, colored lines appear around cells that are referenced by the formula.

3 Click the **Show Formulas** button again to hide the formulas.

Formulas are no longer displayed and the columns return to their original sizes.

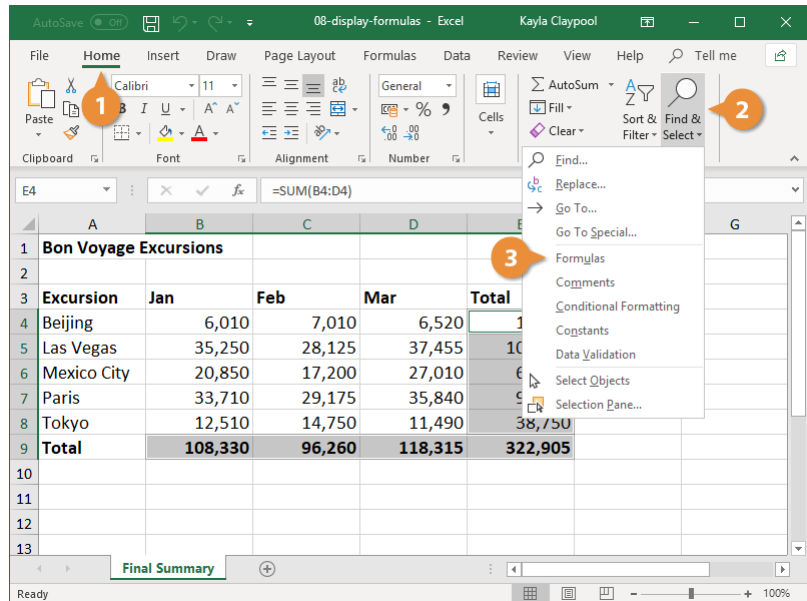


Highlight Formulas

If you don't want to see the actual formulas, but want to know which cells contain them, highlight cells with formulas instead.

- 1 Click the **Home** tab.
- 2 Click the **Find & Select** button.
- 3 Select **Formulas**.

Any cells that contain a formula are highlighted; however, this doesn't change the cell formatting. When you click any other cell in the worksheet, the highlighted cells are unselected.



Date Formulas

You can use dates and time in your formulas just like any other value. For example, if cell A1 contained the entry 5/1/19 you could use the formula =A1+100 to calculate the date 100 days later, which is 8/9/19.

One very important thing to know about working with date and time functions: while Excel can display dates and times using just about any format, it stores dates as chronological numbers called serial values. So, when you think of dates as months, days, and years, such as May 1, 2019, Excel thinks of dates in terms of serial numbers, such as 36281.

Since the date and time formulas often return serial number values, you should format any cells with date or time formulas with date and time formats that you can easily understand.

Common Date Functions

This table lists some of the date and time functions available in Excel.

Function Name	Function	What the Function Does
Date	=DATE(year, month, day)	Enters a date in the cell. Example: DATE(2019,5,1) equals May 1, 2019.
Today	=TODAY()	A special version of the DATE function. The DATE function returns the value of any date; the TODAY function returns the value of the current date.
Time	=TIME(hour, minute, second)	Enters a time in the cell. Uses a 24-hour (military) time system. Example: TIME(14,30,0) equals 2:30 PM.
Now	=NOW()	A special version of the TIME function. The TIME function returns the value of any time; the NOW function returns the value of the current time.
Year	=YEAR(serial_number, return_type)	Returns a value of the year for a specific date. The serial_number argument is a date value (or reference to one). Example: YEAR("3/15/2019") equals 2019.
Month	=MONTH(serial_number, return_type)	Returns a value of the month for a specific date. The serial_number argument is a date value (or reference to one). Example: MONTH("3/15/2019") equals 3.
Day	=DAY(serial_number, return_type)	Returns a value of the day for a specific date. The serial_number argument is a date value (or reference to one). Example: DAY("3/15/2019") equals 15.

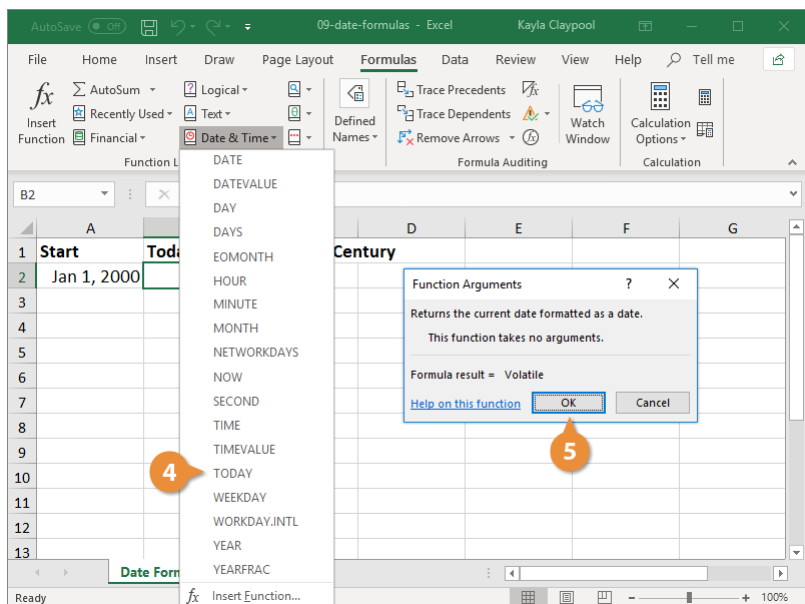
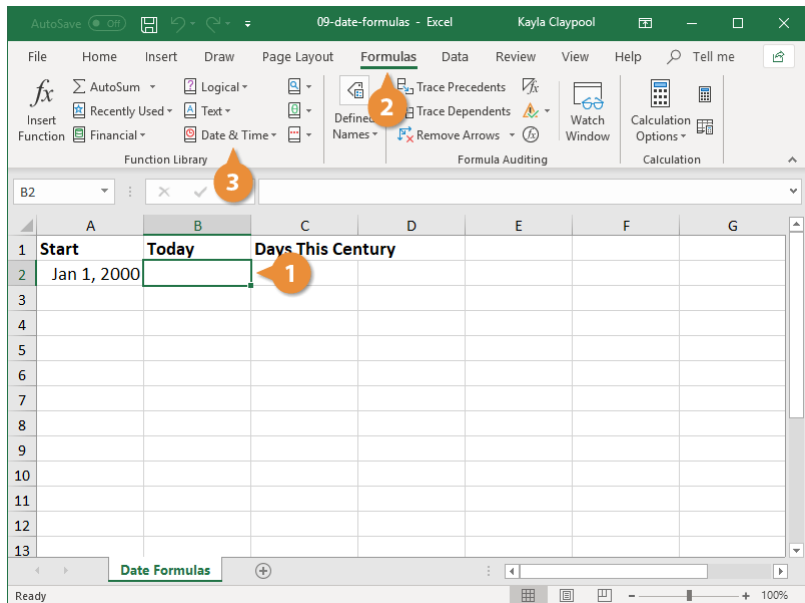
TODAY() Function

If you need to calculate values based on dates, a very helpful function is TODAY, which returns today's date.

- 1 Select the cell where you want to add the TODAY() function.
- 2 Click the **Formulas** tab on the Ribbon.
- 3 Click the **Date & Time** button.
- 4 Select **Today**.
- 5 Click **OK**.

Tip: You can also insert the function by typing =TODAY() in the cell.

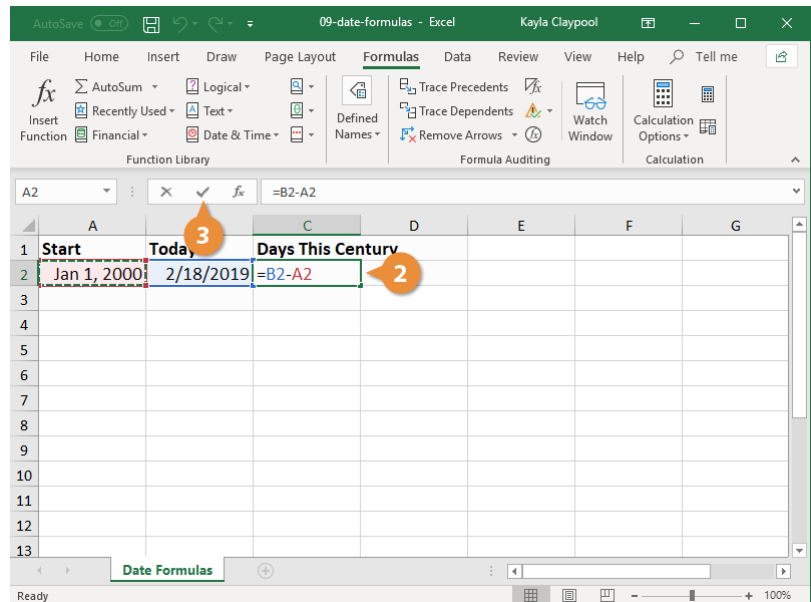
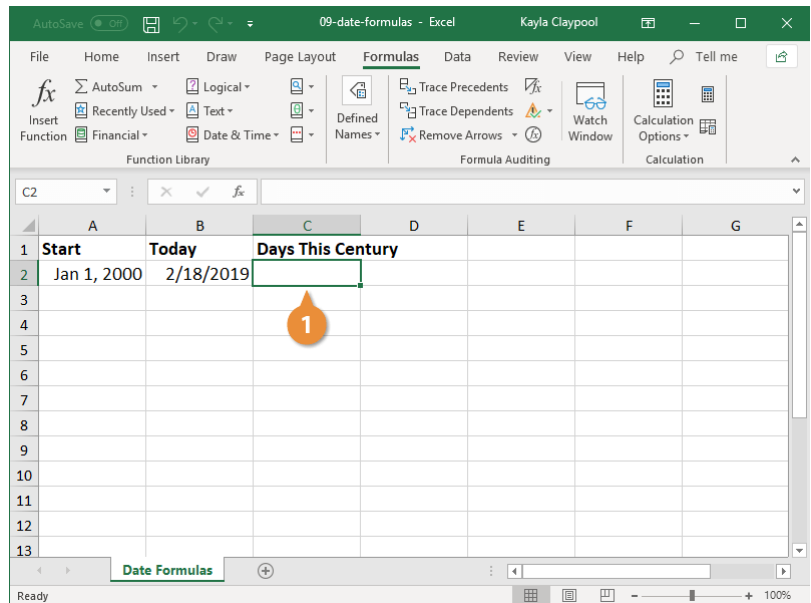
Excel adds today's date.



Date Calculations in Formulas

Referencing cells with a date calculation in a formula is often no different than referencing cells with numbers—you can include date values in basic formulas.

- 1 Select the cell where you want to calculate a date formula.
- 2 Press **=** and enter the formula, referencing the cells that contain a date formula.
- 3 Click the **Enter** button.



Manage Data

In this module, learn how to quickly manipulate the display of your data using built-in styles that best suit your data set. View meaningful hierarchies and groupings using Outline and Subtotal to make your data easier to consume.

If your spreadsheet is shared with others, you can use data validation to guide or control what data is entered. Standardization is key to maintaining data integrity so this an important feature.

You may need to export or import data to or from formats other than an Excel file to accommodate databases or web pages. This module will show you how.

Objectives

Quick Analysis

Outline and Subtotal

Data Validation

Flash Fill

Import and Export Data

Quick Analysis

The Quick Analysis function helps you quickly format your data into a chart, table, summary formula, sparkline, or highlighted figures with just a few simple steps.

Use the Quick Analysis Button

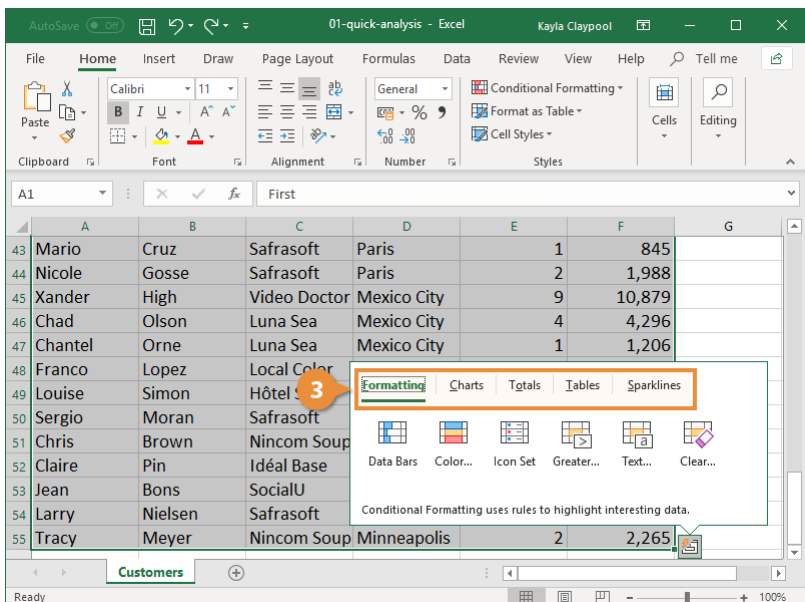
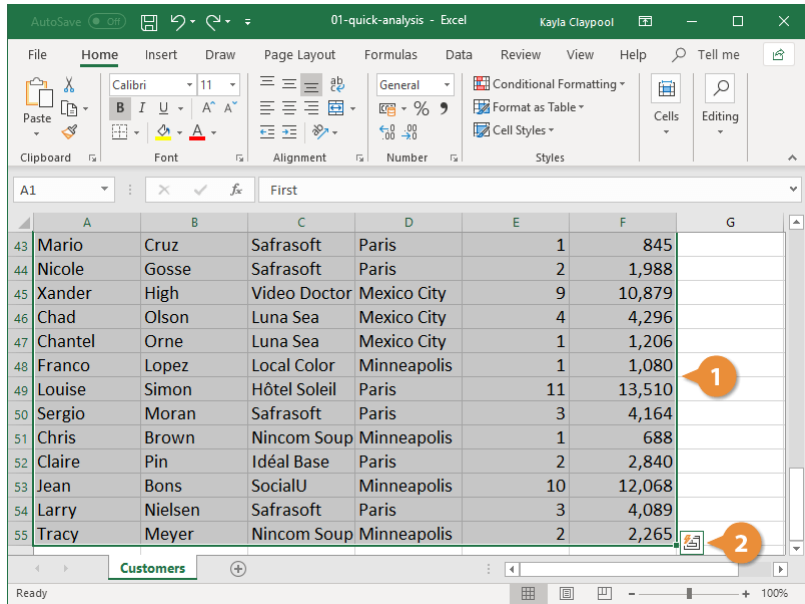
- 1 Select the cell range you want to summarize.

Tip: Be careful when selecting your data. The Quick Analysis button will not appear when using the **Ctrl** key to make multiple selections.

- 2 Click the **Quick Analysis** button.

- 3 Select the type of analysis tools you want to use.

- **Formatting:** Highlight data using conditional formatting.
- **Charts:** Chart the selected data.
- **Totals:** Create common summary formulas.
- **Tables:** Summarize data in a table or PivotTable.
- **Sparklines:** Mini charts placed in single cells.



Outline and Subtotal

Many spreadsheets are created in a hierarchical style. For example, a worksheet might contain a column for a person or company, followed by a column with sales data. By outlining your worksheets, you make them easier to understand and read. Instead of sifting through irrelevant information, you can collapse an outline to display each group's bottom line. There are several ways to outline a workbook:

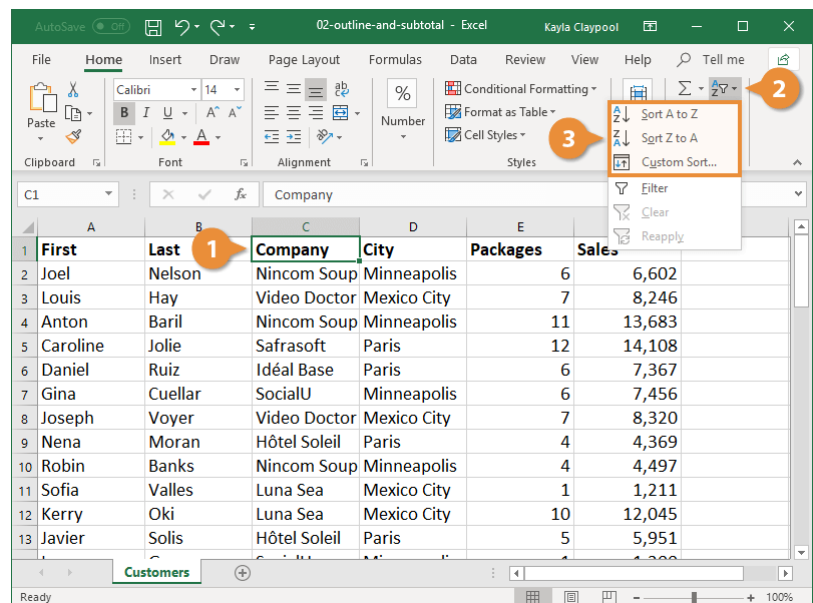
- **Using the Auto Outline Feature:** The Auto Outline command automatically outlines a selected range of cells or the entire worksheet, based on formulas and the direction of references.
- **Grouping Data:** You can group rows and columns manually by selecting them.
- **Using the Subtotals Feature:** The Subtotals command calculates subtotal values for the labeled columns you select. Excel automatically inserts and labels the total rows and outlines the list.
- **Using the Consolidate Feature:** You can consolidate several sheets using the Consolidate feature.

This lesson explains how to turn on the subtotals feature and then use the outline options to simplify the data view.

Add Subtotals

Before you turn on subtotals, there are a few preliminary steps that must be completed. First, make sure your data is arranged into labeled columns. The data in each column must also be of the same type and it needs to be sorted based on the column you want to group the subtotals by.

- 1 Click in the column you want to subtotal.
- 2 Click **Sort & Filter** on the Home tab.
- 3 Select a sort option.
Once the data is sorted, the subtotal can be applied.



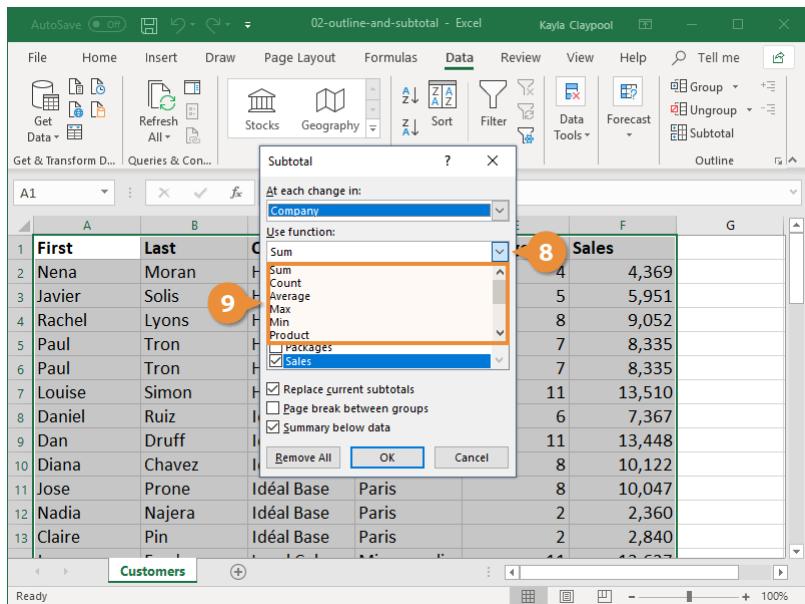
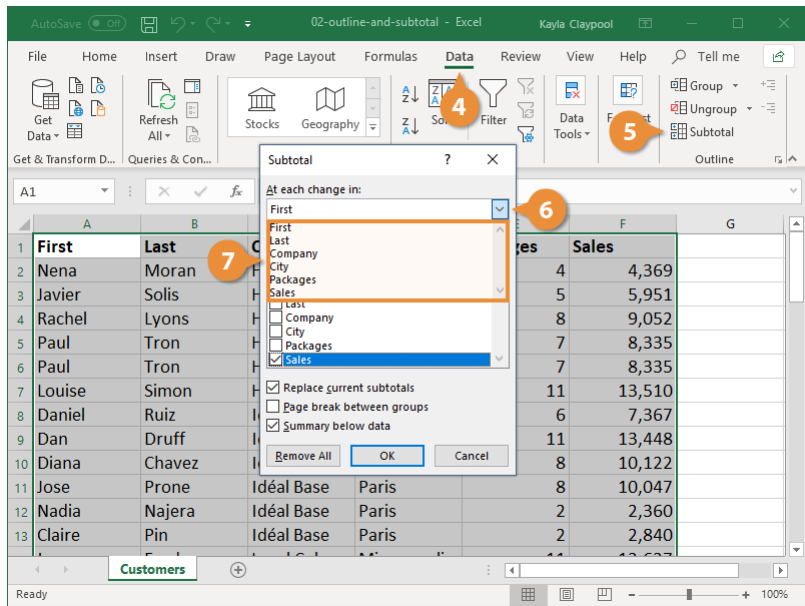
- 4 Click the **Data** tab.
- 5 Click **Subtotal**.
- 6 Click the **At each change in** list arrow.
- 7 Select the column you want to subtotal.

This command specifies what it is that you want to subtotal. For example, if you have a list of people, the company they work for, and the amounts of their sales, and you want to subtotal the list by the company name, you would select the column that contains the company name.

- 8 Click the **Use function** list arrow.

Usually you create subtotals with the SUM function, but you can also create subtotals using functions such as COUNT, AVERAGE, MAX, and MIN.

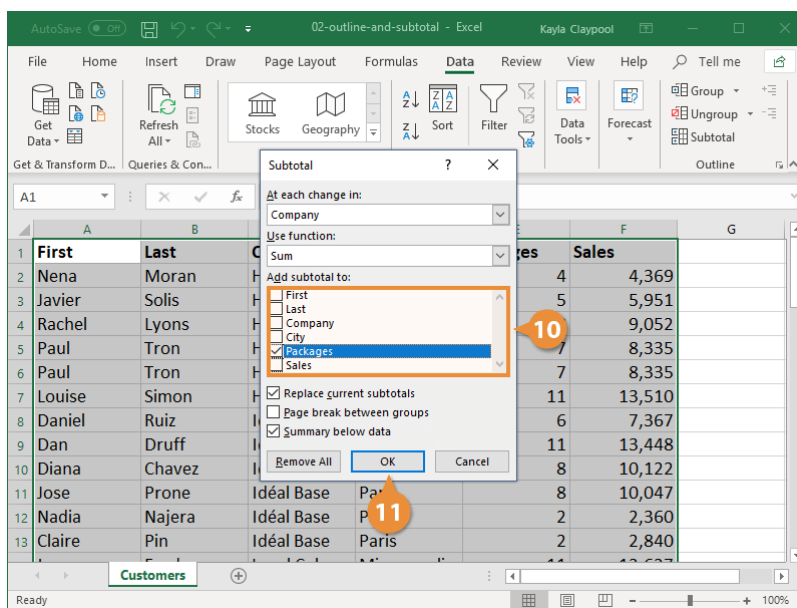
- 9 Select the function you want the subtotal to perform.



10 In the Add subtotal to box, select the check box next to each column that has values you want to subtotal.

Tip: To add more subtotals, repeat the steps but clear the Replace current subtotals check box so you don't overwrite the existing subtotals.

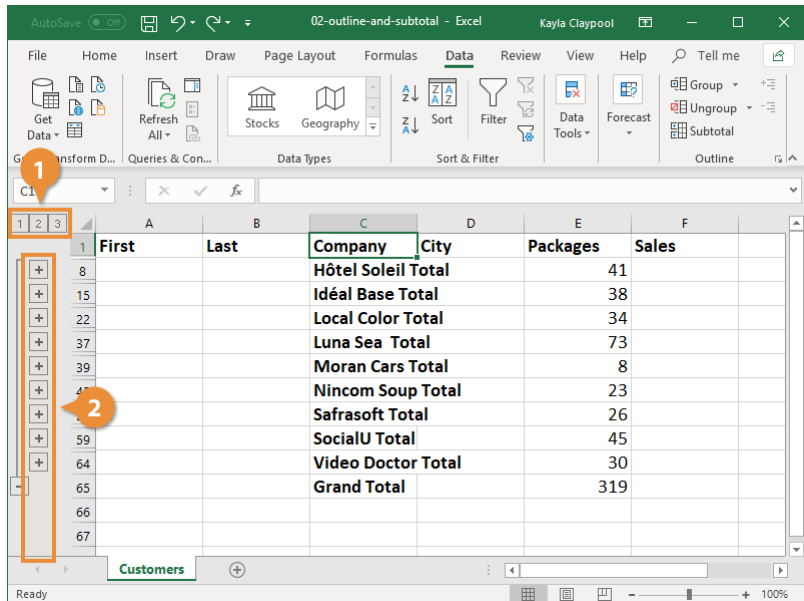
11 Click **OK**.



Outline Options

Once subtotals are applied, the outline levels appear at the left. The outline allows you to collapse the detailed rows or columns and view only the subtotals.

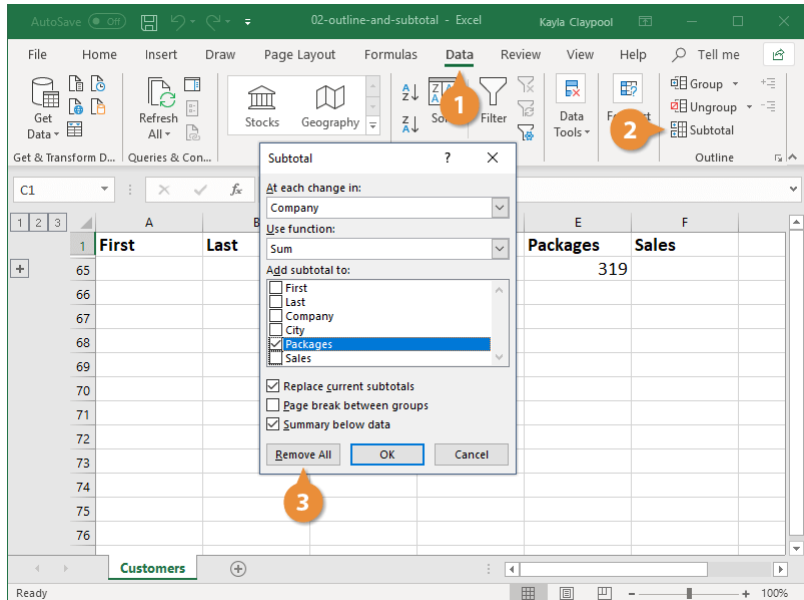
- 1 Select an outline level.
- 2 Expand a category to view additional details.



Remove Outlines and Subtotals

- 1 Click the **Data** tab.
- 2 Click the **Subtotal** button.
- 3 Click **Remove All**.

The outline is cleared from the worksheet.



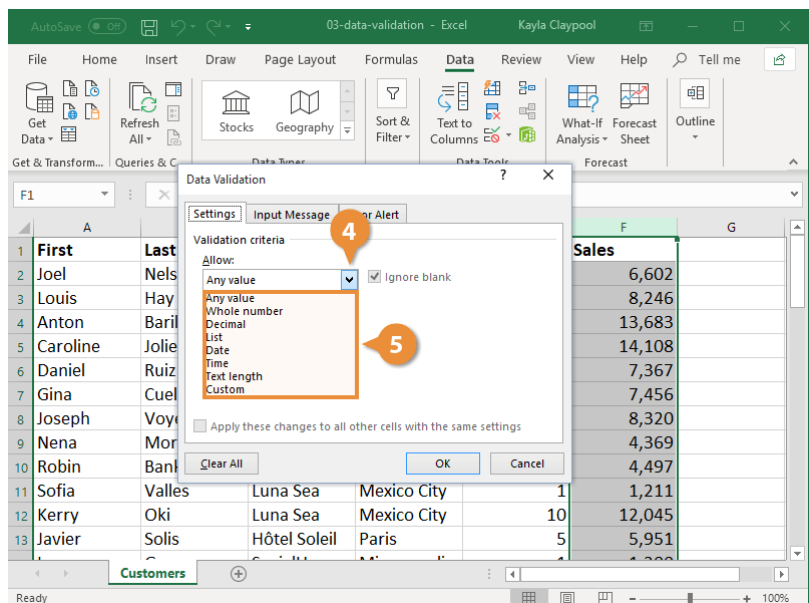
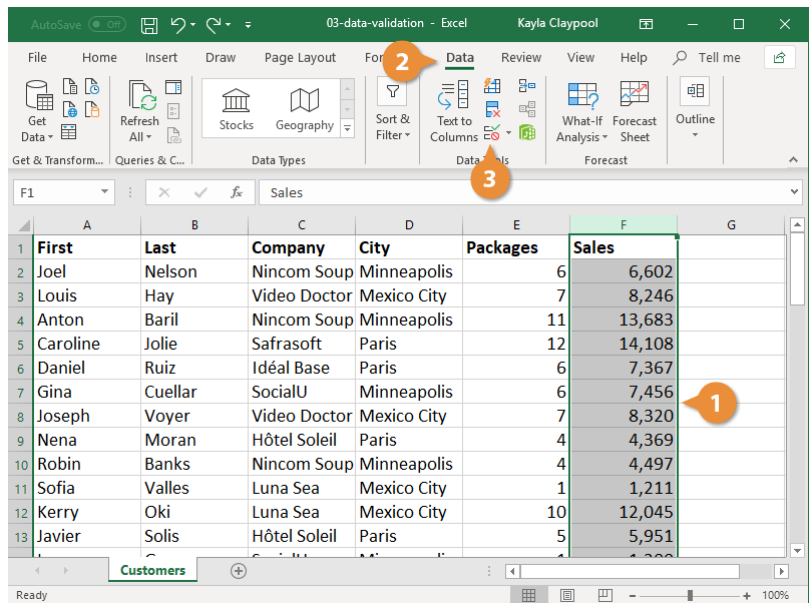
Data Validation

You can help users enter accurate and appropriate information into your worksheets with Excel's Data Validation feature. Data validation restricts the type of information that can be entered in a cell and can provide the user with instructions for entering information in a cell.

Create a Validation Rule

- 1 Select the cells you want to validate.
- 2 Click the **Data** tab.
- 3 Click the **Data Validation** button.
- 4 Click the **Allow** list arrow.
- 5 Select the type of data you want to allow.

- **Any value:** No validation criteria applied.
- **Whole number:** Allows a whole number between the minimum and maximum limits set.
- **Decimal:** Allows a decimal or a percent entered as a decimal between the set limits.
- **List:** Allows a value from a list of choices. A list arrow appears in the cell, and users can choose from the list.
- **Date:** Allows a date within set limits.
- **Time:** Allows a time within set limits.
- **Text length:** Allows text containing a certain number of characters.
- **Custom:** Allows a formula to be entered to calculate what is allowed in the cell.



6

Specify the data validation rules.

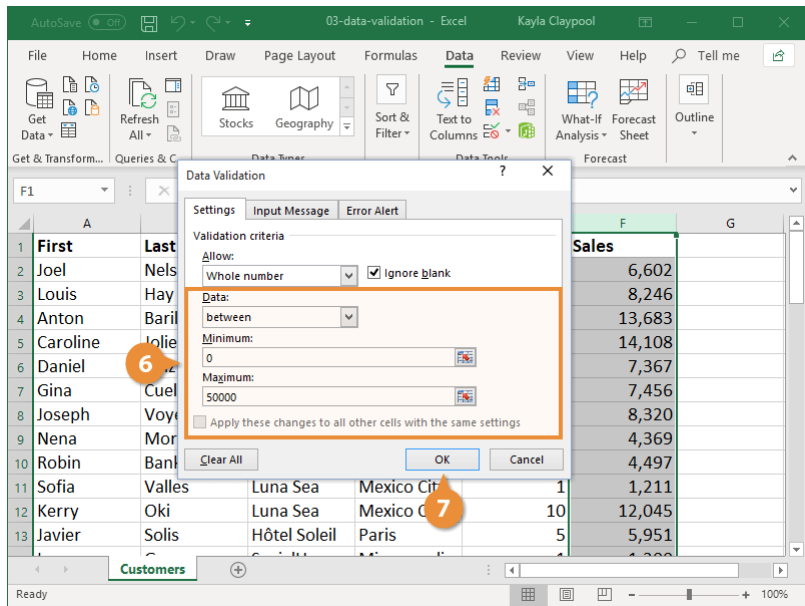
Tip: The validation options will vary depending on the option selected in the Allow field.

7

Click **OK**.

The data validation is set for the selected cell(s). When a user tries to enter data that is not valid, Excel will prevent the entry and display a message about the cell being restricted.

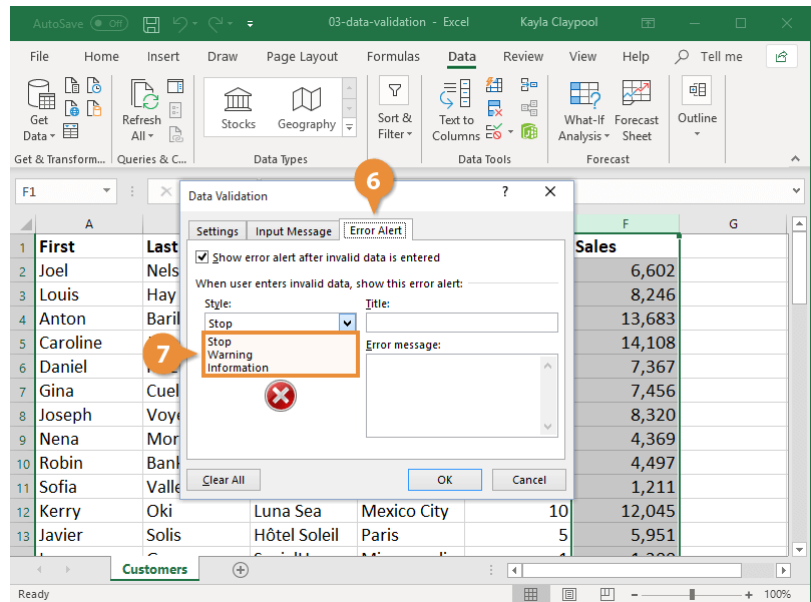
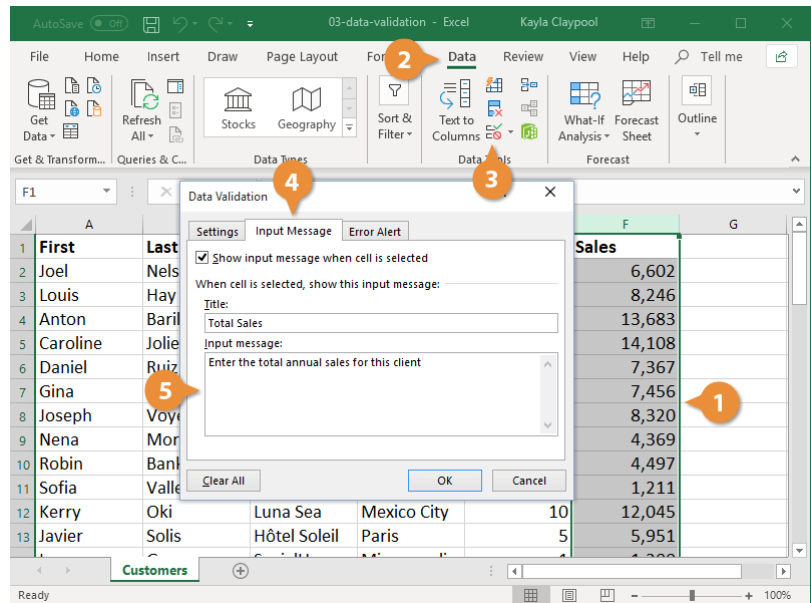
Tip: To find validated data in a worksheet, click the **Find & Select** button in the Editing group on the Home tab and select **Data Validation**. The validated cells are highlighted.



Add Input and Error Messages

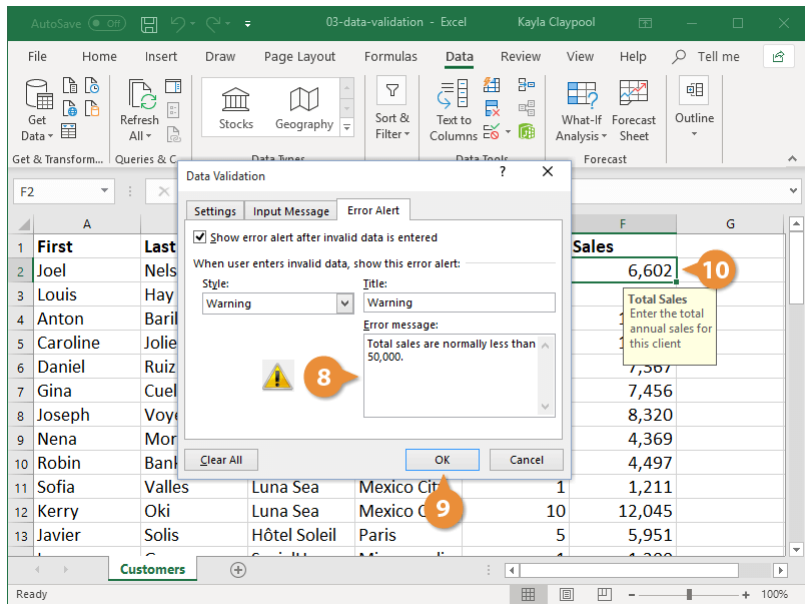
Prevent data validation issues by setting up Excel to display a message whenever a cell or range of cells is selected. These messages are useful when other people will be entering data in your worksheet. An error message can be configured to appear when data is entered that does not match a data validation rule.

- 1 Select the cells where you want an input message to appear.
 - 2 Click the **Data** tab.
 - 3 Click the **Data Validation** button.
 - 4 Click the **Input Message** tab.
 - 5 Enter an input message.
 - 6 Click the **Error Alert** tab.
 - 7 Select an error alert style.
- **Stop:** Prevents users from adding invalid data in a cell.
 - **Warning:** Warns that the data entered is invalid, but users can click **Yes** to accept the invalid entry, **No** to edit it, or **Cancel** to remove it.
 - **Information:** Informs users that the data entered is invalid, but users can click **OK** to accept the invalid entry or **Cancel** to remove it.



- 8 Enter an error alert message.
- 9 Click **OK**.
- 10 Select a cell with an input message.

Now when a cell in the range is selected, the title and message display. If you enter an invalid value, a custom error message appears.



Flash Fill

Flash Fill is a feature in Excel that automatically enters values in a column when a pattern is recognized. It can save a lot of time when manually entering a long list of data, like consecutive values or dates.

Use Flash Fill

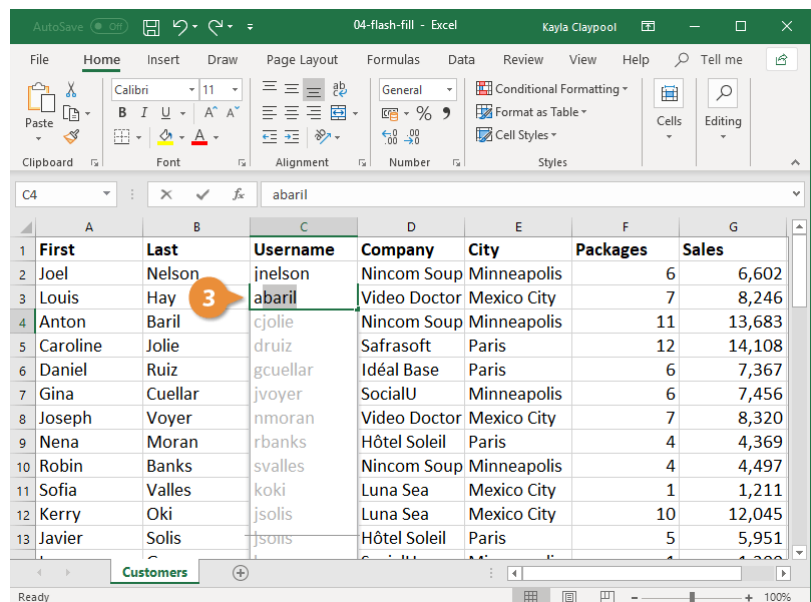
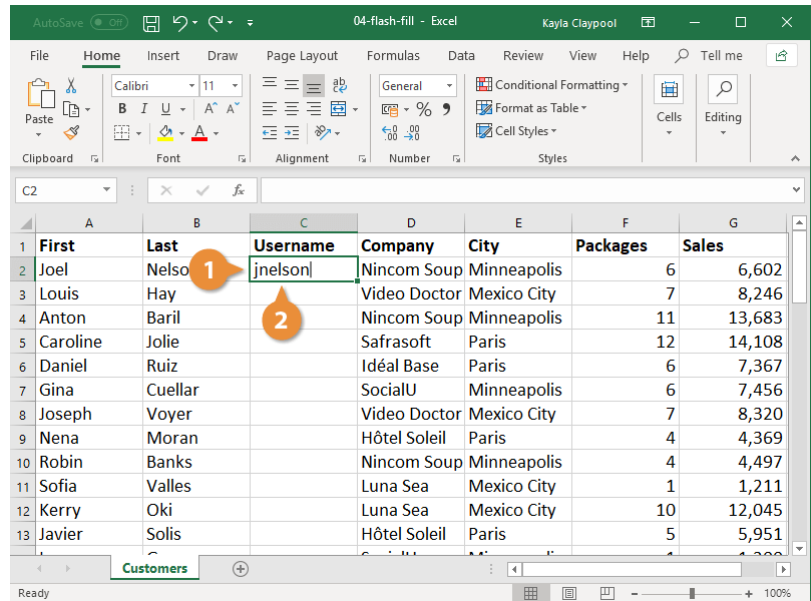
- 1 Click the cell to the right of the data you want to work with.
- 2 Type the first value you want to extract in the new column and press **Enter**.
- 3 Begin typing the second value below the first.

When you start typing in the second value, Excel recognizes the pattern and predicts the values for the rest of the column.

Tip: If the pattern isn't recognized when the second cell is populated, complete the data for the second cell and move to the third. The pattern should be recognized when you begin entering data in the third consecutive cell.

- 4 Press **Enter** to accept the suggested Flash Fill values.

Excel populates the rest of the column following the same pattern of data.



Import and Export Data

Excel can import and export many different file types aside from the standard .xlsx format. If your data is shared between other programs, like a database, you may need to save data as a different file type or bring in files of a different file type.

Export Data

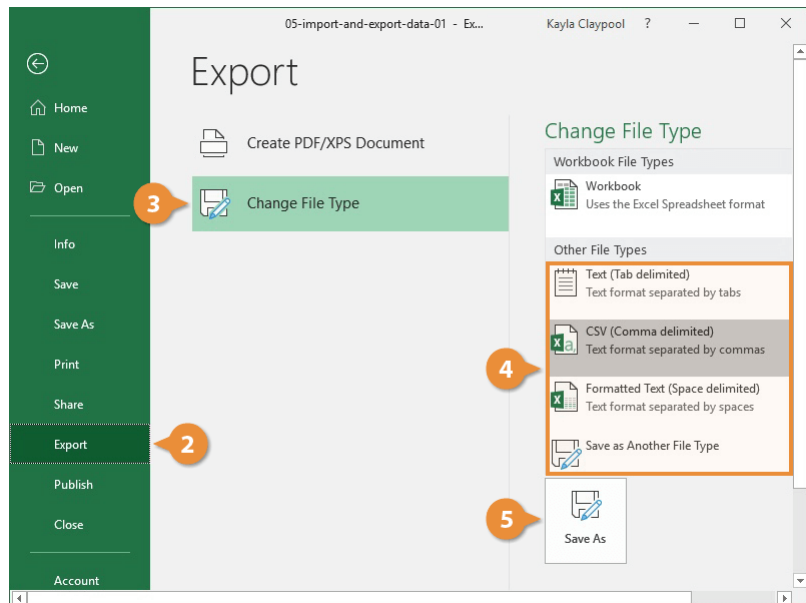
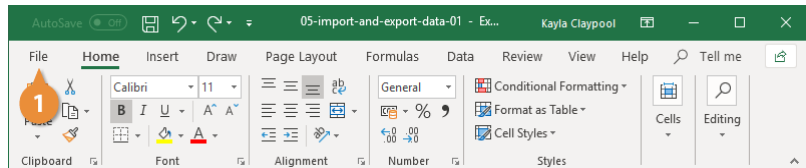
When you have data that needs to be transferred to another system, export it from Excel in a format that can be interpreted by other programs, such as a text or CSV file.

- 1 Click the **File** tab.
- 2 At the left, click **Export**.
- 3 Click **Change File Type**.
- 4 Under Other File Types, select a file type.

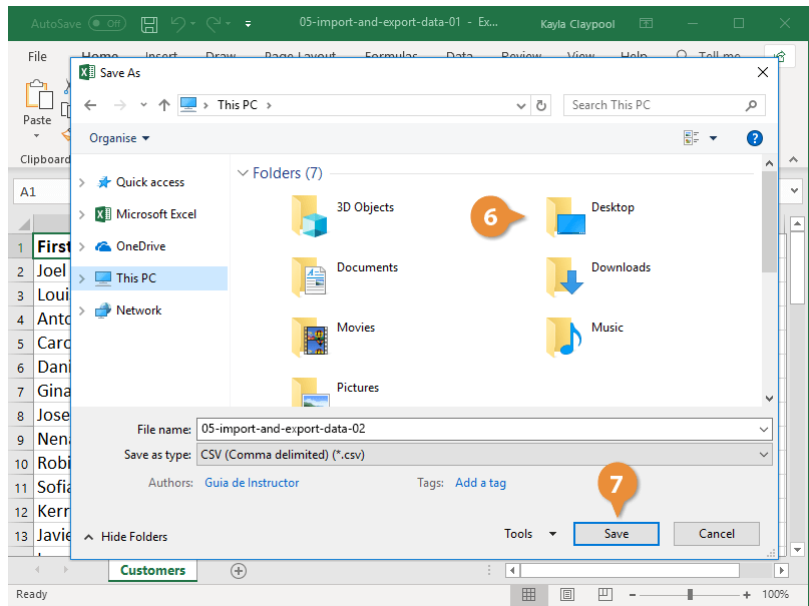
- **Text (Tab delimited):** The cell data will be separated by a tab.
- **CSV (Comma delimited):** The cell data will be separated by a comma.
- **Formatted Text (space delimited):** The cell data will be separated by a space.
- **Save as Another File Type:** Select a different file type when the Save As dialog box appears.

Tip: The file type you select will depend on what type of file is required by the program that will consume the exported data.

- 5 Click **Save As**.



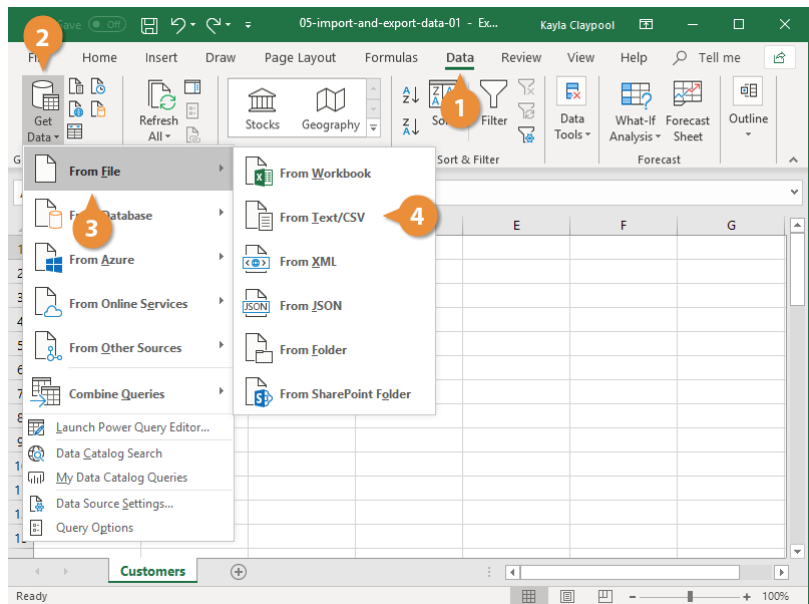
- 6 Specify where you want to save the file.
- 7 Click **Save**.
A dialog box appears stating that some of the workbook features may be lost.
- 8 Click **Yes**.



Import Data

Excel can import data from external data sources including other files, databases, or web pages.

- 1 Click the **Data** tab on the Ribbon.
- 2 Click the **Get Data** button.
Tip: Some data sources may require special security access, and the connection process can often be very complex. Enlist the help of your organization's technical support staff for assistance.
- 3 Select **From File**.
- 4 Select **From Text/CSV**.
If you have data to import from Access, the web, or another source, select one of those options in the Get External Data group instead.



5

Select the file you want to import.

6

Click **Import**.

If, while importing external data, a security notice appears saying that it is connecting to an external source that may not be safe, click **OK**.

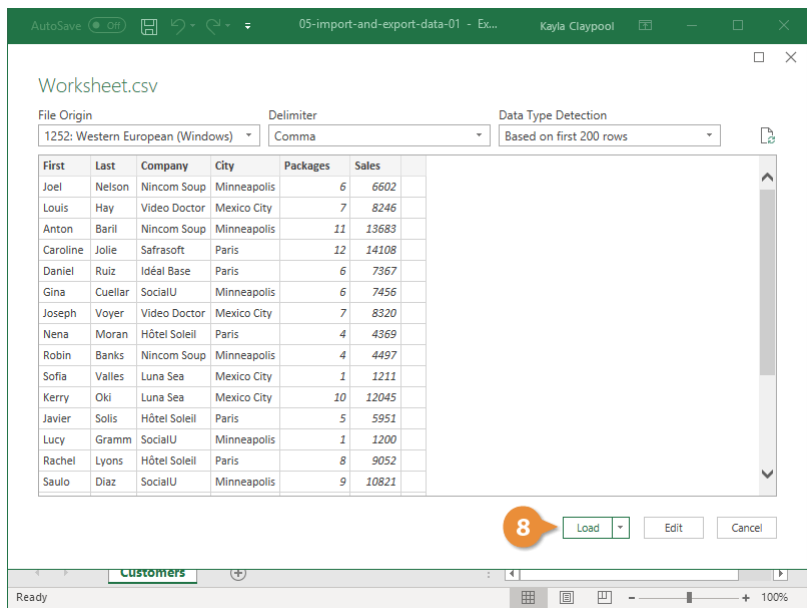
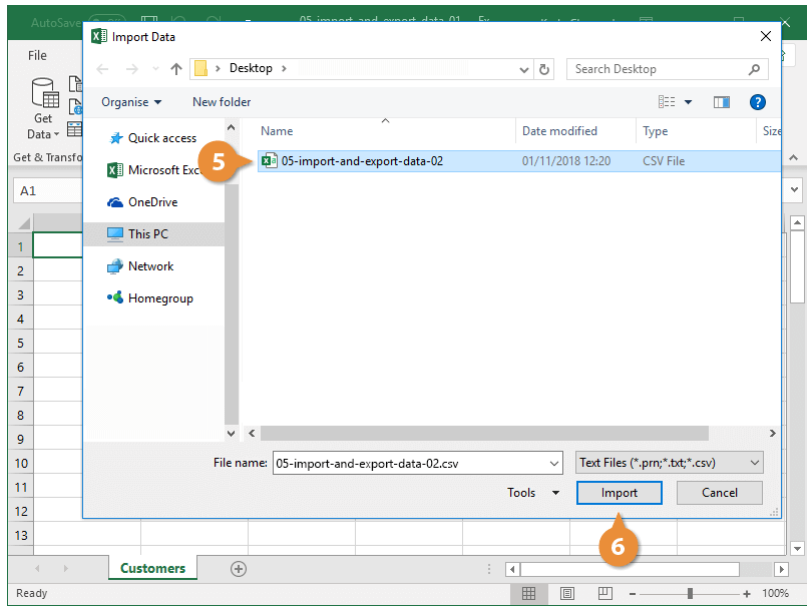
7

Verify the preview looks correct.

Because we've specified the data is separated by commas, the delimiter is already set. If you need to change it, it can be done from this menu.

8

Click **Load**.



Tables

You can create tables from Excel data ranges. There are several benefits of working with your data in a table, including automatic filtering controls and built-in table formatting options. When rows and columns are added or removed, the table and styles automatically adjust accordingly.

You can also add slicers to your worksheet to make filtering on multiple conditions faster and more transparent to your audience. Slicers allow you to set specific filtering criteria for multiple columns without needing to use the column filter drop-down lists. While slicers are commonly used with PivotTables, they're also available and useful when working with tables.

Objectives

Insert a Table

Sort Data

Filter Data

Add Rows and Columns

Table Styles

Remove Duplicates

Slicers

Structured References

Insert a Table

By turning an Excel range into a table, you can work with the table data independently from the rest of the worksheet, and filter buttons appear automatically on the column headers, allowing you to filter and sort columns even faster. You can also add total rows and quickly apply table formatting.

Create a Table

If you already have an organized range of data, you can turn it into a table. Before turning a range of data into a table, remove blank rows and columns, and make sure that a single column doesn't have different types of data within it.

- 1 Click a cell in the range you want to convert to a table.
- 2 Click the **Format as Table** button on the Home tab.
- 3 Select the table style you want to use.

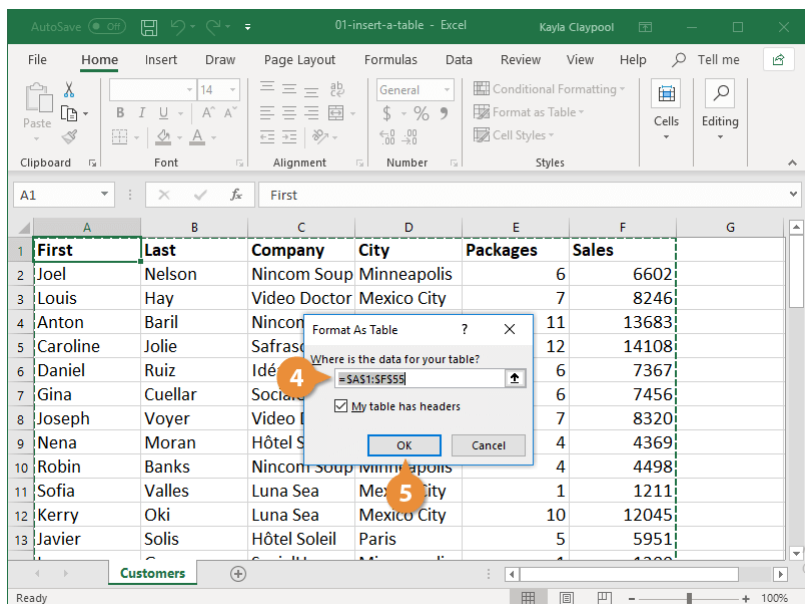
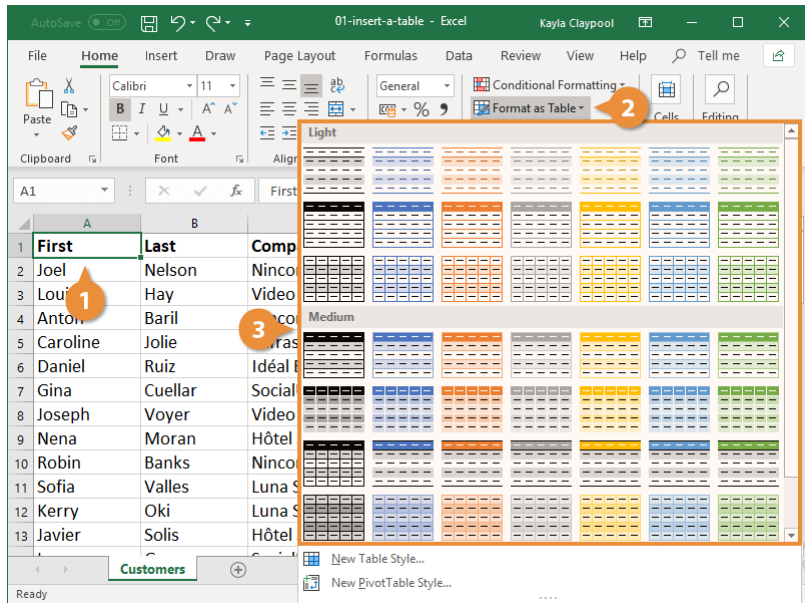
Tip: You can also click the **Insert** tab on the Ribbon and click the **Table** button in the Tables group.

- 4 Verify the data range includes all the cells you want to include in the table.

Make sure to specify whether the table has a header row. If it doesn't, Excel will add a header row above the table data.

- 5 Click **OK**.

The table is created. Filters are added to each column and the table is automatically formatted. Under Table Tools on the Ribbon, the Design tab appears.



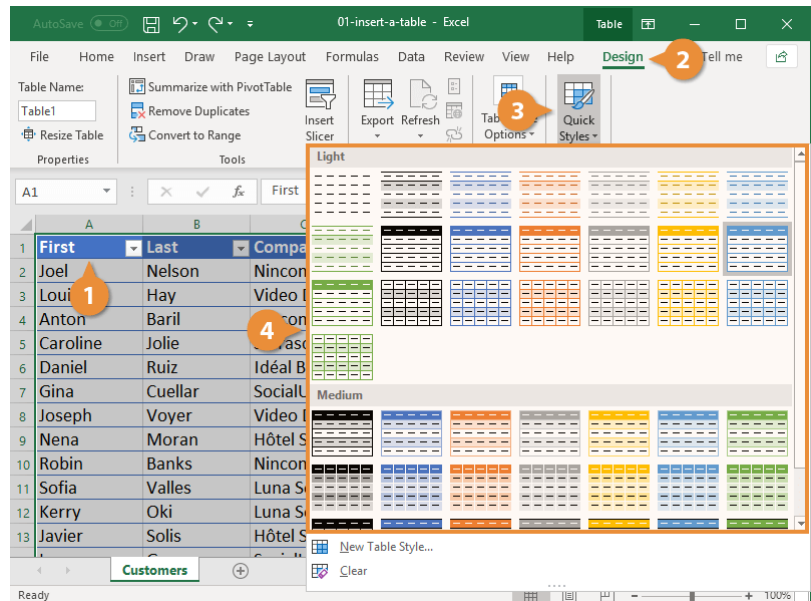
Apply a Table Style

You can change the appearance of a table at any time by applying a preset table formatting style.

- 1 Click a cell in the table.
- 2 Click the **Design** tab.
- 3 Click the **Quick Styles** button from the Table Style group.

The table styles gallery appears. Here you can select styles from the Light, Medium, or Dark categories. You may need to scroll down the list to see the Dark category.

- 4 Select a style.



Convert to a Range

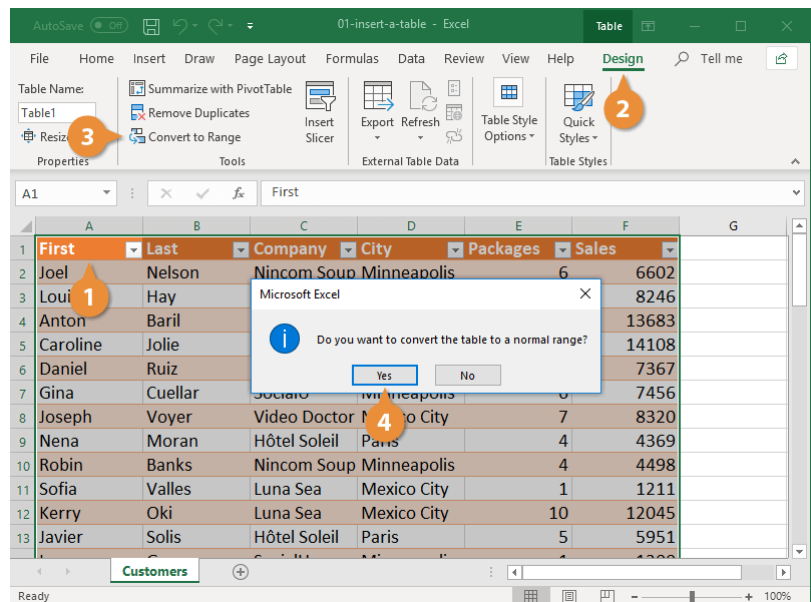
If a table is no longer needed, turn it back into a normal range of data.

- 1 Click a cell in the table.
- 2 Click the **Design** tab.
- 3 Click the **Convert to Range** button.
- 4 Click **Yes**.

Shortcut: Right-click a cell in the table and select **Table**, then **Convert to Range** from the contextual menu.

The table converts back to a normal range of cells, but the table formatting is still applied.

Tip: If you don't want the table formatting to be applied, click the **Quick Styles** button on the Design tab and select **None** before converting the table to a range.

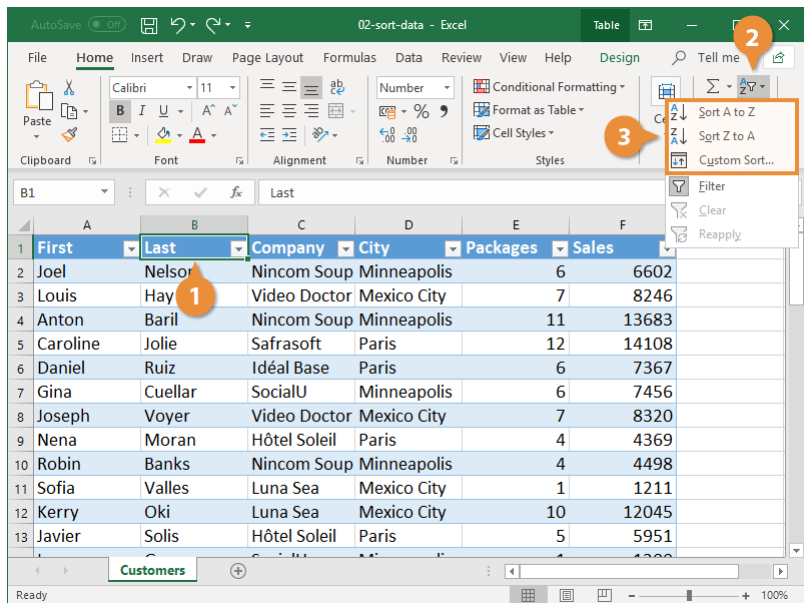


Sort Data

In Excel, you can take tables or ranges of data and sort them into different orders. For example, you can sort text alphabetically; numbers by size; dates and times chronologically; cells or fonts by color or icon; or you can create a custom sort. Usually you sort by column, but you can also sort by row.

Sort by One Column

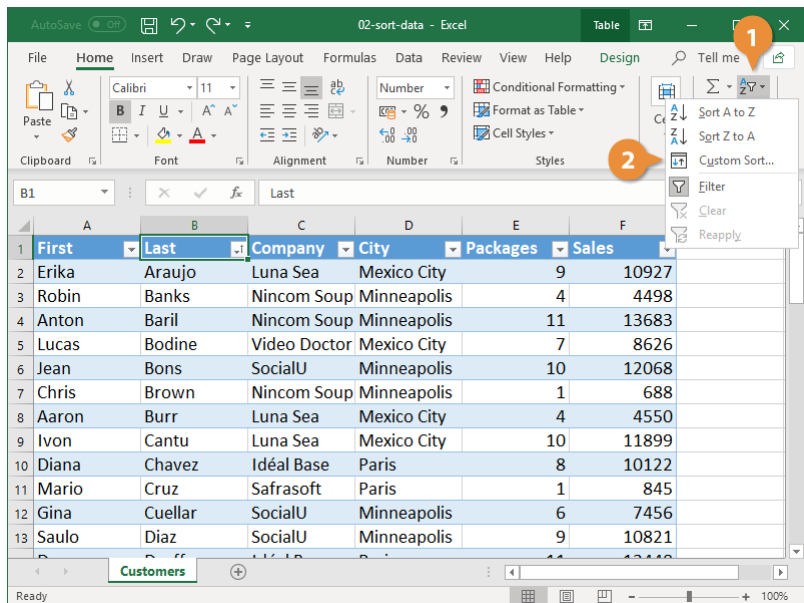
- 1 Select a cell in the column you want to sort.
 - 2 Click the **Sort & Filter** button on the Home tab.
 - 3 Select a sort order.
 - **Sort A to Z:** Sorts the column in ascending order.
 - **Sort Z to A:** Sorts the column in descending order.
 - **Custom Sort:** Allows you to specify custom criteria, such as multi-level data sorting.
- Tip:** You can also right-click the cell and select **Sort**.



Sort by Multiple Columns

If you want to sort by more than one column, you need to use a custom sort. For example, you can sort first by the last name column, then by first name. That way, all the Andersons will be listed before the Bakers, and Andy Anderson will come before Bill Anderson.

- 1 Click the **Sort & Filter** button on the Home tab.
- 2 Select **Custom Sort**.
The Sort dialog box appears.



3 Select the first column you want to sort by.

Tip: To sort by cell or font color, or by icon, click the **Sort On** list arrow and select an option.

4 Select a sort order.

The options for the Order change depending on what you choose for the Sort by variable.

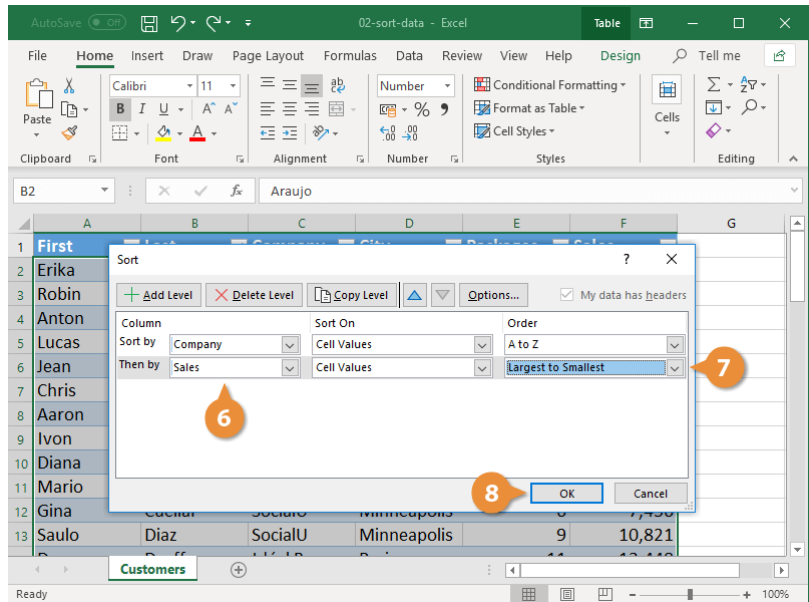
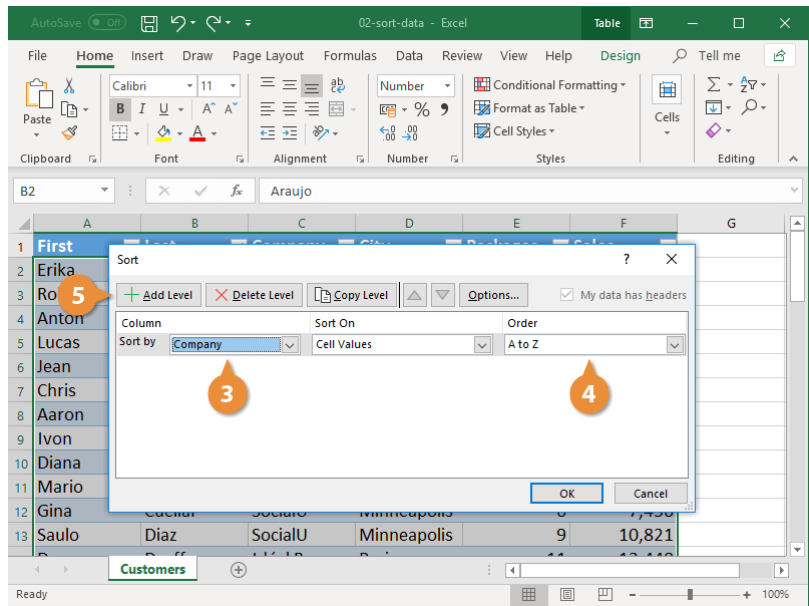
5 To sort by an additional column, click the **Add Level** button.

6 Select the next column you want to sort by.

7 Select a sort order.

Repeat these steps as necessary to sort by additional columns.

8 Click **OK**.

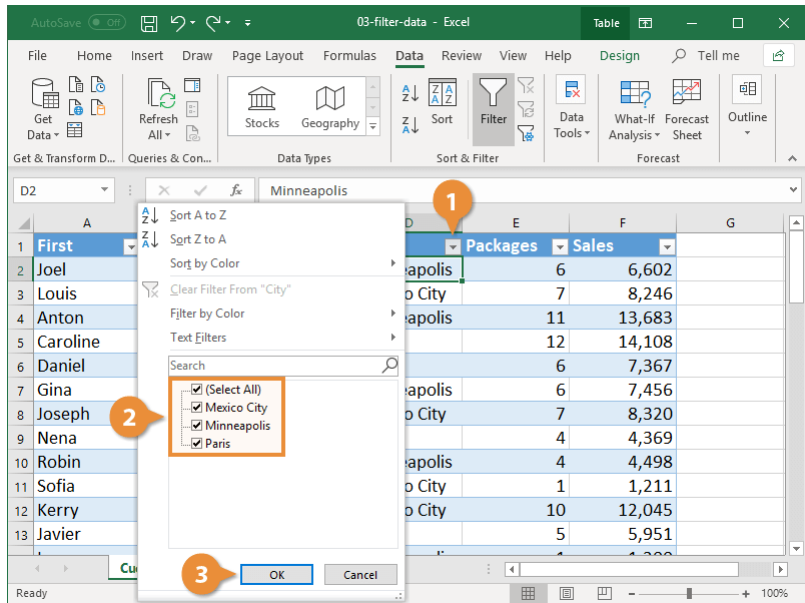


Filter Data

When you create a table, a filter button that looks like a list arrow is added to the header of each column in the table. You can use this arrow to filter the table columns; they remain available when you scroll down the list. You can filter by values such as text, numbers, or dates.

Filter

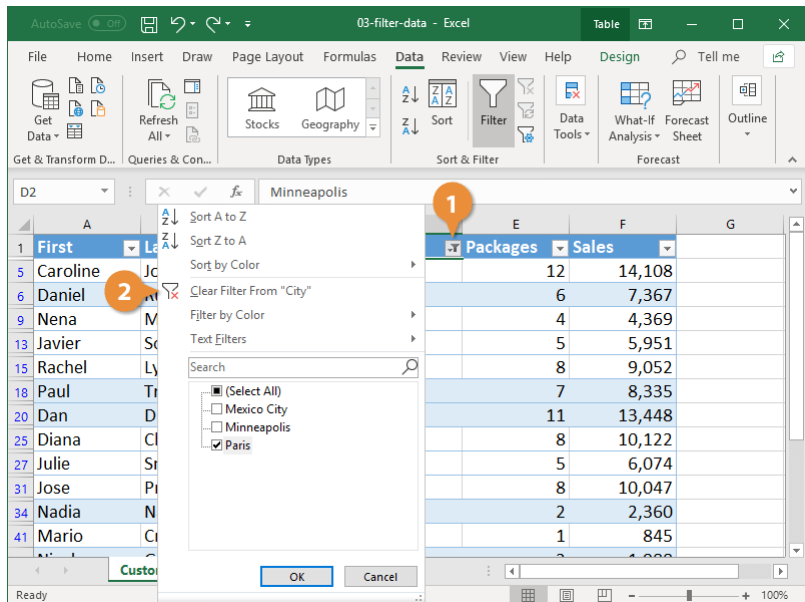
- 1 Click the filter arrow for the column you want to filter.
A list appears, displaying several options for sorting or filtering the table data. A check box will appear for each of the unique data entries for the selected field.
- 2 Select the check box(es) of the filter criteria you want to use.
Tip: You can also click in the Search field and type the criteria by which you want to filter, or click **Text Filters** to apply advanced filtering criteria.
- 3 Click **OK**.



Clear a Filter

- 1 Click the filter arrow for the column with a filter you want to clear.
- 2 Select **Clear Filter From "Column Name."**
Tip: You can also click the **Filter** button on the Data tab to toggle the filter off.

The filter is removed and all the data in that column is visible again.



Add Rows and Columns

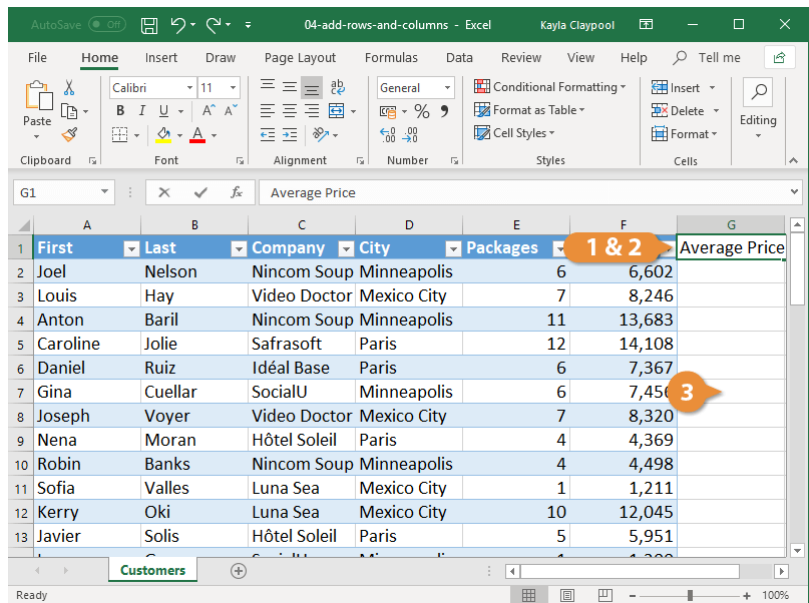
Even after a table is created, you can add additional rows and columns. Whether you add new cells within the current range or adjacent to the table, they will automatically be formatted to match the current table style.

Insert a Row or Column Adjacent to the Table

- 1 Click in a blank cell next to the table.
- 2 Type a cell value.
- 3 Click anywhere outside the cell or press the **Enter** key to add the value.

The new row or column is added to the table and the table formatting is applied.

Tip: When a formula is entered in a blank column of a table, the formula automatically fills the rest of the column, without using the AutoFill feature. If rows are added to the column, the formula appears in those rows as well.



Insert a Row or Column within a Table

- 1 Select a cell in the table row or column next to where you want to add the row or column.

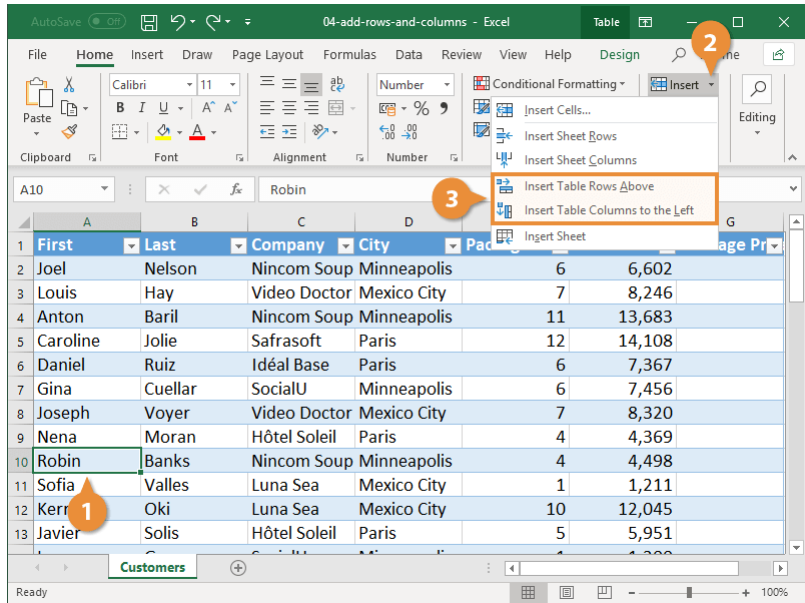
Tip: Insert options aren't available if you select a column header.

- 2 Click the **Insert** list arrow on the Home tab.

- 3 Select an insert table option.

- **Insert Table Rows Above:** Inserts a new row above the select cell.
- **Insert Table Columns to the Left:** Inserts a new column to the left of the selected cell.

Shortcut: Right-click a row or column next to where you want to add data, point to **Insert** in the menu, and select an insertion option.



Delete Rows and Columns

You can also remove unwanted table rows and columns by deleting them.

- 1 Select a cell in the row or column you want to delete.
- 2 Click the **Delete** list arrow.
- 3 Select **Delete Table Rows** or **Delete Table Columns**.

Shortcut: Right-click the row or column you want to delete, point to **Delete** in the menu, and select **Table Columns** or **Table Rows**.

The selected row(s) or column(s) and all the data in them are deleted.

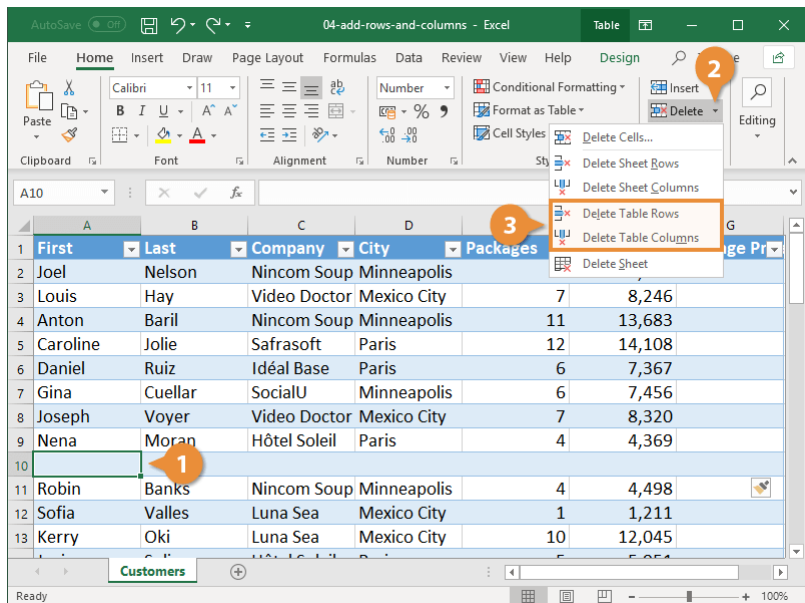


Table Styles

Besides applying table styles, you can format individual table style elements.

Table Style Options

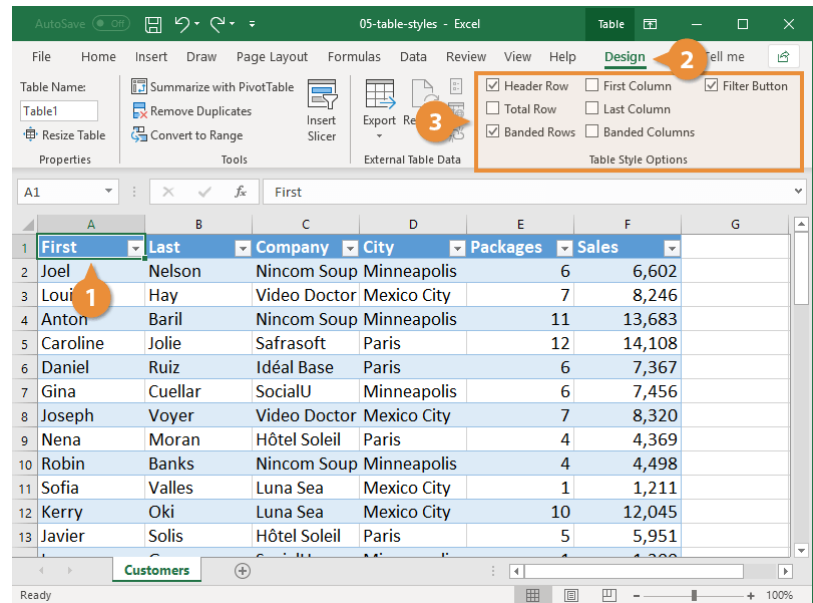
1 Click any cell in the table.

2 Click the **Design** tab.

The formatting options available in the Table Style Options group include:

- **Header Row:** Toggles the table's header row on and off.
- **Total Row:** Adds a total row to the bottom of the table. This option doesn't just change formatting, but also allows you to calculate values in the total row.
- **First/Last Column:** Displays special formatting for the first or last columns in the table.
- **Banded Rows/Columns:** Displays odd and even rows and columns differently for easier readability.

3 Select the option(s) you want to apply in the Table Style Options group.



Remove Duplicates

If there are duplicate rows of identical data in your table, Excel can find and remove the duplicate rows for you. You can also remove duplicates from cell ranges, not just tables. In that case, you need to select the entire cell range you want to examine.

Remove Duplicate Values

- 1 Select a cell in the table.
- 2 Click the **Data** tab.
- 3 Click the **Remove Duplicates** button.

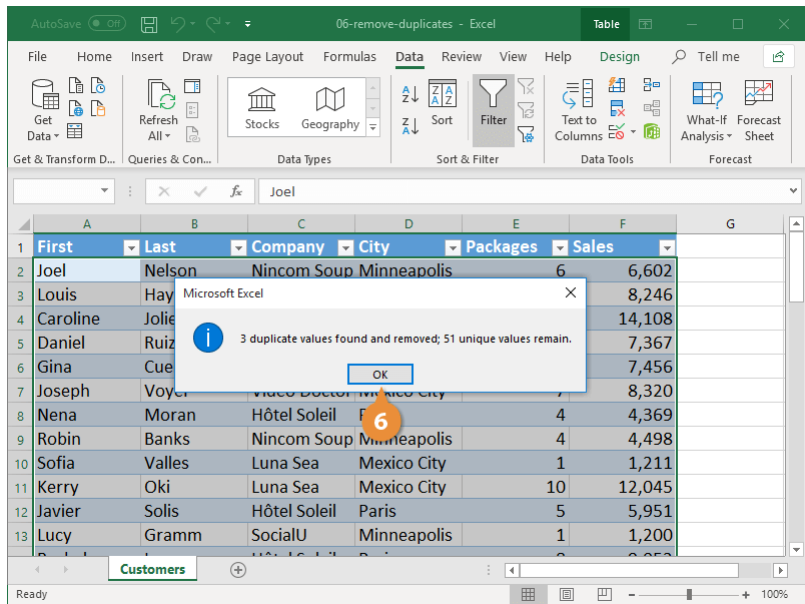
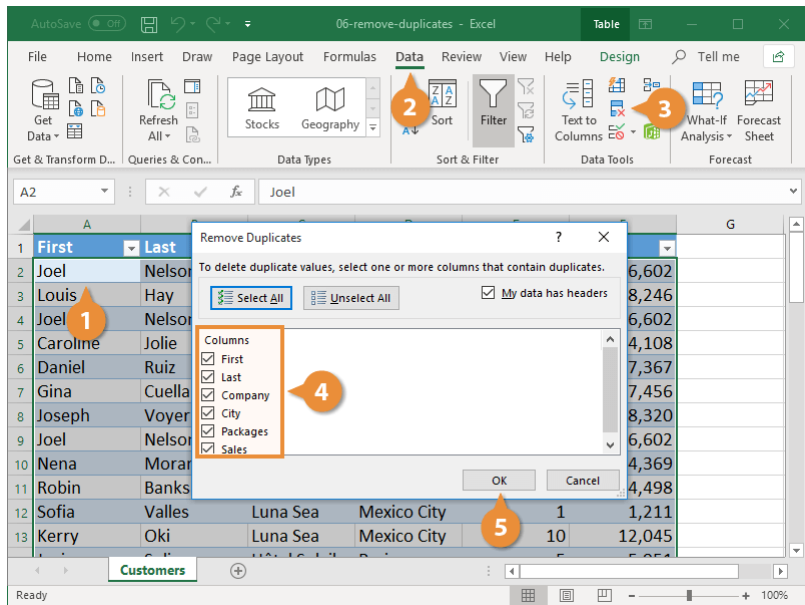
All columns are selected by default, but it's possible to select/deselect individual columns in the Columns list. You can also use the **Select All** and **Unselect All** buttons to select columns.

- 4 Select the columns you want to check for duplicates.
- 5 Click **OK**.

The dialog box displays the number of duplicates that were removed and how many values remain.

Tip: Removing duplicate values actually deletes the duplicate data, so you may want to copy the data to another worksheet or workbook first, just in case.

- 6 Click **OK**.



Slicers

Slicers are a feature in Excel that provide an easy way to filter table data. They allow you to filter and re-filter your data quickly so it's easy to find the exact information you need. Slicers work well when used with both tables and PivotTables.

Insert a Slicer

- 1 Click any cell in the table.
- 2 Click the **Design** tab.
- 3 Click the **Insert Slicer** button.

Tip: You can also click the **Insert** tab, then click **Slicer**.

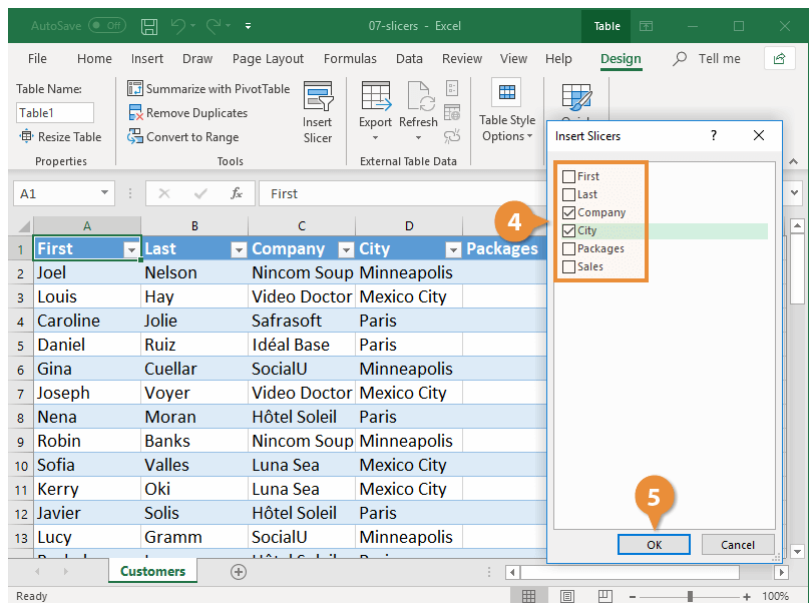
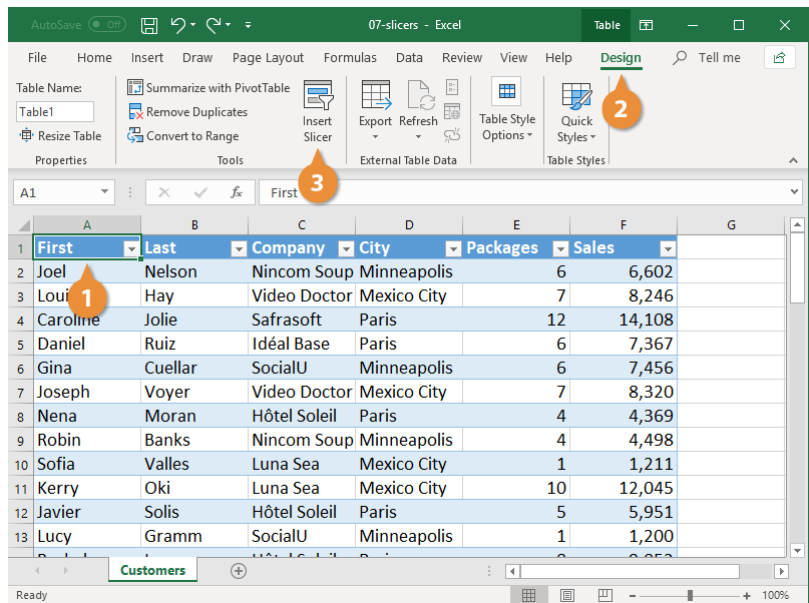
The Insert Slicers dialog box appears. All the column headings in the table are listed here.

- 4 Select the columns you want to use as slicers.

A separate slicer will be created for each column that's selected.

- 5 Click **OK**.

The slicers appear in the worksheet. You can now move or resize them as needed.



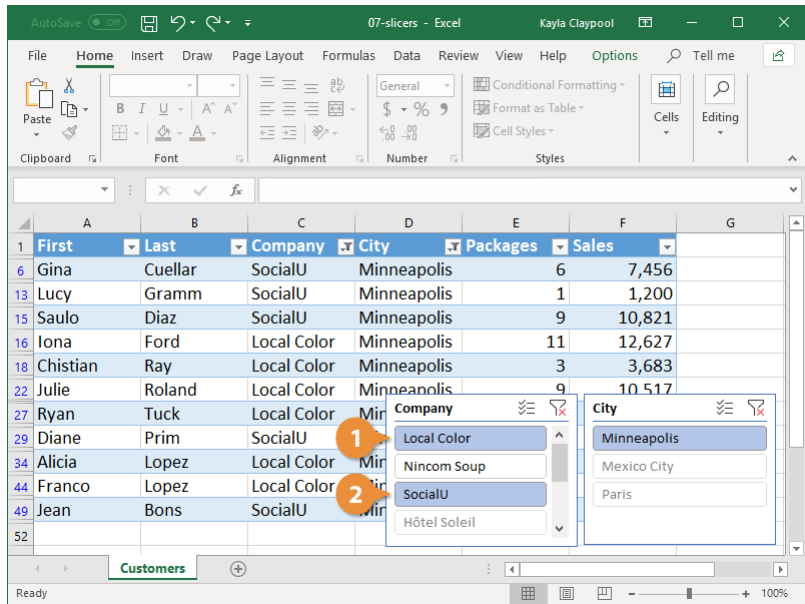
Filter with a Slicer

After a slicer is created, it appears on the worksheet alongside the table. The slicers will be layered on top of one another if there is more than one, but they can easily be repositioned.

- 1 Select the values you want to include in the filter.
- 2 Hold down the **Ctrl** key to select multiple filters.

The table is filtered to show only the selected value(s).

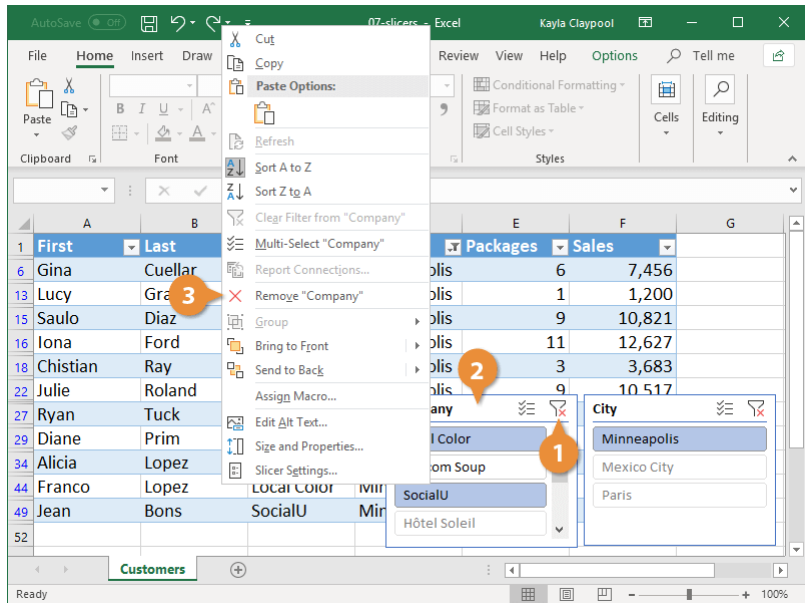
Tip: While holding down the Ctrl key, simply click the value again to stop filtering the selected data.



Clear and Remove a Slicer

Before you delete a slicer from a worksheet, make sure you clear it. Deleting a slicer doesn't clear the filter.

- 1 Click the **Clear Filter** button.
All the filters are cleared, but the Slicer remains on the worksheet.
- 2 Right-click the slicer.
- 3 Select **Remove "Filter name"**.
Shortcut: Click the slicer and press the **Delete** key.



Structured References

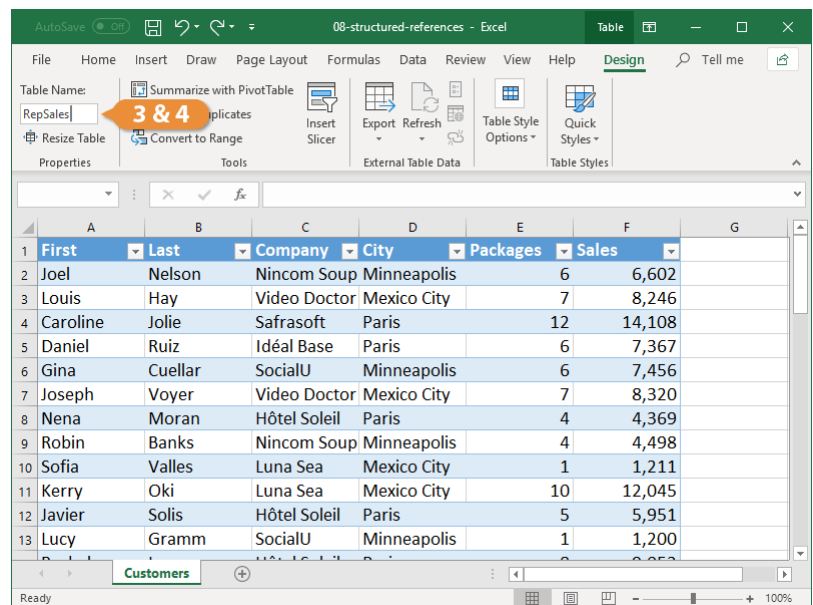
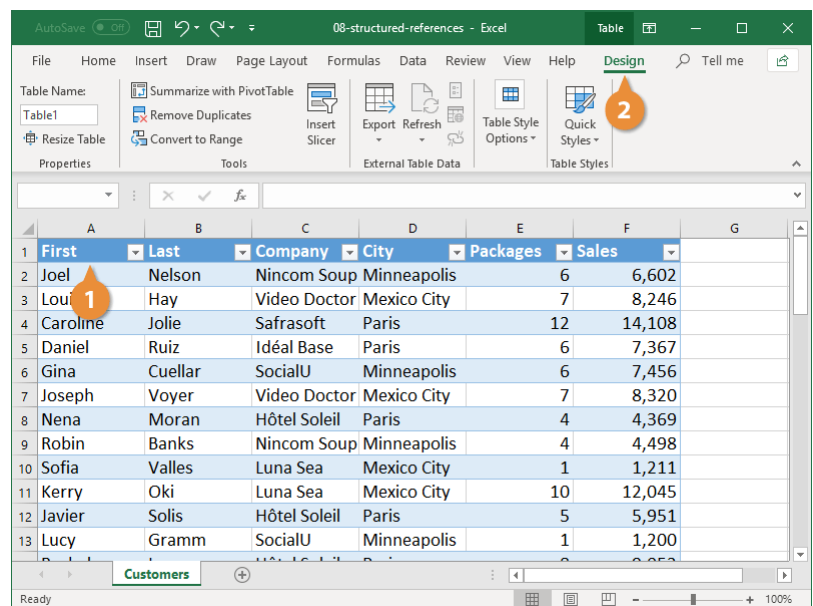
Structured references allow you to easily work with cell references and formulas in a table. For example, instead of using a cell range reference such as F2:F52 in a formula, you can refer to the cell range as Sales (the table column name). They make it easy to see, at a glance, what the formula is calculating.

When you create a formula using structured references, you can use several different elements in place of the regular arguments. These include the table name, column header names, or special items that refer to areas of the table, such as a total row.

Name a Table

Structured references work best if the table is assigned a meaningful name.

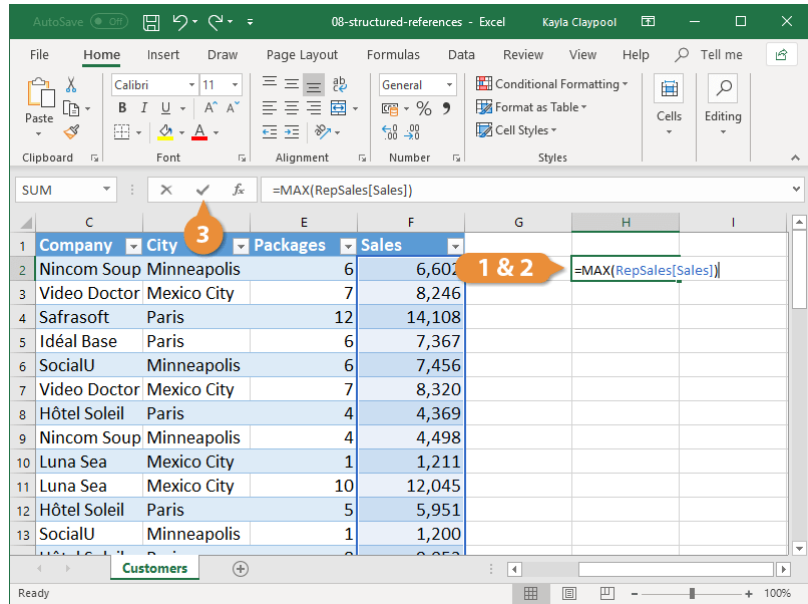
- 1 Select a cell in the table.
- 2 Click the **Design** tab.
- 3 Click in the **Table Name** field.
- 4 Type a table name.
- 5 Press **Enter** on your keyboard.



Enter a Structured Reference

When using structured references, the formula will include the table name as well as the name of the row or column you want to calculate.

- 1 Select the cell where you want to add the structured reference.
- 2 Type the formula using table names instead of cell references.
- 3 Click the **Enter** button or press **Enter** on your keyboard.



Intermediate Formatting

Conditional formatting is a flexible and powerful feature. It allows you to highlight cells if they meet a specified condition. You can use it to quickly identify values above or below certain points, duplicates, or matching text.

In this module, you will also learn how to format your worksheet using cell styles, which is useful if you want to add special effects to headings and total rows or if you need to use specific fonts and colors to meet your organization's brand standards. Applying themes makes it even easier to have a consistent look and feel from one worksheet to another.

Objectives

- Apply and Manage Conditional Formatting
- Apply and Remove Cell Styles
- Create and Modify Cell Styles
- Find and Replace Formatting
- Apply a Theme

Apply and Manage Conditional Formatting

Conditional formatting applies formats to cells only if a specified condition is true. For example, use conditional formatting to change cells with a sales value over \$50,000 to have red, bold font. If the value of the cell changes and no longer meets the specified condition, the cell returns to its original formatting.

Apply Conditional Formatting

- 1 Select the cells you want to change.
- 2 Click the **Conditional Formatting** button from the Home tab.
- 3 Select a conditional formatting category.

- **Highlight Cells Rules:** Focus on general analysis. Preset conditions include: Greater Than; Less Than; Between; Equal To; Text That Contains; Date Occurring; Duplicate Values.

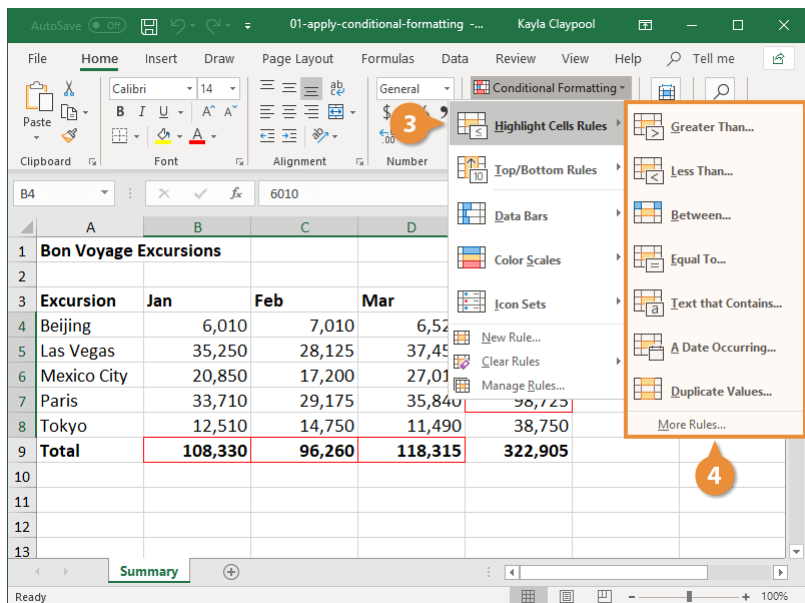
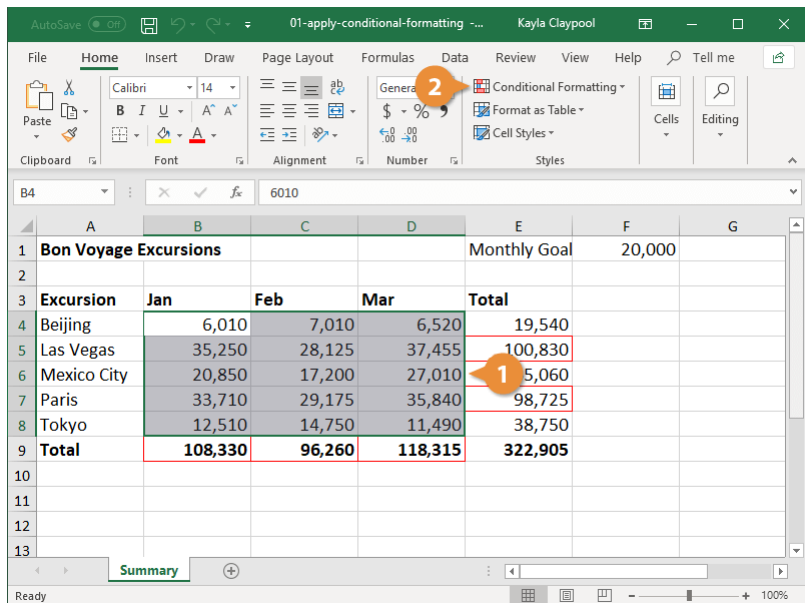
- **Top/Bottom Rules:** Focus on the high and low values in the worksheet. Preset conditions include: Top 10 Items; Top 10%; Bottom 10 Items; Bottom 10%; Above Average; Below Average.

- **Data Bars:** Colored bars that appear in the cells. The longer the bar, the higher the value in that cell.

- **Color Scales:** Cells are shaded different color gradients depending on the relative value of each cell compared to other cells in the range

- **Icon Sets:** Different shaped or colored icons appear in cells, based on each cell's value.

- 4 Select a conditional formatting rule.

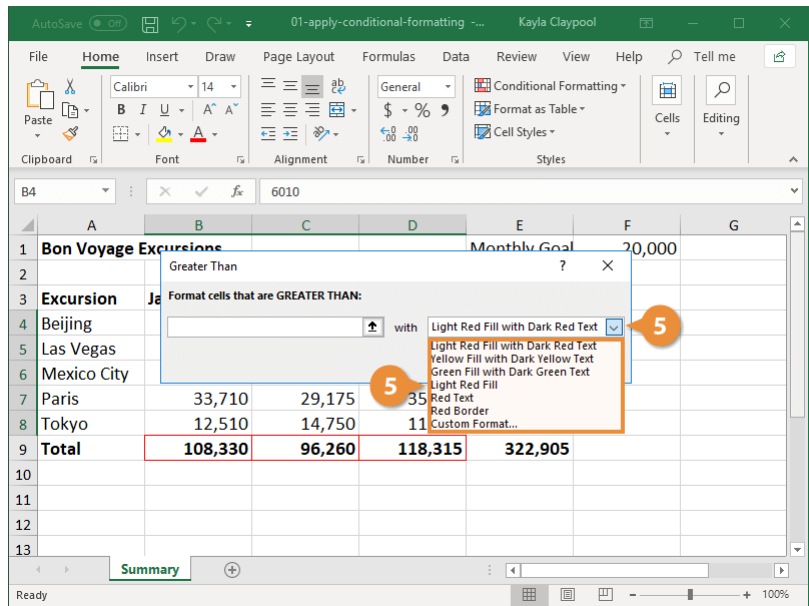


- Specify the formatting to use for items that meet the conditional formatting criteria.

Tip: The options you see in the dialog box will vary depending on the type of rule you selected.

- Click **OK**.

Only the cells that meet the criteria are formatted.



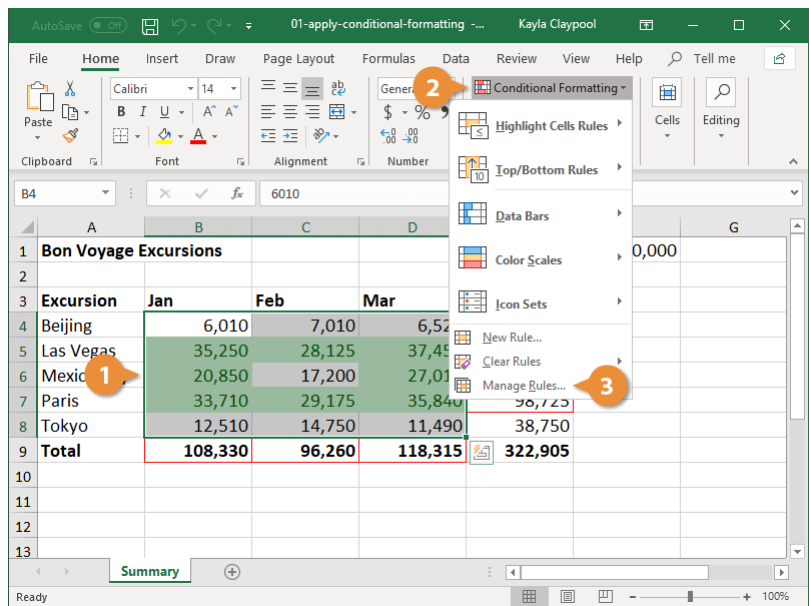
Manage Conditional Formatting Rules

You can manage all aspects of conditional formatting—creating, editing, and deleting rules—in one place using the Rules Manager.

- Select the cell range with the conditional formatting you want to manage.

- Click the **Conditional Formatting** button on the Home tab.

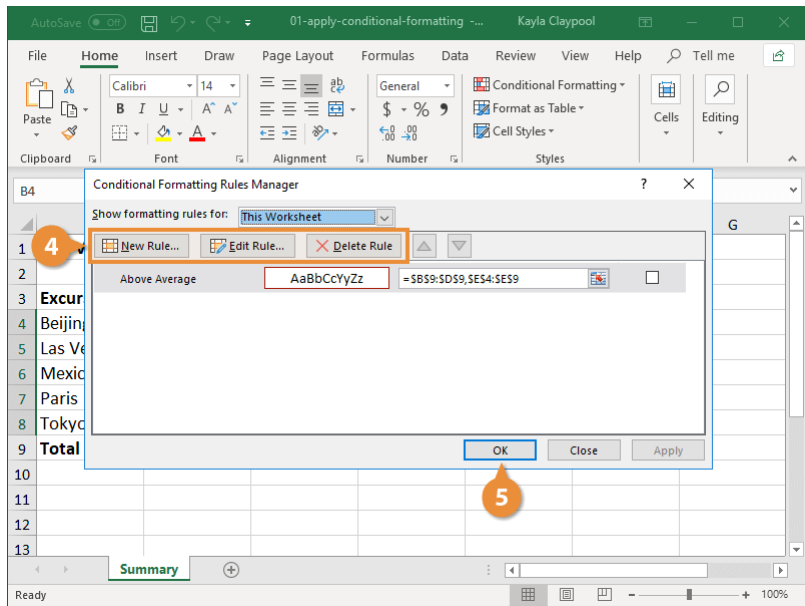
- Select **Manage Rules**.



The Conditional Formatting Rules Manager dialog box appears. The rules applied to the selected cells appear in the dialog box.

Use these buttons to manage the rules:

- **New Rule:** Create a brand new conditional formatting rule.
- **Edit Rule:** Edit the selected conditional formatting rule.
- **Delete Rule:** Delete the selected rule from the worksheet.

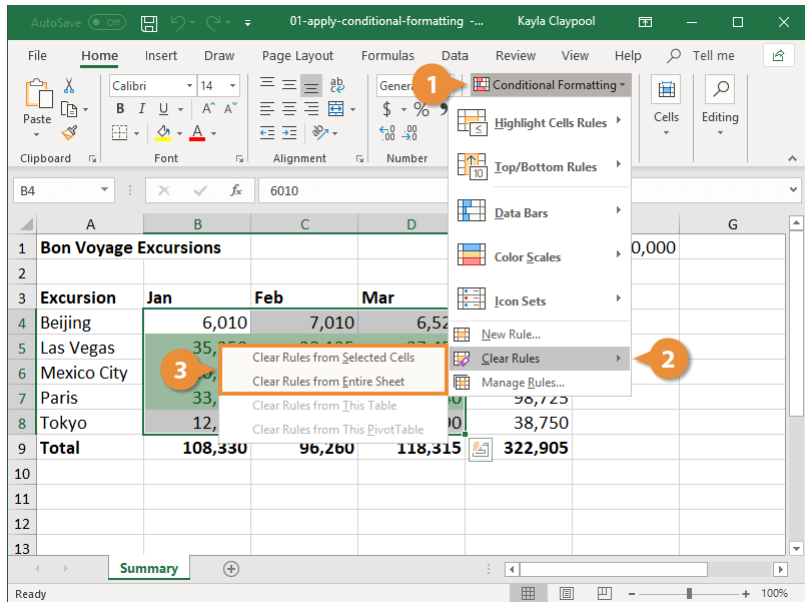


- 4 Manage the formatting rules.
- 5 Click **OK** when you are finished.

Remove Conditional Formatting

The Clear Rules command helps you remove conditional formatting rules from your worksheet.

- 1 Click the **Conditional Formatting** button on the Home tab.
- 2 Select **Clear Rules**.
- 3 Select a Clear Rules option:
 - **Clear Rules from Selected Cells:** Clears only the conditional formatting rules for the selected cell range.
 - **Clear Rules from Entire Sheet:** Clears all the conditional formatting rules in the worksheet.



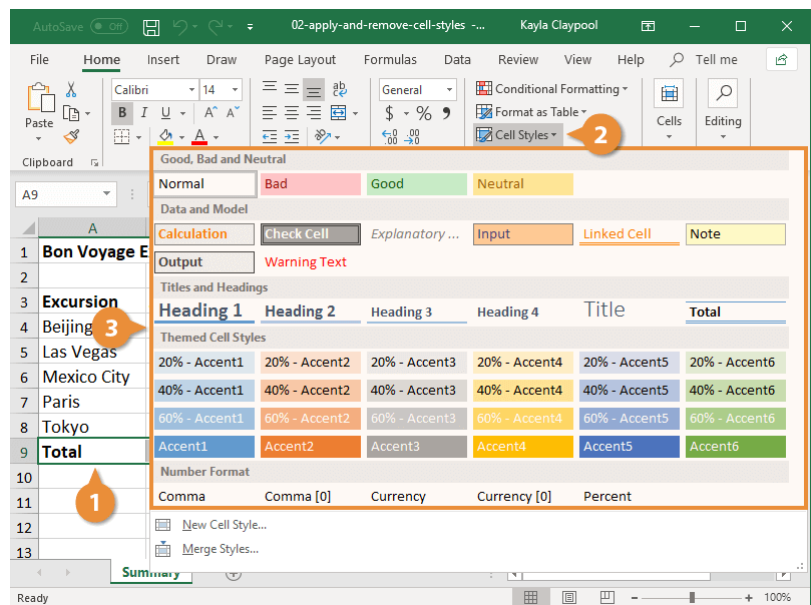
Apply and Remove Cell Styles

Styles contain preset font formatting, cell shading, numbering, borders, and other formatting options that can be applied to a cell or cell range all at once. This is a convenient and easy way to quickly apply complex formatting.

Apply a Cell Style

- 1 Select the cell(s) you want to format.
- 2 Click the **Cell Styles** button on the Home tab.
Tip: Hover your mouse over a style to preview how it will look before selecting it.
- 3 Select a cell style.

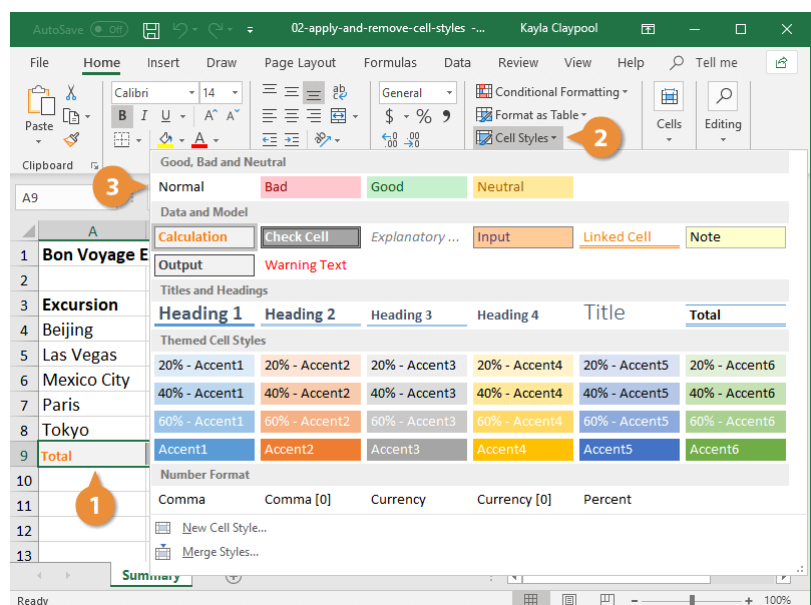
The style is applied to the selected cell or cell range.



Remove a Cell Style

If you decide you no longer need the style applied to the cells, you can remove it.

- 1 Select the cells that have the style applied.
- 2 Click the **Cell Styles** button on the Home tab.
- 3 Select **Normal**.



Create and Modify Cell Styles

If you find that you keep applying the same formatting over and over, create a style with that formatting so you can apply those formatting settings with one click.

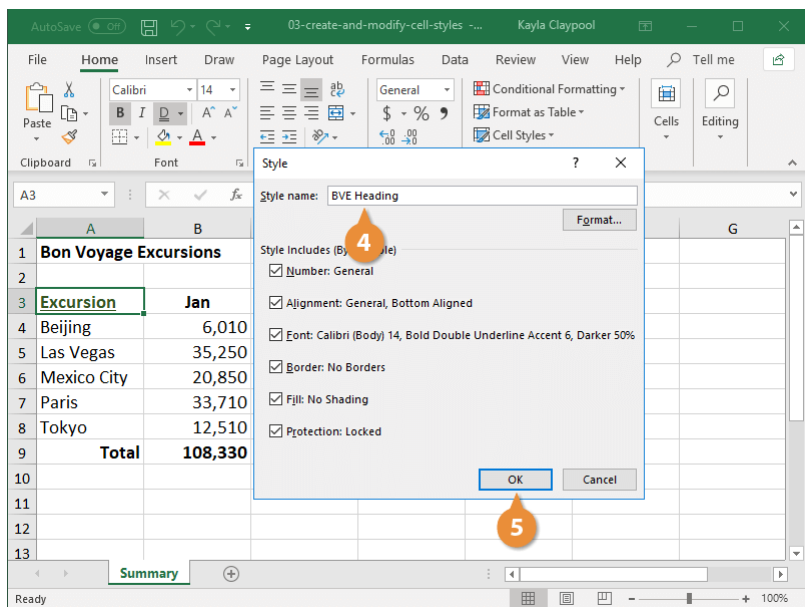
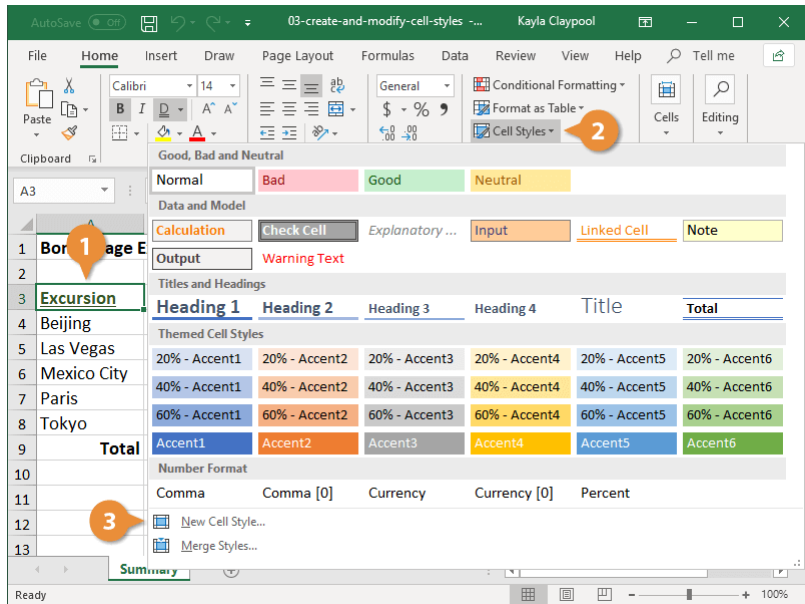
Create a New Style

The easiest way to create a style is to do so from a cell that already has the formatting you want to capture.

- 1 Select the cell that has the formatting you want to use for the new style.
- 2 Click the **Cell Styles** button on the Home tab.
- 3 Select **New Cell Style**.
The Style dialog box opens and the formatting from the selected cell is captured.
- 4 Enter a name in the Style name field.
- 5 Click **OK**.

The style is now saved and can be used in any Excel worksheet.

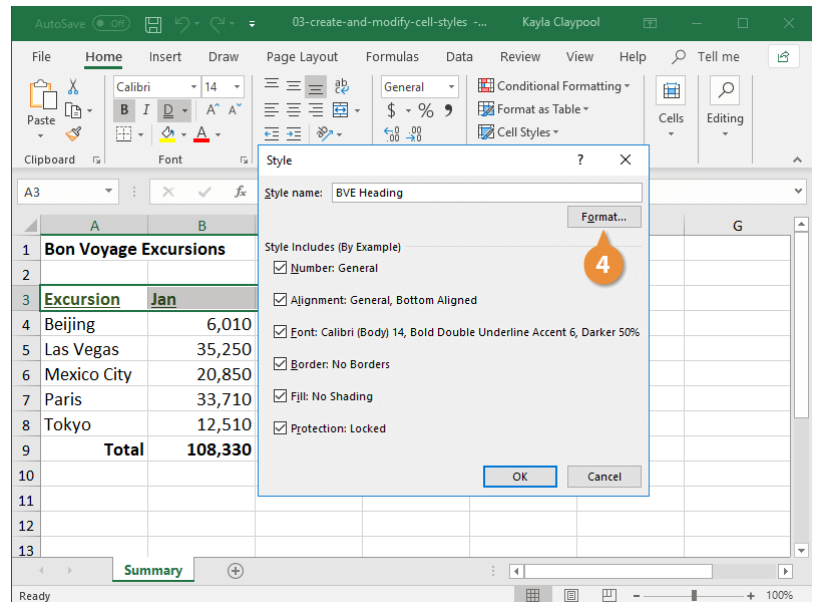
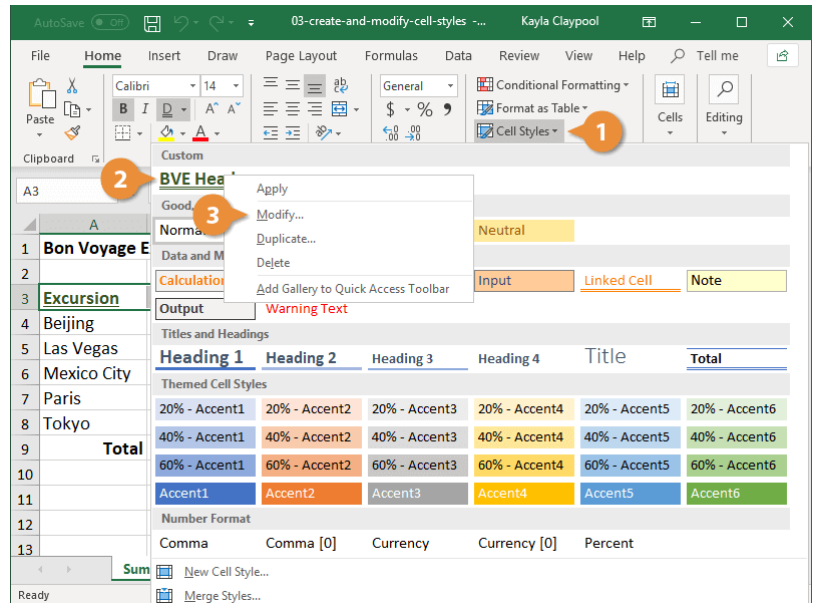
Tip: Cell styles are associated with the theme that is being used for the workbook. If you switch to a new theme, the cell styles will update to match it.



Modify a Style

If you decide you need to change an existing style, you can easily make modifications. Any updates you make will automatically be reflected in any cells that have the style applied.

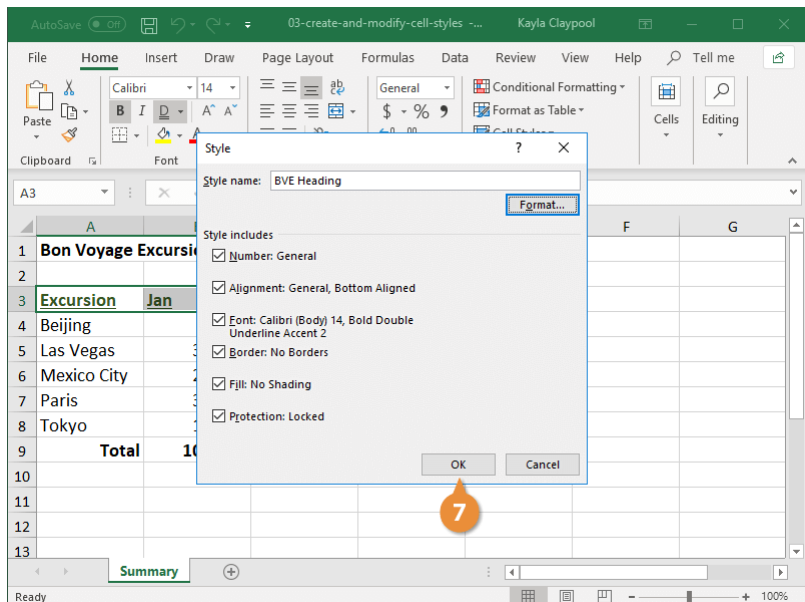
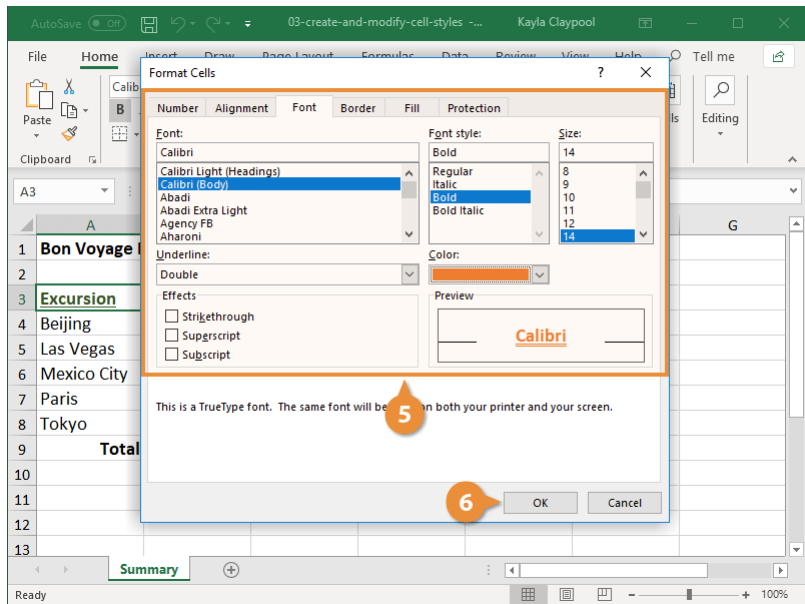
- 1 Click the **Cell Styles** button.
 - 2 Right-click the cell style you want to modify.
 - 3 Select **Modify**.
- Tip:** To duplicate a style before making changes, select **Duplicate** from the menu instead.
- 4 Click the **Format** button.



- 5 Select the formatting options you want to use.
- 6 Click **OK**.
- 7 Click **OK** again.

The style is updated and any cells with the style applied are automatically updated.

Tip: To remove a cell style from all cells and delete the cell style itself, click the **Cell Styles** button on the Home tab. Then right-click the style and select **Delete**.

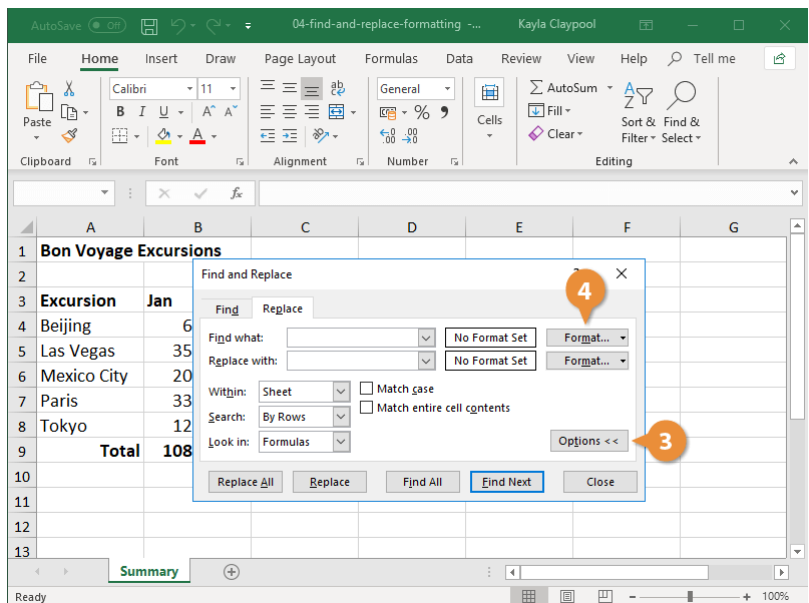
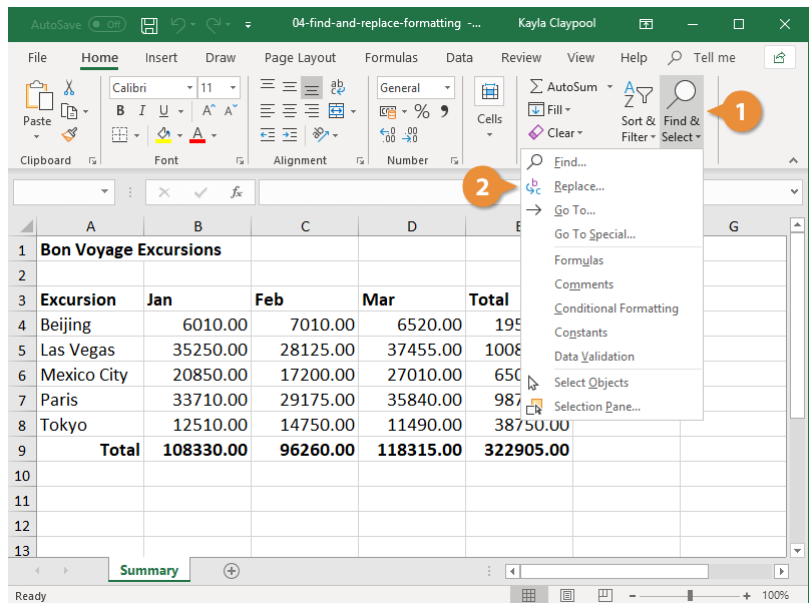


Find and Replace Formatting

Excel's Find and Replace features can find and/or replace formatting in addition to text and information. Use the Find and Replace Formatting option when you want to change all instances of a particular formatting choice at once.

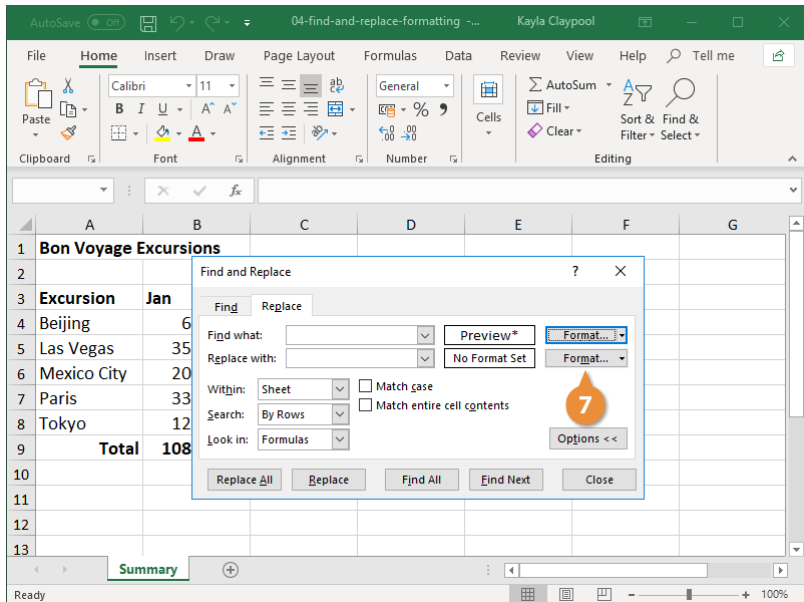
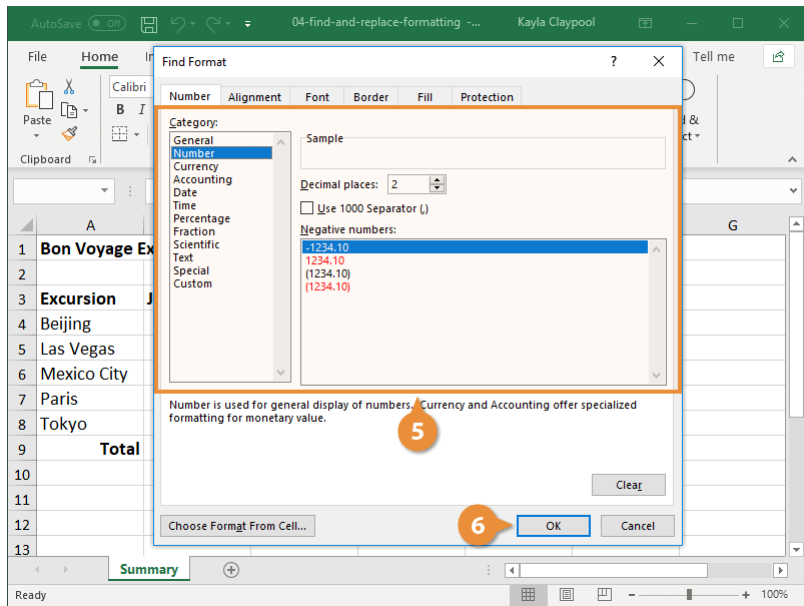
Using Find and Replace Formatting

- 1 Click the **Find & Select** button on the Home tab.
- 2 Select **Replace**.
Shortcut: Press **Ctrl + H** to open the Find and Replace dialog box.
- 3 Click the **Options** button.
- 4 Click the Find what: **Format** button.



The Find Format dialog box opens. Here you can select any type of formatting you want to look for in the workbook.

- 5 Select the formatting you want to find.
- 6 Click **OK**.
- 7 Click the Replace with: **Format** button.



8

Select the new formatting options you want to use.

9

Click **OK**.

Once the formatting options are set, you're ready to begin finding and replacing the formatting.

10

Select the Find or Replace option you want.

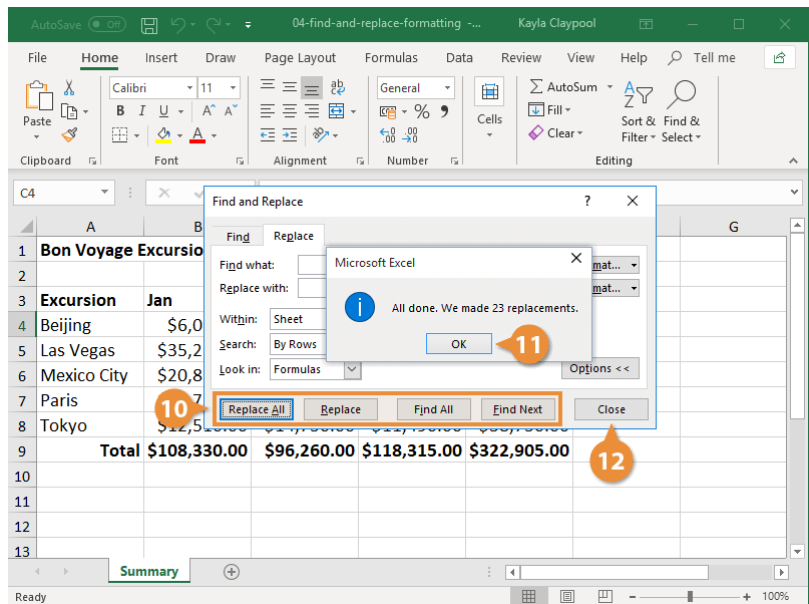
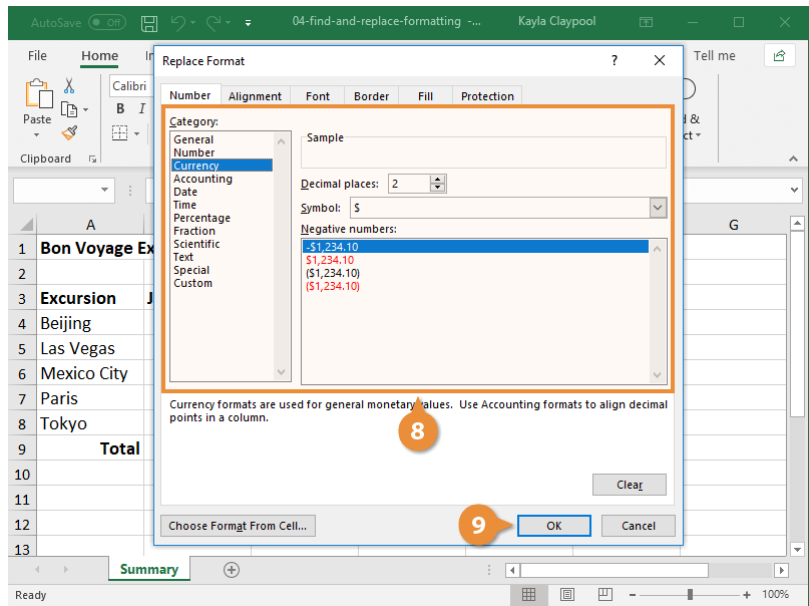
- Click **Find Next** or **Find All** to locate the formatting you want replace before replacing it.
- Click **Replace** to change cells one at a time.
- Click **Replace All** to replace every instance of the formatting at once.

11

When you choose to replace all instances of the formatting, the dialog box lets you know how many replacements were made. Click **OK**.

12

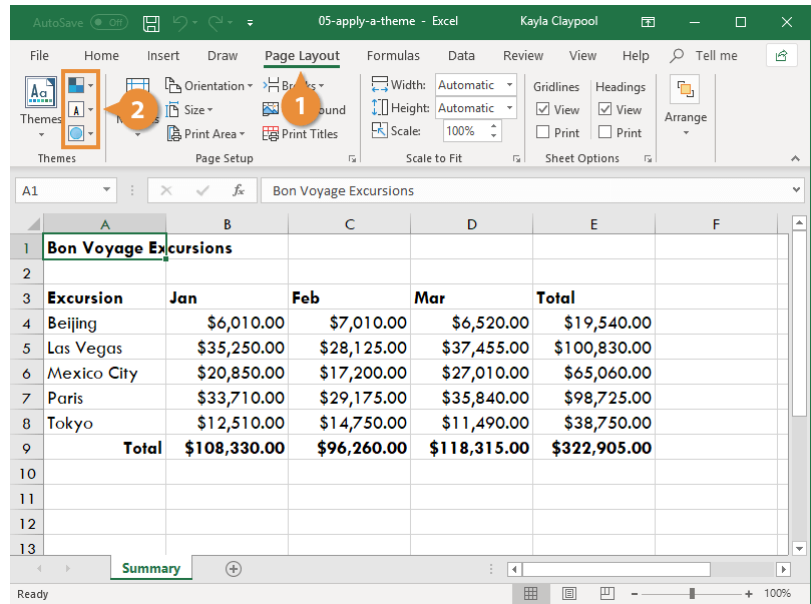
Click **Close**.



Customize a Document Theme

You are not bound to keep the colors, fonts, or effects that are assigned to a document theme. You may mix and match theme colors, theme fonts, and theme effects.

- 1 Click the Page Layout tab on the Ribbon.
- 2 Click the Theme Colors, Theme Fonts, or Theme Effects button and select the set of colors, fonts, or effects you want to use.



Collaborate with Excel

There are several options for sharing workbooks that make it easy for others to review and provide feedback. You can add comments directly to a cell so your note has context. If you track changes in your document, any adjustments made in the review process will be transparent and can be accepted or rejected.

This module also covers various methods for protecting your workbook. You can add protection as discretely as locking a cell from edits, or as broadly as requiring a password to open a workbook.

Objectives

- Cell Comments
- Share Workbooks
- Co-author Workbooks
- Version History
- Protect a Worksheet
- Protect Workbook Structure
- Password Protection

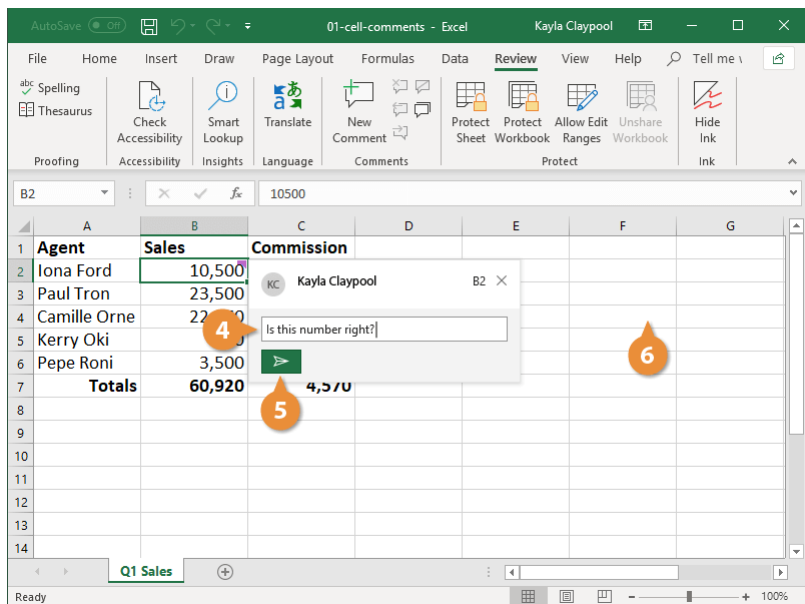
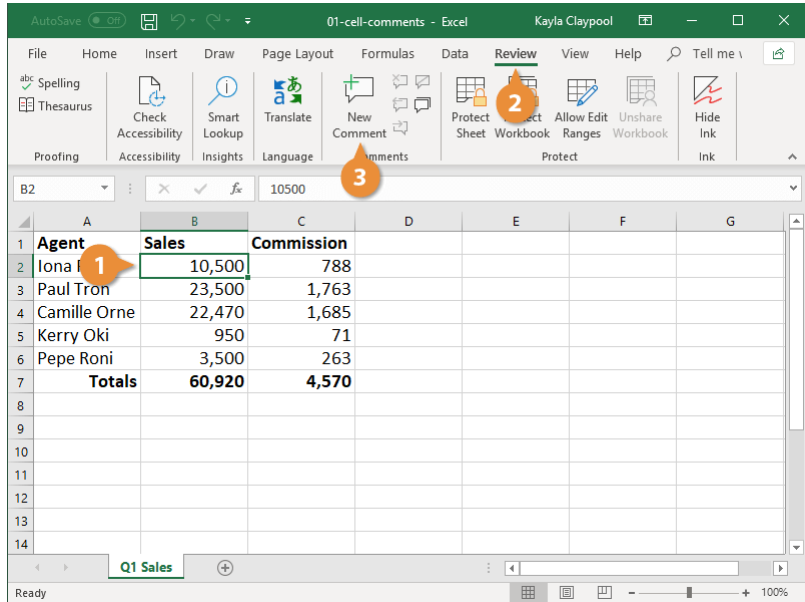
Cell Comments

Sometimes you may need to add notes to document complicated formulas, call out questionable values, or even to leave a comment for another user. Excel's cell comments command helps you document your worksheets and make them easier to understand. Think of cell comments as sticky notes that you can attach to any cell. Cell comments appear whenever you point at the cell they're attached to.

Add a Comment

- 1 Click the cell where you want to add the comment.
- 2 Click the **Review** tab.
- 3 Click the **New Comment** button.
Shortcut: Right-click a cell and select **New Comment**.
- 4 Type the comment you want.
- 5 Click the **Post** button.
- 6 Click anywhere outside the comment.

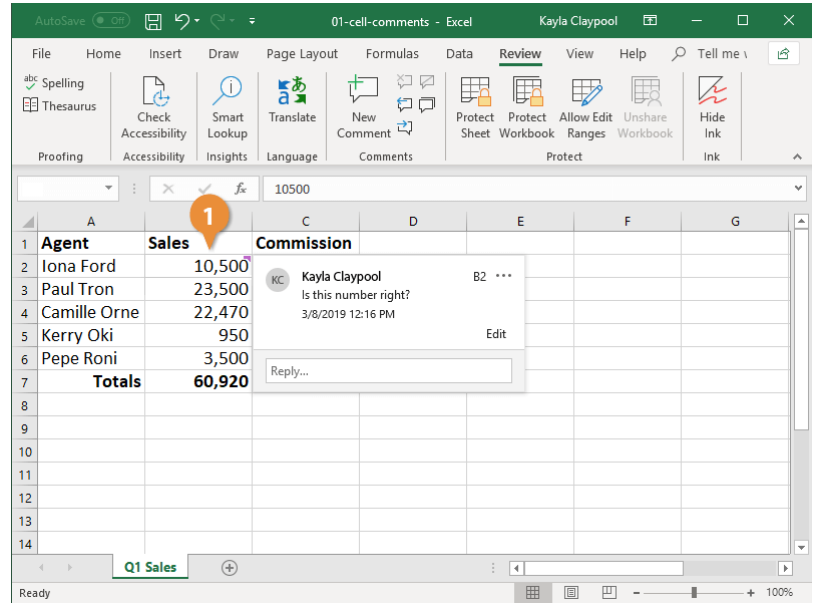
The comment disappears, but a red triangle appears in the corner of the cell to show that it has a comment.



View a Comment

- 1 Point to a cell with a comment icon.

Tip: To display a comment all the time, click the cell with the comment, then click the **Review** tab on the Ribbon and click the **Show/Hide Comments** button in the Comments group.

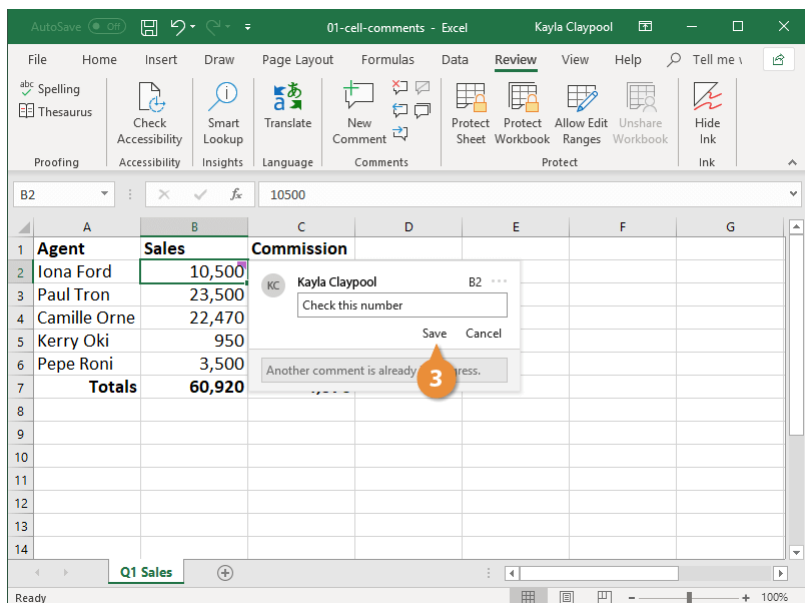
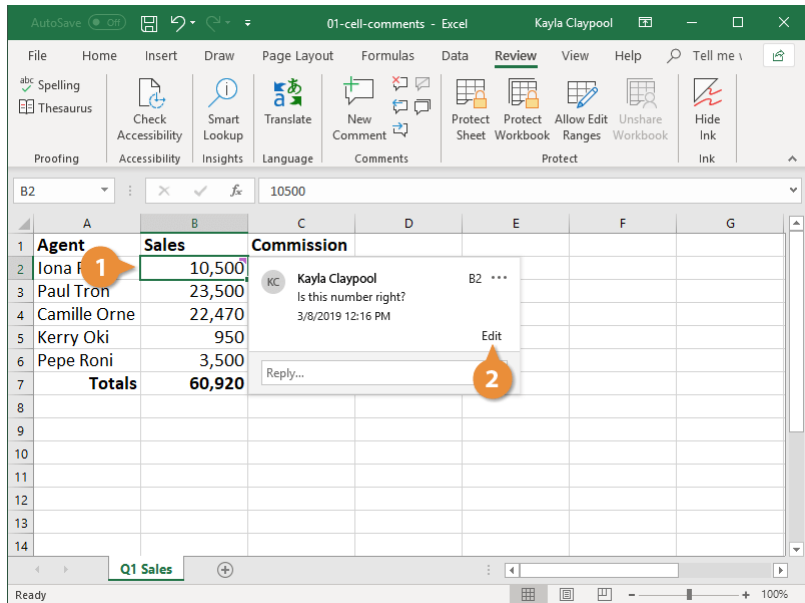


Edit a Comment

- 1 Click the cell that contains the comment you want to edit.
- 2 Click the **Edit** button in the comment.
- 3 Make the changes and then click **Save**.

Shortcut: Right-click a cell with a comment and select **Edit Comment**.

The comment box reappears, ready for editing.

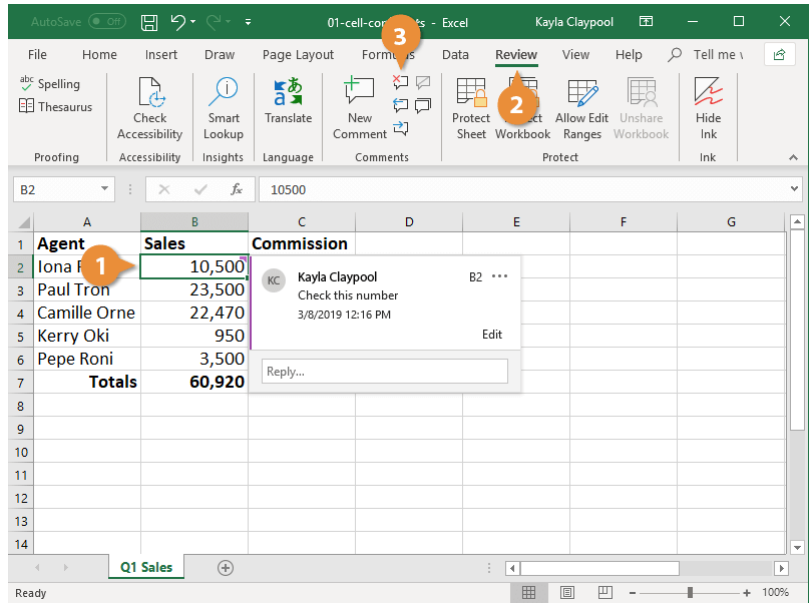


Delete a Comment

- 1 Click the cell that contains the comment you want to delete.
- 2 Click the **Review** tab.
- 3 Click the **Delete** button.

Shortcut: Right-click a cell with a comment and select **Delete Comment**.

The comment is removed from the cell.



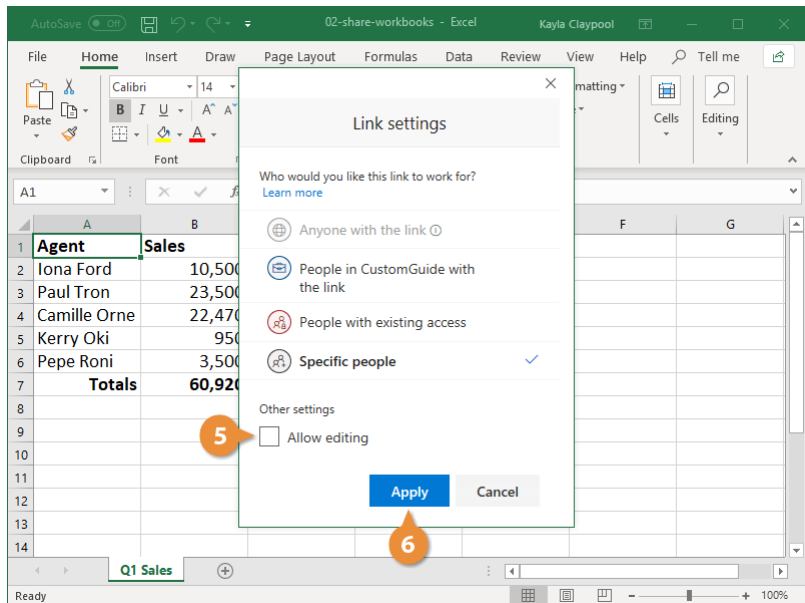
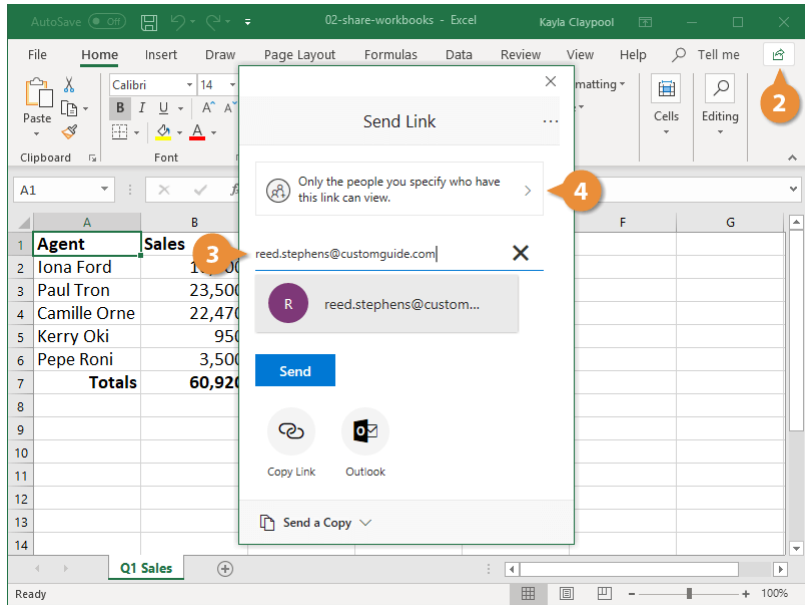
Share Workbooks

If you need to share a workbook with others, you can send them an invitation to view it online. You can also share workbooks by emailing them as an attachment, although this sends them a copy of the workbook and not the original.

Invite People to Collaborate

When you share a workbook from Excel, you're giving others access to the exact same file. This lets you and others view and even edit the same workbook without having to keep track of multiple copies.

- 1 Save your workbook to your OneDrive or SharePoint.
Workbooks must be saved to either Microsoft OneDrive or SharePoint before you can share them with others.
- 2 Click the **Share** button.
The Share pane opens, where you can invite others to view and edit this file.
- 3 Enter the email address of each person you want to share with.
- 4 Click the **Permissions** list arrow.
This lets you decide whether the people you invite can make changes to the workbook, or just view it as a read-only document.
- 5 Select a permission level for the file.
- 6 Click **Apply**.

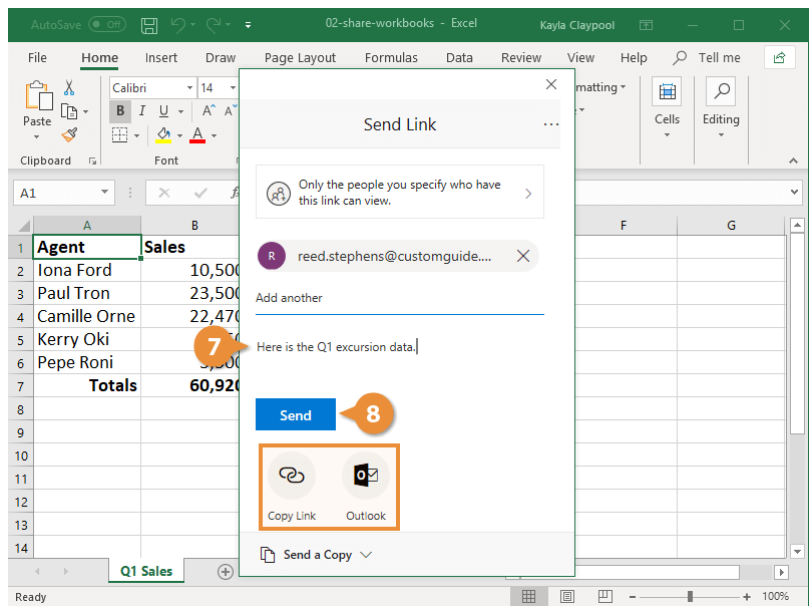


7 Include a message (optional).

8 Click **Send**.

Tip: If you wanted to just send a link to people at will, you could do so by clicking **Copy Link** or **Outlook**.

The people you shared the workbook with will appear in the Share pane.



Co-author Workbooks

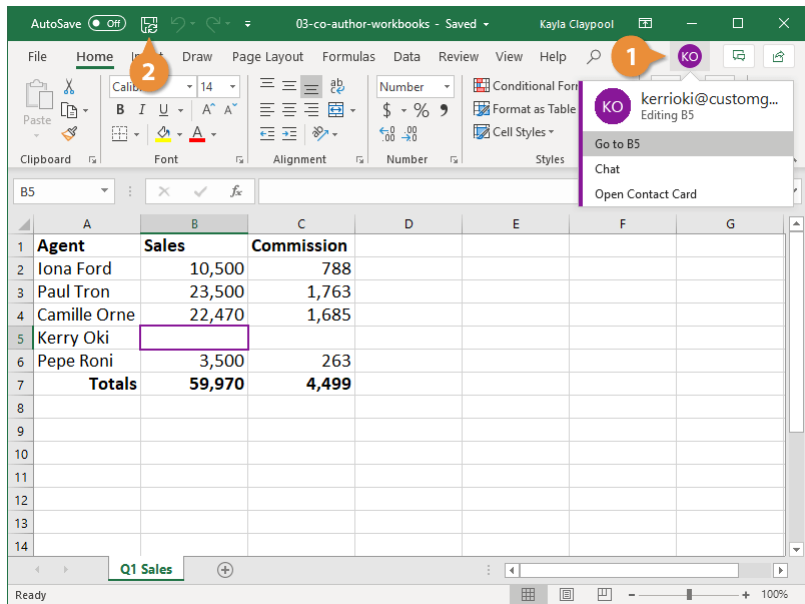
You can work on a file in Excel at the same time as others by using Office's Co-author feature.

Simultaneously Edit

Make sure the file is saved to an online location like SharePoint or OneDrive, and that you've shared it with people who need to make edits.

- 1 Click a user's picture or initials in the ribbon to see what they are editing.
 - Cells being edited by others appear with a colored border or shading.
 - Changes are automatically synced.
- 2 Click the **Save** button to force a sync and display new changes.

All of the changes are immediately synced to the workbook.



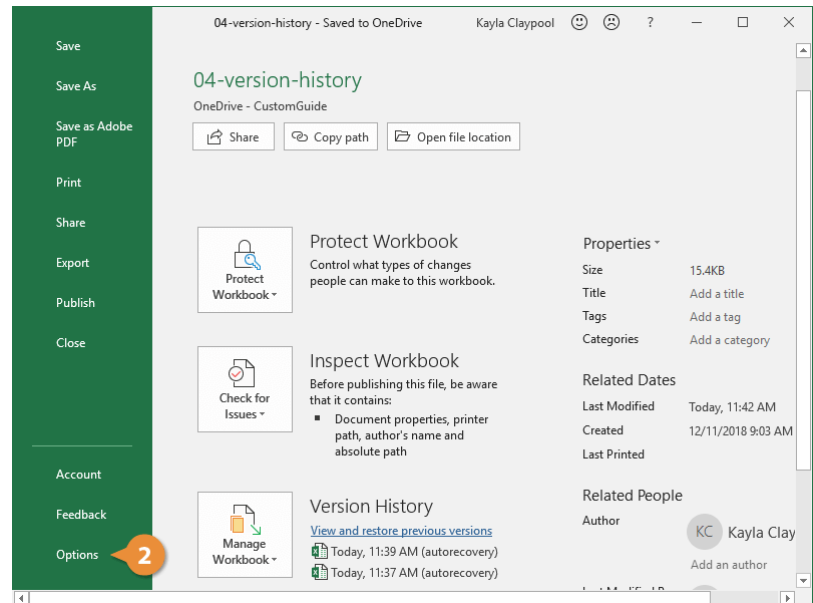
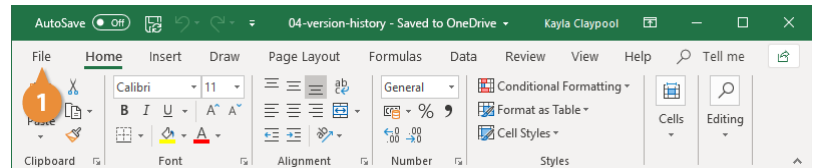
Version History

Nothing is more frustrating than when a program locks up—and stops responding—for no apparent reason. You can protect your work from these events by using the AutoRecover feature to periodically save a temporary copy of the project you're working on.

Modify Recovery Settings

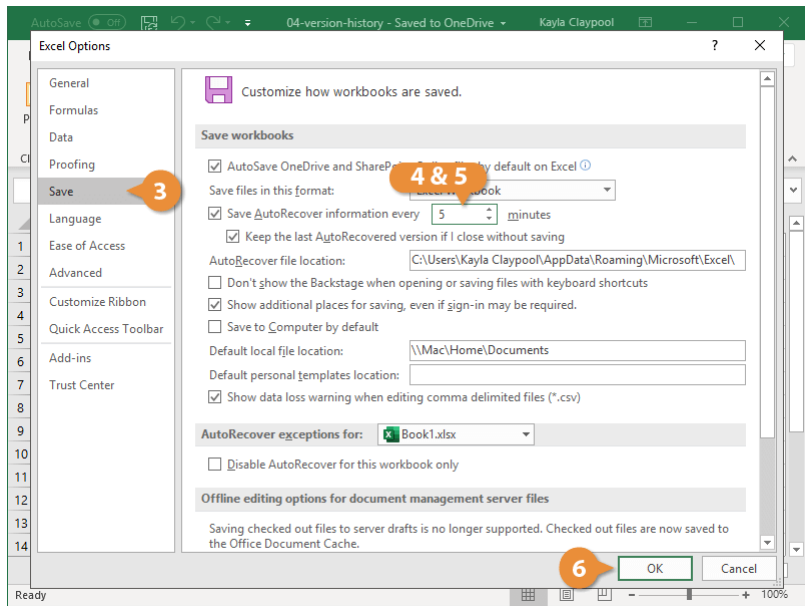
When the AutoRecover feature is enabled, a backup copy of the workbook is saved every 10 minutes (its default setting). However, you can change the AutoRecover save interval to occur more or less frequently.

- 1 Click the **File** tab.
- 2 Click **Options**.
The Excel Options dialog box appears.



- 3 Click **Save**.
- 4 Click in the **Minutes** field.
- 5 Enter a value for how frequently you'd like to save AutoRecover information.
- 6 Click **OK**.

Even with Excel's document recovery features, the best way to ensure that you don't lose much information if your computer freezes up is to save your work regularly.



Recover Unsaved Workbook Versions

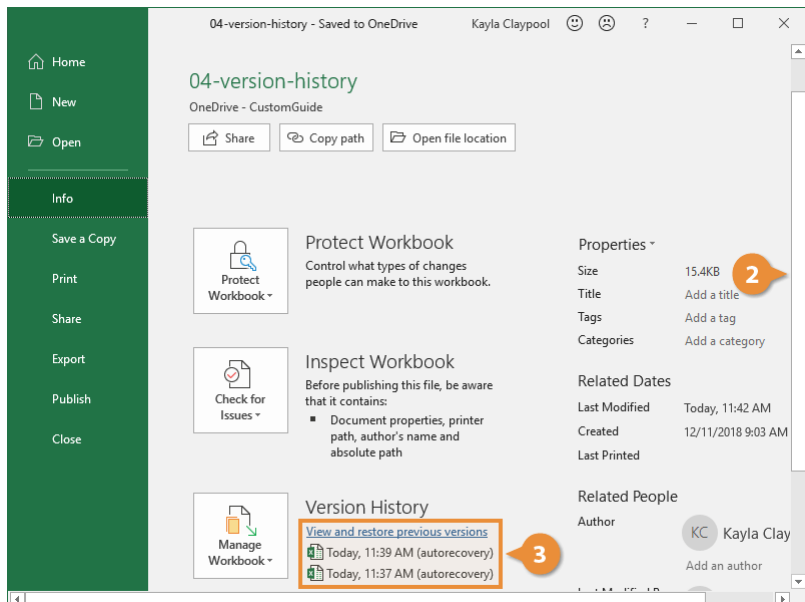
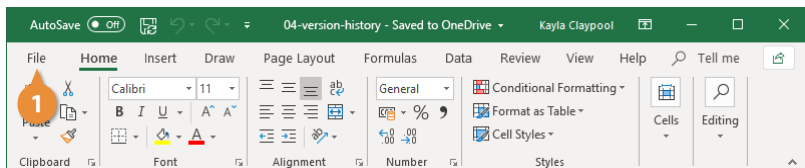
If AutoRecover is enabled in Excel, you don't have to do anything to make it work. Any available unsaved versions can be found in the Backstage view.

- 1 Click the **File** tab.
- 2 If needed, scroll to the Version history section.
- 3 Select an autosaved version of the file in the list of recovered files.

Tip: If the version you need to recover isn't in the recent list, click the **Manage Workbook** button and select **Recover Unsaved Workbooks** to see if the version you need is saved there.

The previous version of the file opens. At the top, you see a notification that this is an AutoSaved version.

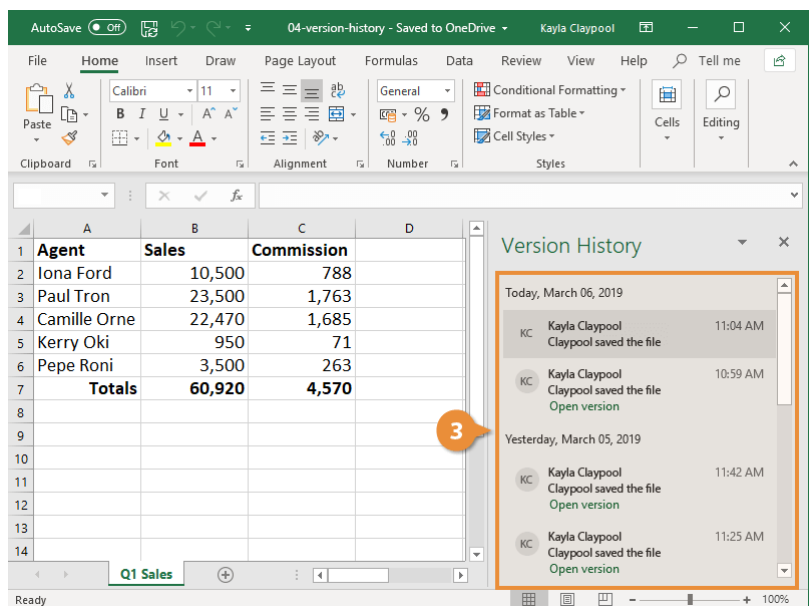
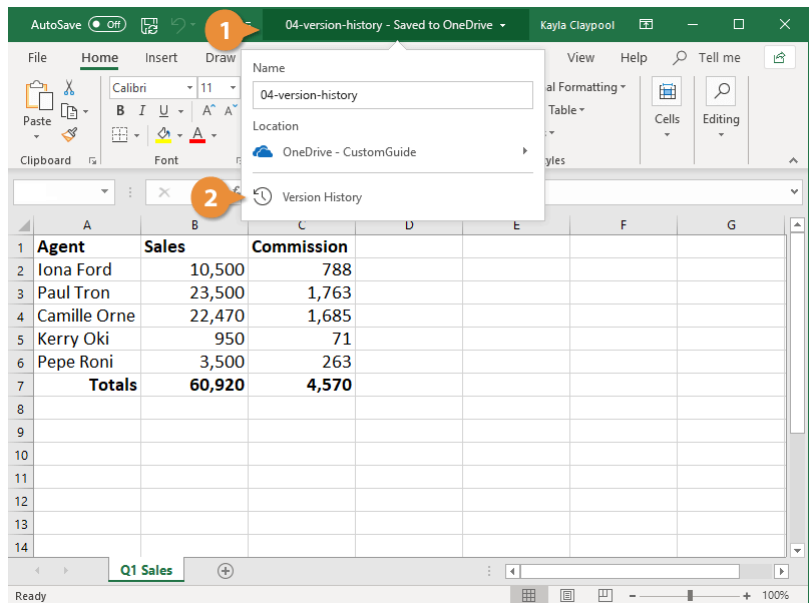
The file is restored to the previous version.



Online Version History

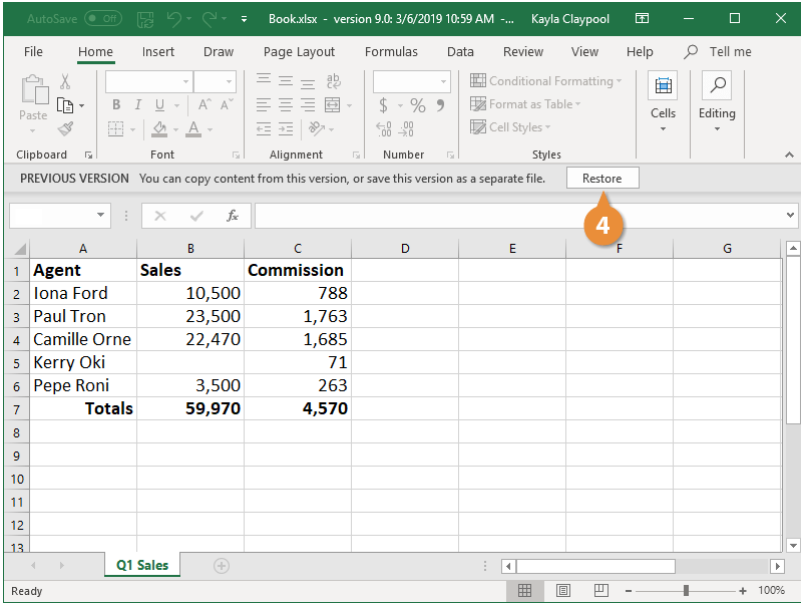
If this is a file that's saved online, there's another way to view version history.

- 1 Click the **Title Bar** button.
- 2 Select **Version History**.
Here you see all the changes that have been made to the file, either by you or anyone the file is shared with.
- 3 Click **Open version** for the file you want to restore.



4

Save an additional copy of the file or click the **Restore** button.



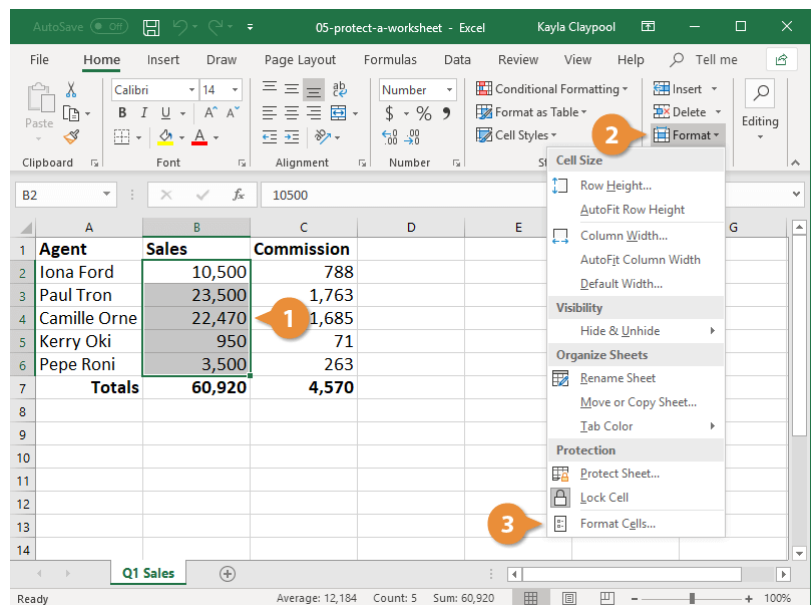
Protect a Worksheet

Prevent unauthorized changes to data by protecting worksheets. In a protected worksheet, none of its contents can be changed. However, it's possible to set up the worksheet so that only certain cells and elements can be changed after it's protected.

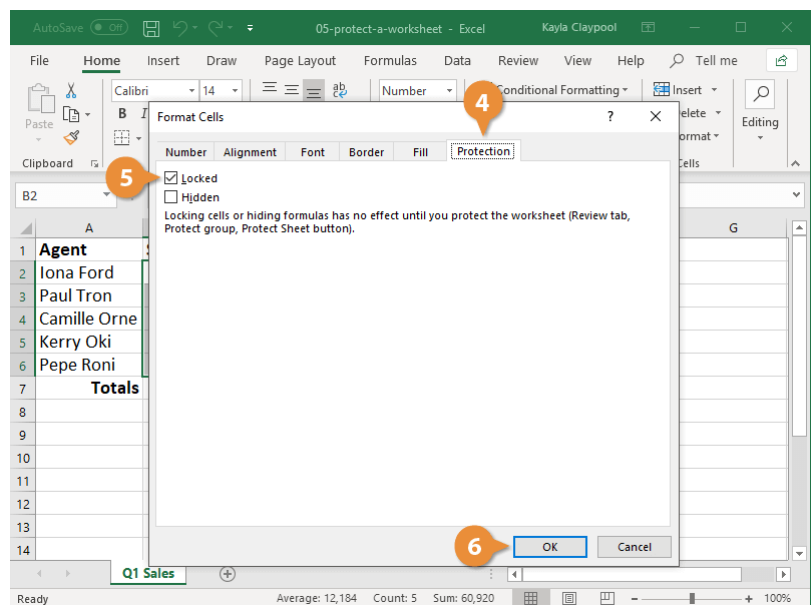
Lock or Unlock Cells

By default, cells are locked once a worksheet is protected. If there are cells that users should be able to change after a worksheet has been protected, make sure to unlock them before you protect the worksheet.

- 1 Select the cells you want to unlock.
- 2 Click the **Format** button on the Home tab.
- 3 Select **Format Cells**.
- 4 Click the **Protection** tab.
- 5 Clear the **Locked** check box.
Shortcut: You can also toggle the lock on and off by clicking the **Format** button and selecting **Lock Cell**.
Locking and unlocking cells only takes effect once the sheet is protected.
- 6 Click **OK**.



The selected cells will now stay unlocked and editable by others after the sheet is protected.

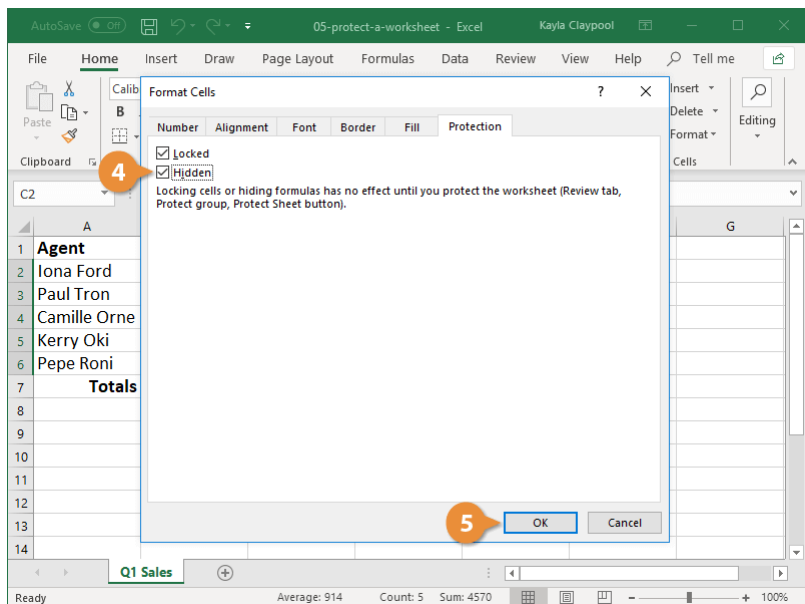
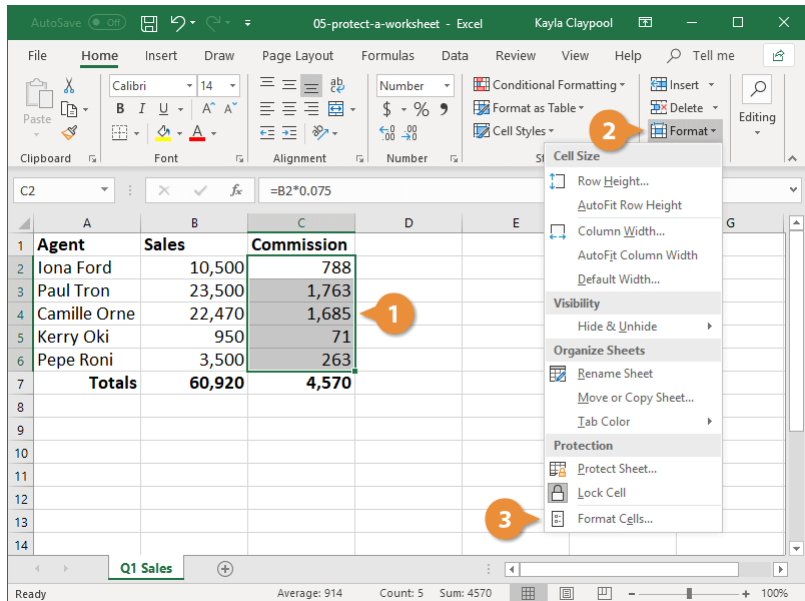


Hide Formulas

You can also prevent certain formulas from being displayed once the worksheet has been protected.

- 1 Select the cells with a formula you want to hide.
- 2 Click the **Format** button on the Home tab.
- 3 Select **Format Cells**.
- 4 Select the **Hidden** check box.
- 5 Click **OK**.

Remember, even if cells are locked and hidden, it doesn't take effect until the worksheet is protected.



Protect a Worksheet

Once you finish preparing the worksheet, it's time to protect it.

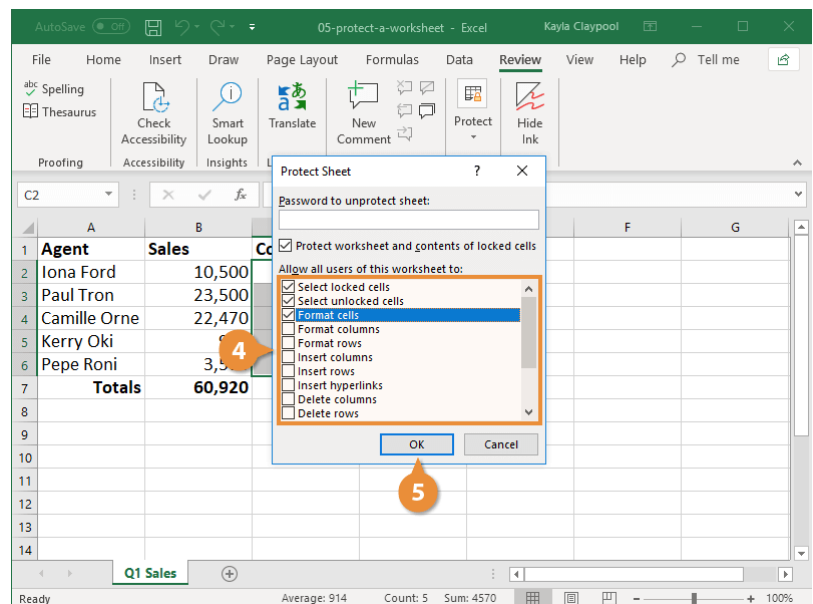
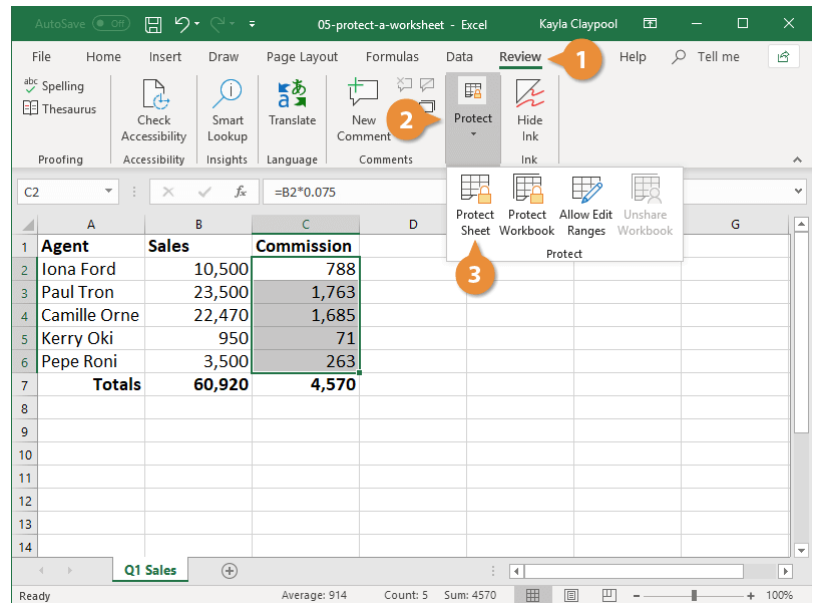
- 1 Click the **Review** tab.
- 2 If necessary, expand the **Protect** group.
- 3 Click the **Protect Sheet** button.

Shortcut: You can protect or unprotect a worksheet by right-clicking the sheet tab and selecting **Protect Sheet** or **Unprotect Sheet** from the contextual menu.

- 4 Select what you want to protect.

A password isn't necessary to protect the sheet; however, if one is not entered, anyone can unprotect it.

- 5 Click **OK**.



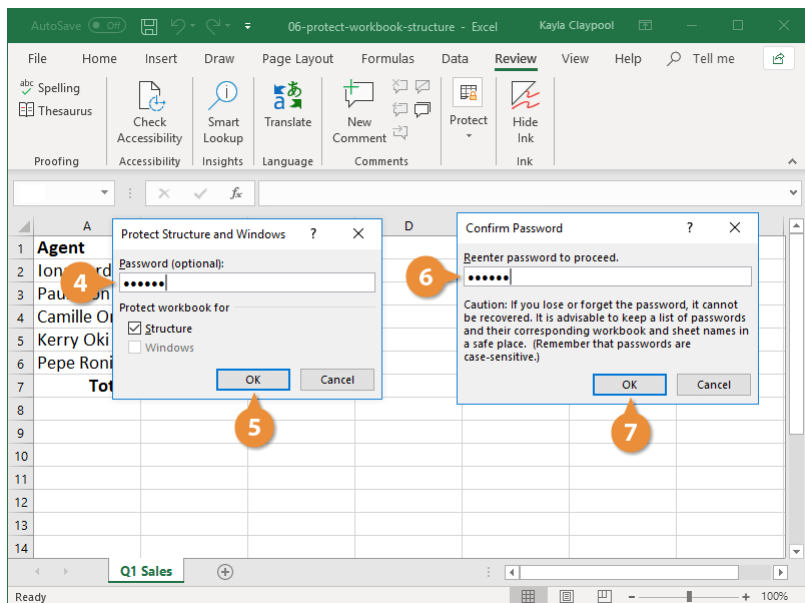
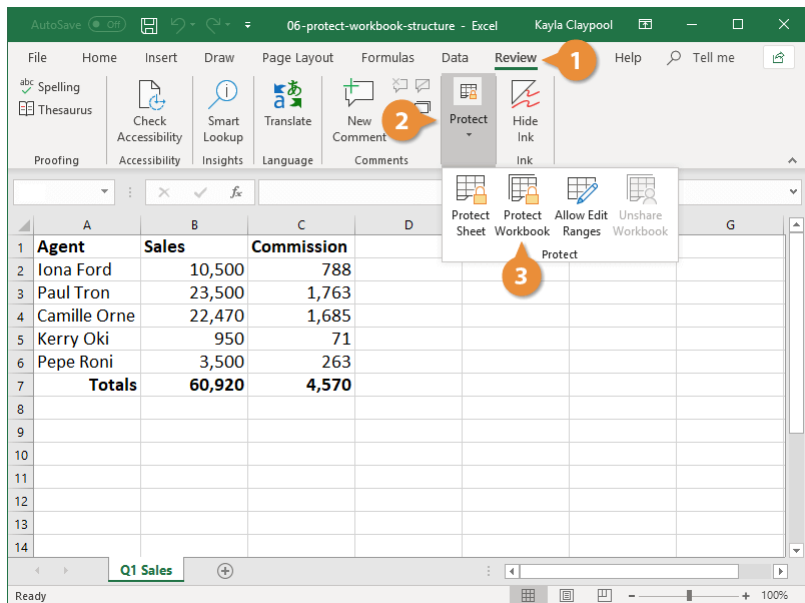
Protect Workbook Structure

You can secure a workbook's structure against changes, such as sheets being added or deleted. You can also protect a workbook's windows so that they are the same size and in the same position every time the workbook is opened.

Protect Workbook Structure

- 1 Click the **Review** tab.
- 2 If necessary, expand the **Protect** group.
- 3 Click the **Protect Workbook** button.
- 4 Type a password, if desired.
- 5 Click **OK**.
- 6 Reenter the password.
- 7 Click **OK**.

The workbook is now protected. When you right-click the sheet tab, all the options for changing the structure are unavailable.

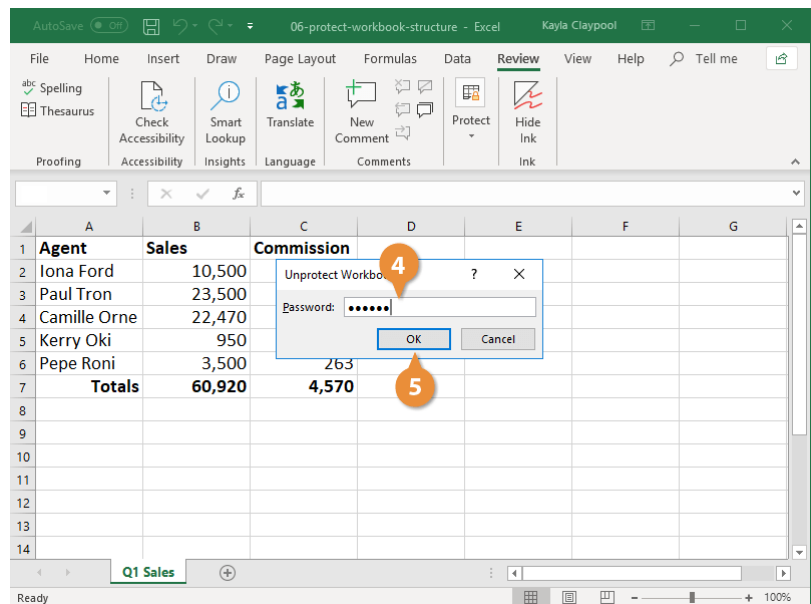
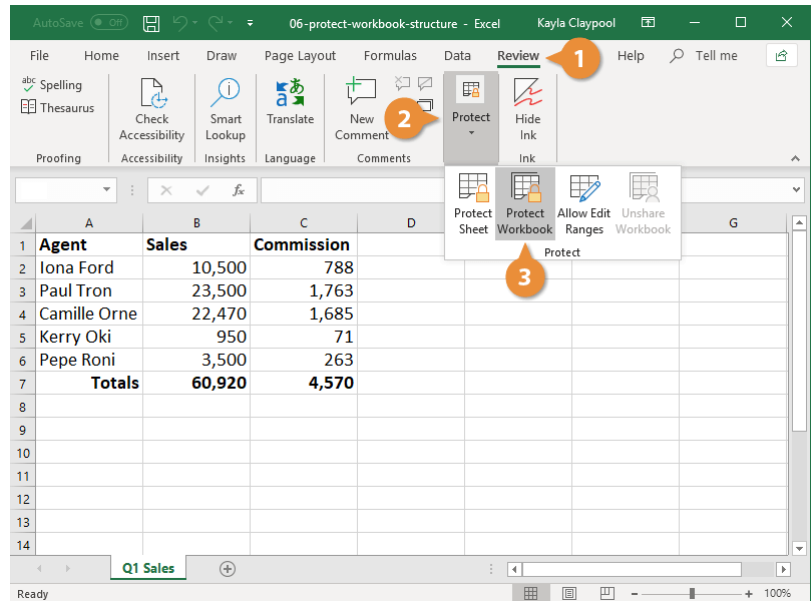


Turn Off Workbook Protection

If you need to turn off workbook protection, you can do so at any time.

- 1 Click the Review tab.
- 2 If necessary, expand the **Protect** group.
- 3 Click the **Protect Workbook** button.
- 4 Enter the password.
- 5 Click **OK**.

The protection is removed, and the workbook is editable again.

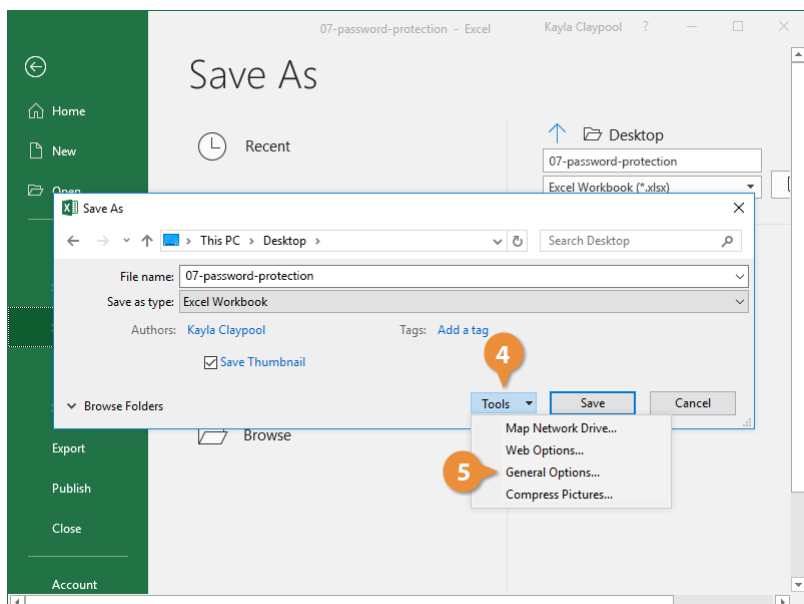
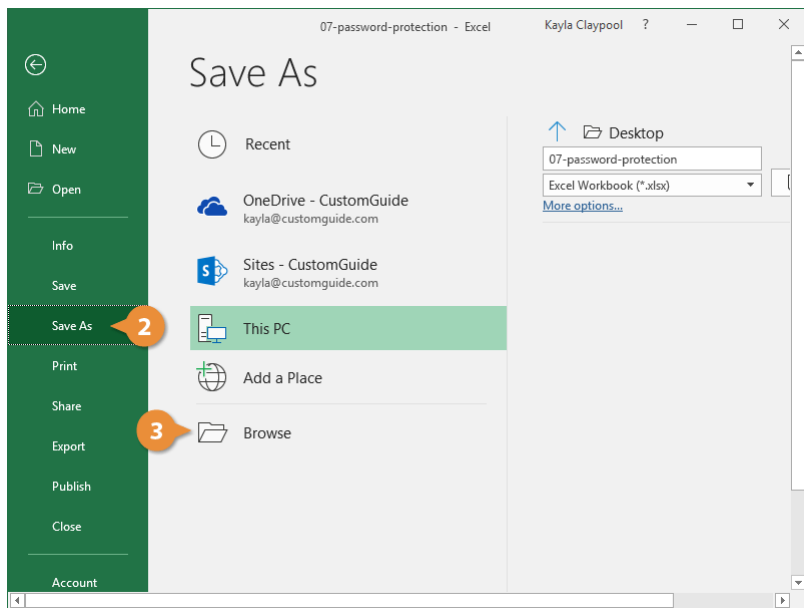
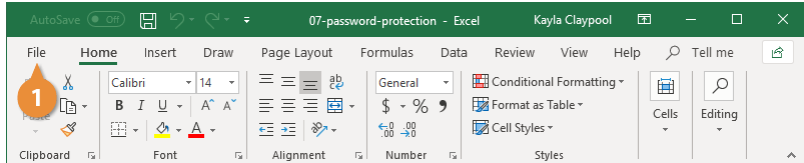


Password Protection

When a password is added to a workbook, only authorized users with the password can view or modify it.

Add Password Protection

- 1 Click the **File** tab.
- 2 Click **Save As**.
- 3 Click **Browse**.
- 4 Click **Tools**.
- 5 Select **General Options**.



6

Enter passwords in the password text boxes as desired.

- **Password to open:** Enter a password here to require users to enter a password to view the workbook. This password is encrypted, making it more secure.
- **Password to modify:** Enter a password here to require users to enter a password to save changes to the workbook. This password is not encrypted.

You can enter just one or both passwords, depending on the type of protection you want for the workbook. Passwords are case-sensitive.

Tip: Check the **Always create backup** box to save a copy without a password in case the password is forgotten.

7

Click **OK**.

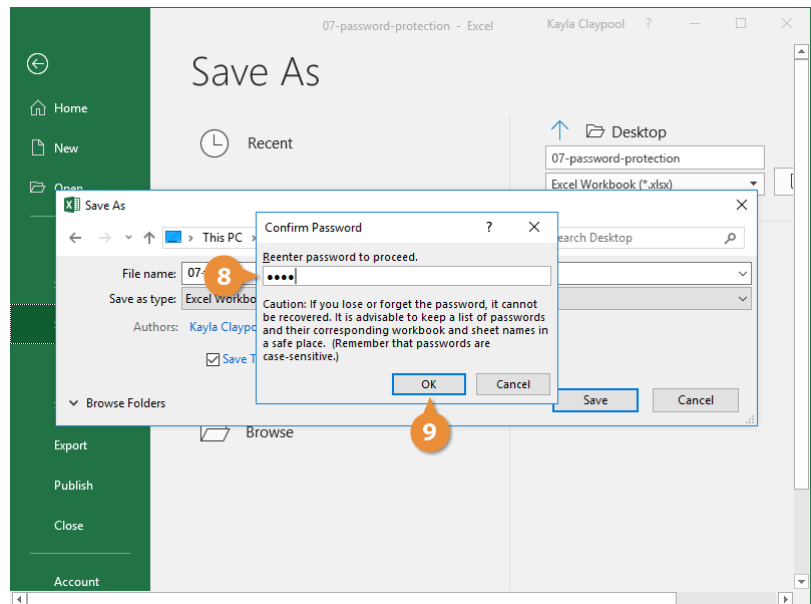
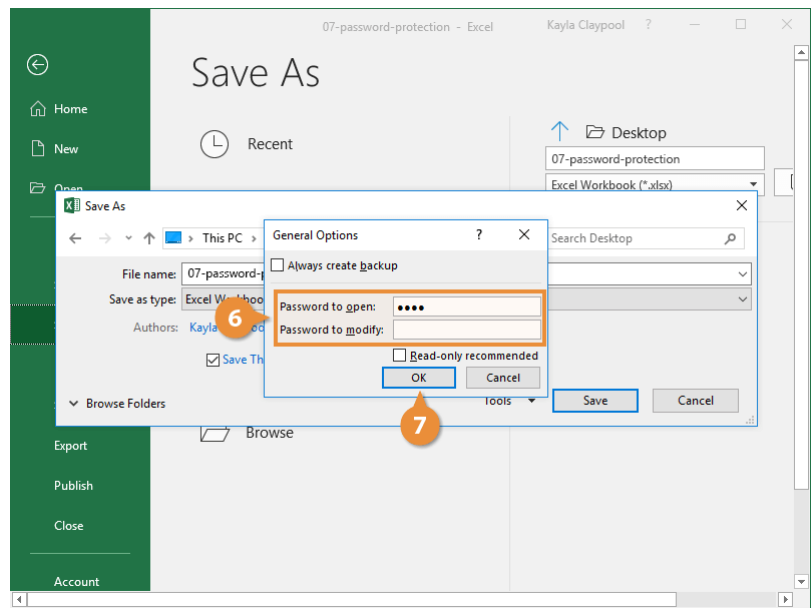
8

Reenter the password.

Tip: Type a secure password that can't easily be guessed by other users, and be sure to write down your password in a safe location.

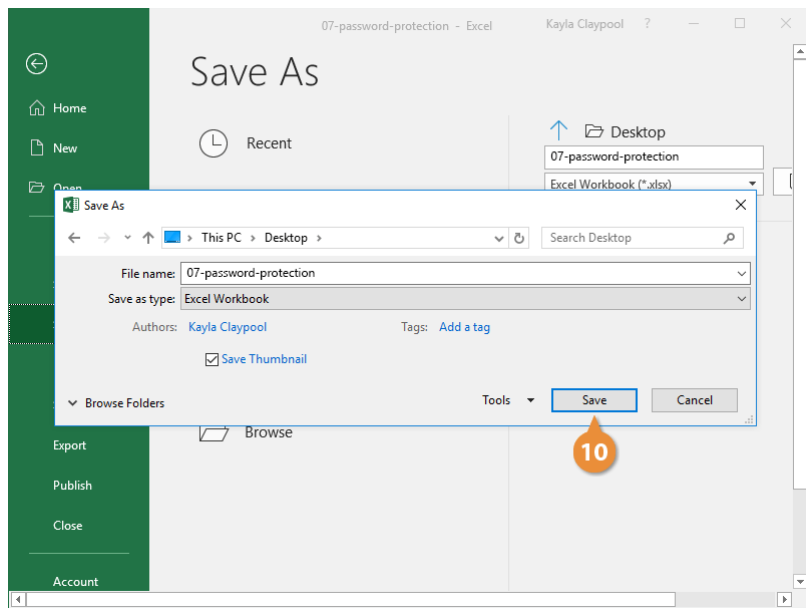
9

Click **OK**.



10 Click **Save**.

The workbook is now password protected. To change or remove a password, repeat the workbook protection steps and simply change or delete the password in the General Options dialog box.



Custom**Guide**

www.customguide.com

info@customguide.com

888.903.2432