Microsoft® Office

Excel 2010

UNIVERSITY OF VIRGINIA HEALTH SYSTEM

Table of Contents

Introducing CustomGuide Courseware

Thank you for choosing CustomGuide courseware as the solution to your training needs. A proven leader in the computer training industry, CustomGuide has been the key to successful training for thousands of students and instructors across the globe.

This manual is designed for computer users of all experience levels. Novice users can use it to learn skills such as formatting text, while advanced users can use it to create their own templates.

All this information is quickly accessible. Lessons are broken down into basic step-by-step instructions that answer "how-to" questions in minutes. You can print a complete 300-page training manual or a single page of instructions.

Here's how a CustomGuide manual is organized:

Chapters

Each manual is divided into several chapters. Aren't sure if you're ready for a chapter? Look at the table of contents that appears at the beginning of each chapter. It will tell you the name of each lesson and subtopic included in the chapter.

Lessons

Each chapter contains lessons on related topics. Each lesson explains a new skill or topic and contains an exercise and exercise file to give you hands-on-experience. These skills can also be practiced using CustomGuide Online Learning.

Review

A review is included at the end of the manual. Use these quiz questions and answers to assess how much you've learned.

How It Works

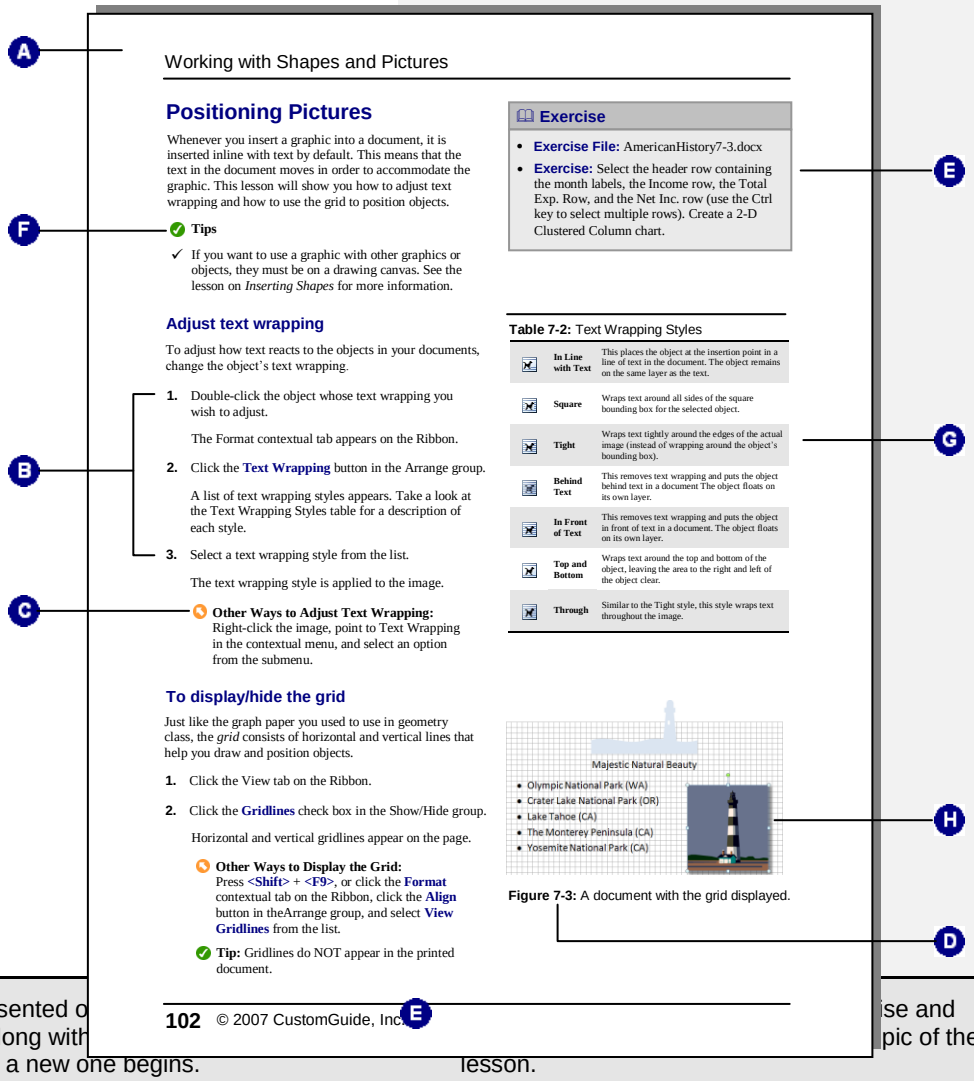
1. **Open Microsoft Word**
   Our customizable courseware is provided as simple-to-use, editable Microsoft Word documents—if you can use Microsoft Word you can create your own training materials in minutes!
2. **Select Your Topics**
   Select the content you need from our award-winning courseware library. You can even mix and match topics between titles, such as Microsoft Outlook and Microsoft Word.
3. **Customize**
   Arrange topics in the order you want—the courseware automatically updates to reflect your changes. Add your organization's name and logo for a professional "in-house" look.
4. **Print and Distribute**
   Print as many copies as you need at your site, without paying any per-unit royalties or maintaining physical inventories. You can print single-page handouts, a group of related lessons, or a complete manual. It's fast, convenient, and very affordable.
5. **Teach and Learn**
   You'll love having your own customized training materials, and your users will appreciate the colorful illustrations, down-to-earth writing style, and the convenience of having a reference guide that they can use in or out of the classroom.

3rd Generation Courseware: What's New?

CustomGuide is pleased to introduce 3rd generation courseware. Completely redesigned from years of customer feedback, 3rd generation courseware features a streamlined design that is easier to customize and use as a reference tool. Take a look at the table below for more information regarding these features.

Streamlined design	Featuring a professional-looking, easy-to-read design, 3rd generation courseware appeals to instructors, students and individual users alike.
Exercise Notes	A new Exercise Notes section appears at the top of each lesson. Rather than practicing the topic step by step through the lesson as in 2nd generation courseware, the topic can be practiced using the exercise file and exercise described here.
Table of Contents	In addition to the Table of Contents found at the beginning of each courseware title, 3rd generation courseware includes a Table of Contents at the beginning of each *chapter*, making it even easier to locate the lessons you need.
Smart Quizzes	The Quiz section, located at the back of the book, automatically updates itself when the manual is customized. For example, if you remove a lesson regarding cutting and pasting text, there will be no questions in the Quiz section that relate to cutting and pasting text.
Easier customization	The design of 3rd generation is simplified, which makes it easier to customize. All you have to do is click and drag or copy and paste, or press the <Delete> key to remove a lesson, and voila; you're done!
Use as a reference tool	3rd generation courseware breaks tasks down into basic step-by-step instructions and can be used as a virtual help desk, answering "how-to" questions in minutes.

Courseware Features



Working with Shapes and Pictures

Positioning Pictures

Whenever you insert a graphic into a document, it is inserted inline with text by default. This means that the text in the document moves in order to accommodate the graphic. This lesson will show you how to adjust text wrapping and how to use the grid to position objects.

Tips

✓ If you want to use a graphic with other graphics or objects, they must be on a drawing canvas. See the lesson on *Inserting Shapes* for more information.

Adjust text wrapping

To adjust how text reacts to the objects in your documents, change the object's text wrapping.

1. Double-click the object whose text wrapping you wish to adjust.

   The Format contextual tab appears on the Ribbon.

2. Click the **Text Wrapping** button in the Arrange group.

   A list of text wrapping styles appears. Take a look at the Text Wrapping Styles table for a description of each style.

3. Select a text wrapping style from the list.

   The text wrapping style is applied to the image.

Other Ways to Adjust Text Wrapping: Right-click the image, point to Text Wrapping in the contextual menu, and select an option from the submenu.

To display/hide the grid

Just like the graph paper you used to use in geometry class, the *grid* consists of horizontal and vertical lines that help you draw and position objects.

1. Click the View tab on the Ribbon.
2. Click the **Gridlines** check box in the Show/Hide group.

   Horizontal and vertical gridlines appear on the page.

Other Ways to Display the Grid: Press **<Shift>** + **<F9>**, or click the **Format** contextual tab on the Ribbon, click the **Align** button in theArrange group, and select **View Gridlines** from the list.

Tip: Gridlines do NOT appear in the printed document.

Exercise

- **Exercise File:** AmericanHistory7-3.docx
- **Exercise:** Select the header row containing the month labels, the Income row, the Total Exp. Row, and the Net Inc. row (use the Ctrl key to select multiple rows). Create a 2-D Clustered Column chart.

Table 7-2: Text Wrapping Styles

In Line with Text	This places the object at the insertion point in a line of text in the document. The object remains on the same layer as the text.
Square	Wraps text around all sides of the square bounding box for the selected object.
Tight	Wraps text tightly around the edges of the actual image (instead of wrapping around the object's bounding box).
Behind Text	This removes text wrapping and puts the object behind text in a document The object floats on its own layer.
In Front of Text	This removes text wrapping and puts the object in front of text in a document. The object floats on its own layer.
Top and Bottom	Wraps text around the top and bottom of the object, leaving the area to the right and left of the object clear.
Through	Similar to the Tight style, this style wraps text throughout the image.

Figure 7-3: A document with the grid displayed.

A	Lessons are presented o… you can follow along with… lesson ends and a new one begins.		…ise and …pic of the lesson.
B	Clear step-by-step instructions answer "how-to" questions. Anything you need to click appears **like this**.	F	Tips let you know more information about a specific step or topic as a whole.
C	Whenever there is more than one way to do something, the most common method is presented in the numbered step, while the alternate methods appear beneath.	G	Tables provide summaries of the terms, toolbar buttons, and options covered in the lesson.
D	The table of contents, index, tables, figures, and quiz questions automatically update to reflect any changes you make to the courseware.	H	Icons and pictures show you what to look for as you follow the instructions.

1

Program Fundamentals

Microsoft Excel is a powerful spreadsheet program that allows you to make quick and accurate numerical calculations and helps you to make your data look sharp and professional. The uses for Excel are limitless: businesses use Excel for creating financial reports, scientists use Excel for statistical analysis, and families use Excel to help manage their investment portfolios.

If you're moving from Excel 2003 or earlier to Excel 2010, you'll see that Excel has undergone a major redesign. You'll still be familiar with much of the program's functionality, but you'll notice a completely new user interface and many new features that have been added to make using Excel more efficient.

This chapter is an introduction to working with Excel. You'll learn about the main parts of the program screen, how to give commands, use help, and about new features in Excel 2010.

Starting Excel 2010

In order to use a program, you must start—or launch—it first.

Windows Vista and Windows 7

1. Click the **Start** button.

   The Start menu appears.

2. Click **All Programs**.

   The left pane of the Start menu displays the programs and menus installed on your computer.

3. Click **Microsoft Office**.

4. Select **Microsoft Office Excel 2010**.

   The Excel 2010 program screen appears.

   Other Ways to Launch a Program:
   Click the **Start** button and type the program name in the Search box. Click the program in the search results to launch it.

Tips

✓ If you use Excel 2010 frequently, you might consider pinning it to the Start menu. To do this, right-click **Microsoft Office Excel 2010** in the All Programs menu and select **Pin to Start Menu**.

Windows 7 users can also pin a program to the taskbar. To do this, right-click the **Excel** button in the taskbar and select **Pin this program to taskbar** from the contextual menu.

Exercise

- **Exercise File:** None required.
- **Exercise:** Start the Microsoft Office Excel 2010 program.

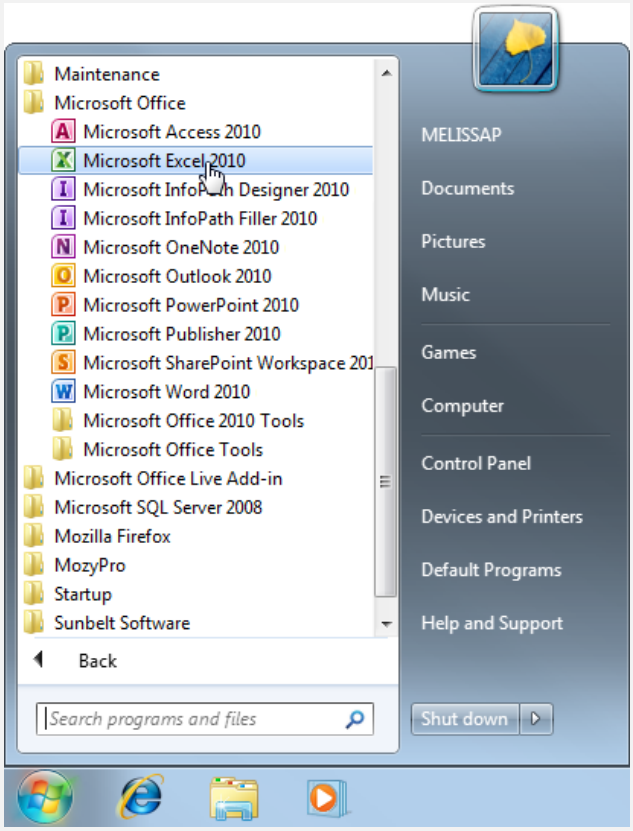


Figure 1-1: The All Programs menu in Windows 7.

What's New in Excel 2010

Excel 2010 is very different from previous versions. The table below gives you an overview of what to expect.

Exercise

- **Exercise File:** None required.
- **Exercise:** Review the new features in Microsoft Office Excel 2010.

Table 1-1: What's New in Excel 2010

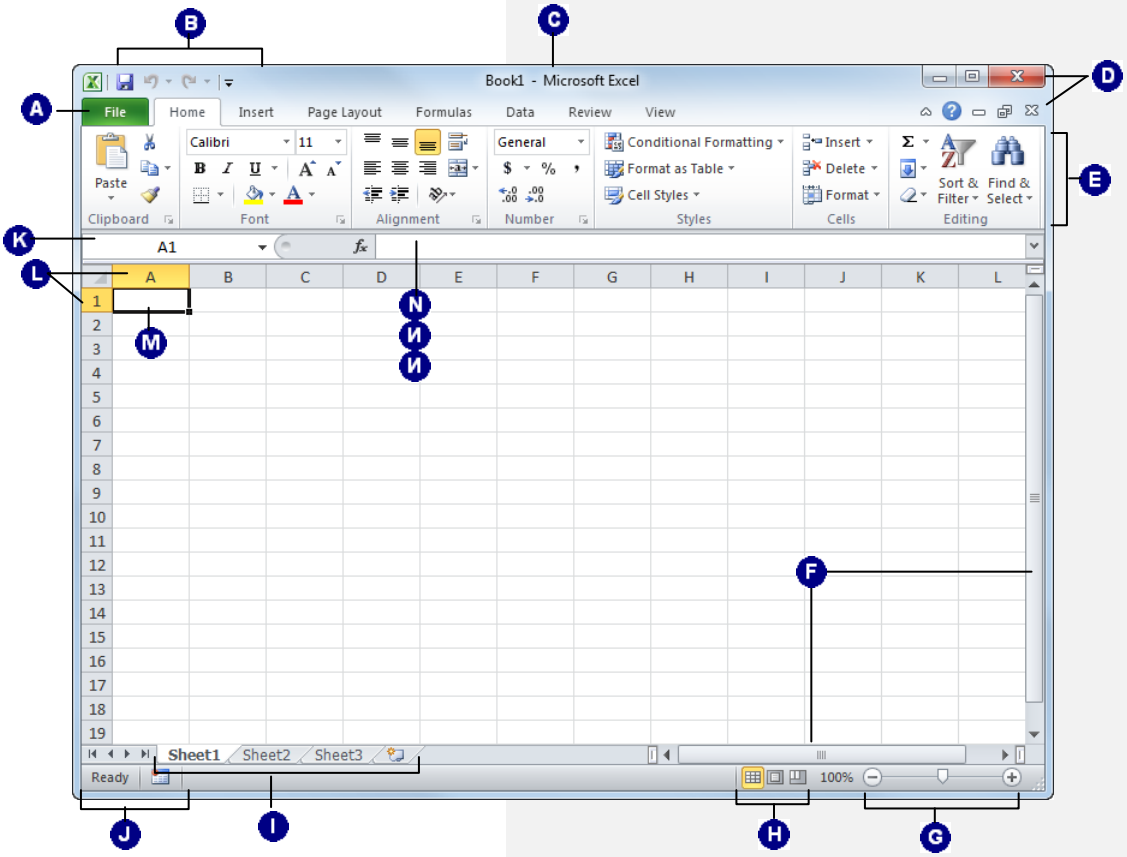
Customizable Ribbon	The Ribbon makes all the commands needed to work with a program readily available. The Ribbon was introduced in Excel 2007, but has been improved in Excel 2010: now you can create your own tabs and groups for the Ribbon. You can also rename or change the order of default tabs and groups.
Backstage View	Backstage view is where you open, save, print, share, and manage your files and program options. To access Backstage view, click the File tab on the Ribbon.
Workbook Management	Three new tools help you manage, protect, and share your workbooks: **Recover previous versions** lets you revert to an earlier version of your workbook. **Protected view** helps protect your computer from online attacks when opening files from the Internet. The **Trusted documents** feature remembers which files you trust so you aren't prompted each time the file is opened.
Paste with Live Preview	Allows you to preview how pasted content will look with various paste options before you paste it.
More Themes and Styles	Predefined styles and themes let you change the overall look and feel of a worksheet in just a few clicks. Now Office 2010 has even more themes you can apply to your documents.
Improved Picture-Editing Tools	There are many new ways to edit pictures and images in your documents. **Insert screen shots:** You can take a screen shot or screen clipping and add it to your documents. **Improved SmartArt:** Now you can add SmartArt that uses photographs. **Other tools:** New picture editing tools let you refine the brightness, contrast, or sharpness of a picture; add artistic effects; and control cropping and compression.
Accessibility Checker	The Accessibility Checker lets you find and fix issues that can make it difficult for people with disabilities to read or interact with your workbook.
Language Tools	Improved language tools let multilingual users set preferences for language settings in Office 2010.
Better conditional formatting	Conditional formatting allows you to analyze Excel data with just a few clicks. New icon sets and formatting options for data bars are available to add to conditional formatting in your documents.
Improved charts	**Sparklines** are tiny charts that fit within a cell. They are useful for showing a snapshot of your data in a small amount of space. **Expanded charting limits:** Now the number of data points in a data series is only limited by available memory. **Double-click to format charts:** In Excel 2010, you can instantly access formatting options by double-clicking a chart element. **Macro recording for chart elements:** You can use the macro recorder to record formatting changes to charts and other objects.
Improved PivotTables	PivotTables are easier to use and are more responsive in Excel 2010. Multi-threading to speed up performance; the ability to fill down labels; and new search features are some of the enhancements in Excel 2010. **Slicers** are a visual way to filter the data in PivotTables. When a slicer is inserted, you use buttons to filter the data and display what you need. Slicers also make it easy to see which filters are applied.
Improved functions	Excel 2010 includes a set of more accurate functions for statistics. Some existing functions have also been renamed so they better describe what they do.
Improved filtering	A new search filter helps you to find what you need in large worksheets quickly. Search filters can be used in tables, PivotTables, and PivotCharts. AutoFilter buttons also remain visible as you scroll down in a table.
Equations in text boxes	Excel 2010's built-in Equation Tools make it easier to write and edit equations by keeping them inside text boxes on a worksheet.

Understanding the Excel Program Screen

The Excel 2010 program screen may seem confusing and overwhelming at first. This lesson will help you become familiar with the Excel 2010 program screen as well as the new user interface.

Exercise Notes

- **Exercise File:** None required.
- **Exercise:** Understand and experiment with the different parts of the Microsoft Office Excel 2010 screen.



A	**File tab:** Contains basic file management commands—such as New, Open, Save, and Close—and program options.	H	**View buttons:** Use these buttons to quickly switch between Normal, Page Layout, and Page Break Preview views.
B	**Quick Access Toolbar:** Contains common commands such as Save and Undo. You can add more commands as well.	I	**Worksheet tabs:** Workbooks have three worksheets by default. You can move from one worksheet to another by clicking the worksheet tabs.
C	**Title bar:** Displays the name of the workbook you are working on and the name of the program you are using.	J	**Status bar:** Displays messages and feedback on the current state of Excel. Right-click the status bar to configure it.
D	**Close button:** Click the close button in the Title bar to exit the Excel program entirely, or click the close button in the Ribbon to close only the current workbook.	K	**Name box:** Displays the active cell address or object name. Click the list arrow to enter formulas.
E	**Ribbon:** The tabs and groups on the Ribbon replace the menus and toolbars found in previous versions of Excel.	L	**Row and column headings:** Cells are organized and referenced by row and column headings (for example, cell A1).
F	**Scroll bars:** Use the vertical and horizontal scroll bars to view different parts of the worksheet.	M	**Active cell:** You can enter or edit data in the active cell.
G	**Zoom slider:** Click and drag the slider to zoom in or out of a window. You can also use the + and – buttons.	N	**Formula Bar:** Allows you to view, enter, and edit data in the active cell. Displays values or formulas in the cell.

Giving Commands

Excel 2010 provides easy access to commands through the Ribbon. The Ribbon keeps commands visible while you work instead of hiding them under menus or toolbars.

Ribbon

The Ribbon is made up of three basic components: tabs, groups, and buttons. It is the primary way to give commands in Excel.

Tabs: Commands are organized into *tabs* on the Ribbon. Each tab contains a different set of commands. There are different types of tabs:

- **Command tabs:** These tabs appear by default whenever you open the Excel program. In Excel 2010, the Home, Insert, Page Layout, Formulas, Data, Review, and View tabs appear by default.
- **Contextual tabs:** Contextual tabs appear whenever you perform specific task, or when a specific object is selected. The tabs offer commands relative to only that object or task. For example, whenever you select an image, the Picture Tools tab appears on the Ribbon.

Groups: The commands found on each tab are organized into *groups* of related commands. For example, the Font group contains commands used for formatting fonts. Click the Dialog Box Launcher ( ) in the bottom-right corner of a group to display even more commands. Some groups also contain galleries that display several formatting options.

> **Trap:** Based on the size of the program window, Excel changes the appearance and layout of the commands within the groups.

Buttons: One way to issue a command is by clicking its *button* on the Ribbon. Buttons are the smallest element of the Ribbon. Click a button to give a command.

Tips

✓ You can hide the Ribbon so that only tab names appear, giving you more room in the program window. To do this, double-click the currently displayed command tab. Or, right-click a Ribbon tab and select **Minimize Ribbon** from the contextual menu. To display the Ribbon again, click any tab.

Exercise

- **Exercise File:** None required.
- **Exercise:** Click each tab on the Ribbon to view its commands. Click the File tab to view Backstage view.

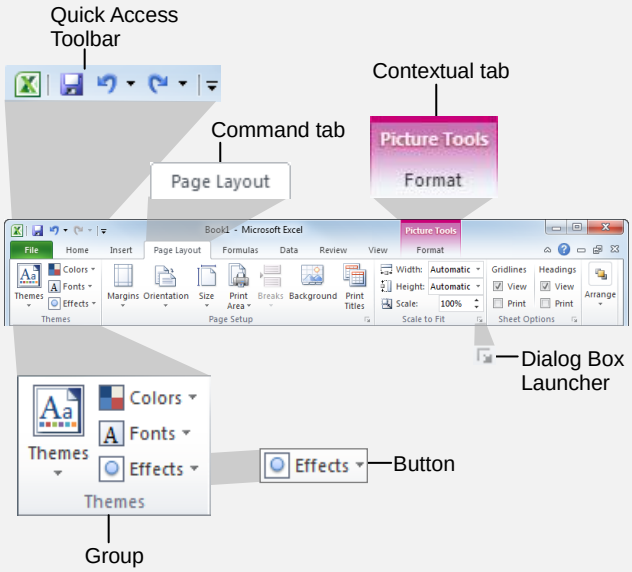


Figure 1-2: Elements of the Ribbon.

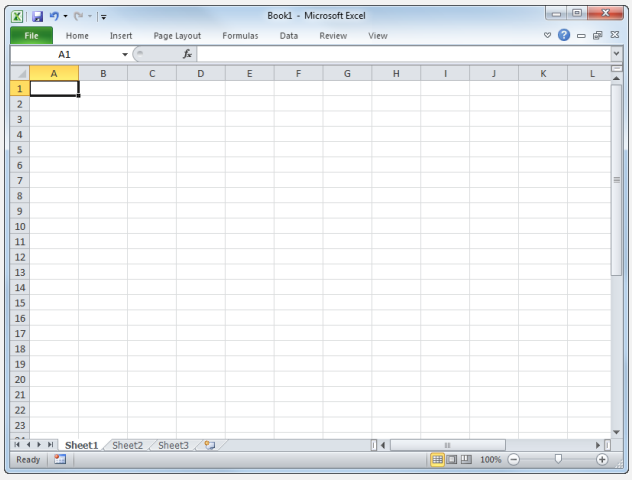


Figure 1-3: Hiding the Ribbon gives you more room in the program window.

File tab

The *File tab* appears in the upper-left corner of the program window. When clicked, it opens *Backstage view*, which is where you find commands for basic file management, including New, which creates a new file; Open, which opens an existing file; Save, which saves the currently opened file; and Close, which closes the currently opened file. This is also where you find commands for controlling program options and sharing.

Tips

✓ The File tab replaces the File menu and Office Button found in previous versions of Excel.

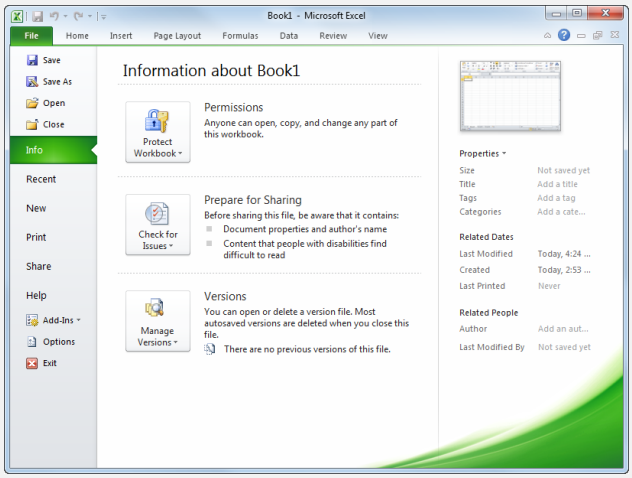


Figure 1-4: The Info tab in Backstage view.

Quick Access Toolbar

The *Quick Access Toolbar* appears to the right of the File tab and provides easy access to the commands you use most frequently. By default, the Save, Undo, and Redo buttons appear on the toolbar; however, you can customize this toolbar to meet your needs by adding or removing buttons.

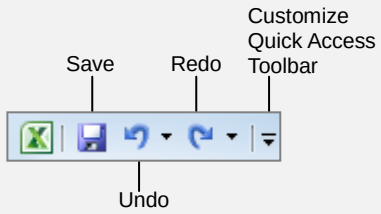


Figure 1-5: The Quick Access Toolbar.

Using Command Shortcuts

Command shortcuts provide other ways to give commands in Excel. Shortcuts can be a time-saving and efficient alternative to the Ribbon. Use shortcuts for the commands you use most frequently.

Keystroke shortcuts

Without a doubt, *keystroke shortcuts* are the fastest way to give commands in Excel. They're especially great for issuing common commands, such as saving a workbook.

In order to issue a command using a keystroke shortcut, you simply press a combination of keys on your keyboard. For example, rather than clicking the Copy button on the Ribbon to copy a cell, you could press and hold the copy keystroke shortcut, <Ctrl> + <C>.

Contextual menus

A *contextual menu* displays a list of commands related to a specific object or area. To open a contextual menu:

1. Right-click an object or area of the worksheet or program screen.

   A contextual menu appears, displaying commands that are relevant to the object or area that you right-clicked.

2. Select an option from the contextual menu, or click anywhere outside the contextual menu to close it without selecting anything.

Mini Toolbar

The *Mini Toolbar* appears when you select text or data within a cell or the formula bar, and contains common text formatting commands.

1. Select text or data within a cell or the formula bar.

   The Mini Toolbar appears near the text or data you selected.

   Trap: Sometimes the Mini Toolbar can be hard to see due to its transparency. To make the Mini Toolbar more visible, point to it.

   Tip: To close the Mini Toolbar while text is still selected, press **<Esc>**.

2. Click a button on the Mini Toolbar.

   The command is given in Excel.

Exercise

- **Exercise File:** None required.
- **Exercise:** Memorize some common keystroke shortcuts.

  Open a contextual menu in the main part of the program window.

Table 1-2: Common Keystroke Shortcuts

<Ctrl> + <O>	Opens a workbook.
<Ctrl> + <N>	Creates a new workbook.
<Ctrl> + <S>	Saves the current workbook.
<Ctrl> + <P>	Prints the worksheet.
<Ctrl> + <B>	Toggles bold font formatting.
<Ctrl> + <I>	Toggles italic font formatting.
<Ctrl> + <C>	Copies the selected cell, text or object.
<Ctrl> + <X>	Cuts the selected cell, text or object.
<Ctrl> + <V>	Pastes the selected cell, text or object.
<Ctrl> + <Home>	Moves the cell pointer to the beginning of the worksheet.
<Ctrl> + <End>	Moves the cell pointer to the end of the worksheet.

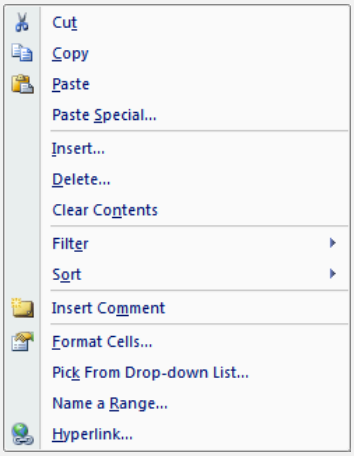


Figure 1-6: A contextual menu.

Figure 1-7: The Mini Toolbar.

Tips

- ✓ If you don't want the Mini Toolbar to appear every time you select text, click the **File** tab and click **Options**. Click the **Personalize** category, uncheck the **Show Mini Toolbar on selection** check box, and click **OK**.
- ✓ A larger version of the Mini Toolbar and a contextual menu appear when you right-click an object or area of the worksheet window.

Key Tips

Key Tips appear whenever you press the <Alt> key. You can use Key Tips to perform just about any action in Excel, without ever having to use the mouse.

To issue a command using a Key Tip, first press the <Alt> key. Tiny letters and numbers, called *badges*, appear on the Quick Access Toolbar, and all of the tabs on the Ribbon. Depending on the tab or command you want to select, press the letter or number key indicated on the badge. Repeat this step as necessary until the desired command has been issued.

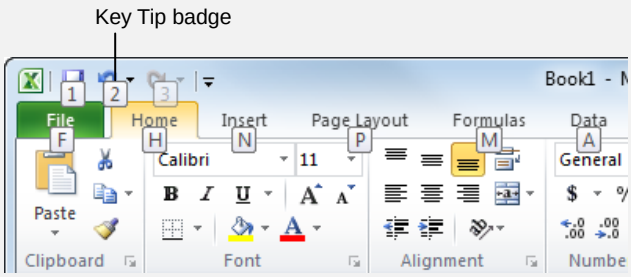


Figure 1-8: Press the <Alt> key to display Key Tips.

Creating a New Workbook

Creating a new workbook is one of the most basic commands you need to know in Excel. A new workbook automatically appears upon starting Excel, but it's also helpful to know how to create a new workbook within the application. You can create a blank new workbook, such as the one that appears when you open Excel, or you can create a new workbook based on a template.

Create a new blank workbook

1. Click the **File** tab on the Ribbon and select **New**.

   The New tab of Backstage view appears. By default, the Blank Workbook option is already selected.

2. Make sure the **Blank Workbook** option is selected and click **Create**.

   The new blank workbook appears in the Excel application screen.

   Other Ways to Create a Blank Workbook: Press **<Ctrl>** + **<N>**. Or, double-click the **Blank Workbook** option in Backstage view.

Create a workbook from a template

1. Click the **File** tab on the Ribbon and select **New**.

   The New tab of Backstage view appears. There are several ways you can create a new workbook from a template.

   - **Recent templates:** Select a template in the Recently Used Templates area and click **Create**.
   - **Sample templates:** Click this category to view templates that are already installed on your computer. Select the template you want to use and click **Create**.
   - **My templates:** Select **My Templates** to open a dialog box that displays templates you have created and saved on your computer.
   - **New from existing:** Select **New from Existing** to open a dialog box that allows you to browse for a workbook on your computer that you want to base a new workbook on. This is essentially like creating a copy of an existing file.
   - **Office.com Templates:** Click a category to view templates that you can download from Office Online. Find the template you want to use and click **Download**.

Exercise

- **Exercise File:** None required.
- **Exercise:** Create a new blank workbook. Then create a new workbook from a Microsoft Office Online template.

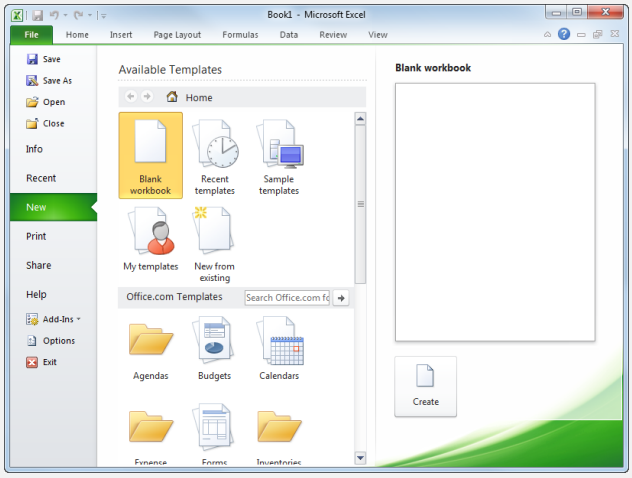


Figure 1-9: The New tab of Backstage view.

Opening a Workbook

Opening a workbook lets you use a workbook that you or someone else has previously created and then saved. This lesson explains how to open a saved workbook.

Open a workbook

You can locate workbook on your computer and simply double-click it to open it, but you can also open a workbook from within the Excel program.

1. Click the **File** tab and select **Open**.

   The Open dialog box appears. Next, you have to tell Excel where the file you want to open is located.

   Other Ways to Open a Workbook:
   Press **<Ctrl>** + **<O>**.

2. Navigate to the location of the saved file.

   The Open dialog box has several controls that make it easy to navigate to locations and find files on your computer:

   - **Address bar:** Click a location in the Address bar to open it. Click the arrow to the right of a location to view a list of folders within that location. Select a folder from the list to open it.
   - **Folders List:** Shortcuts to common locations on your computer, such as the Desktop and Documents library.
   - **Search box:** This searches the contents—including subfolders—of that window for the text that you type. If a file's name, file content, tags, or other file properties match the searched text, it will appear in the search results. Search results appear as you enter text in the search box.

3. Select a file and click **Open**.

   Excel displays the file in the application window.

Tips

✓ To open a workbook that has been used recently, click the **File** tab, click **Recent**, and select a workbook from the Recent Workbooks list.

✓ You can pin a workbook to the Recent Workbooks list so that it is always available there. Click the **Pin this document to the Recent Workbooks list** button next to the workbook that you want to always be available. Click it again to remove the workbook from the Recent Workbooks list.

Exercise

- **Exercise File:** Sales.xlsx
- **Exercise:** Open a workbook.

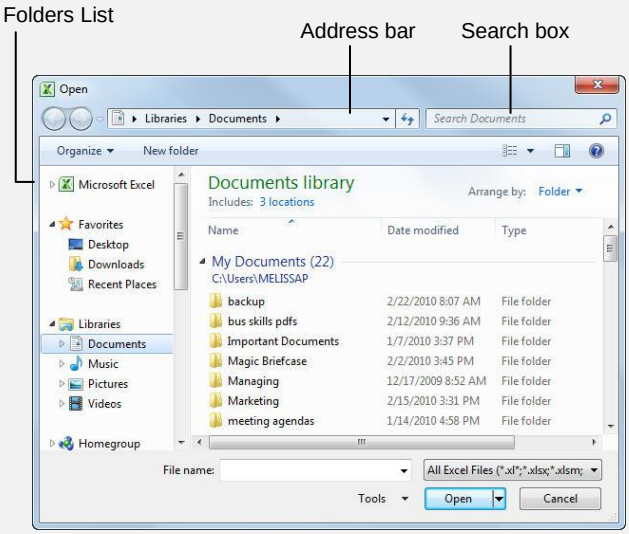


Figure 1-10: The Open dialog box. To open a file, you must first navigate to the folder where it is saved. Most new files are saved in the Documents folder by default.

Previewing and Printing a Worksheet

Once you have created a worksheet, and your computer is connected to a printer, you can print a copy. Before you do this, it's a good idea to preview how it's going to look.

1. Click the **File** tab on the Ribbon and select **Print**.

Notice that the print settings and a preview of the document appear together, with print settings on the left and a preview on the right.

Tip: Use the scroll bar or the page navigation controls below the preview to view other pages in the document.

Other Ways to Preview and Print:
Press **<Ctrl>** + **<P>**.

After previewing the document, you can specify printing options, such as which pages or the number of copies to print.

2. Specify printing options and click the **Print** button.

The document is sent to the printer.

Exercise Notes

- **Exercise File:** Sales.xlsx
- **Exercise:** Preview and print the worksheet.

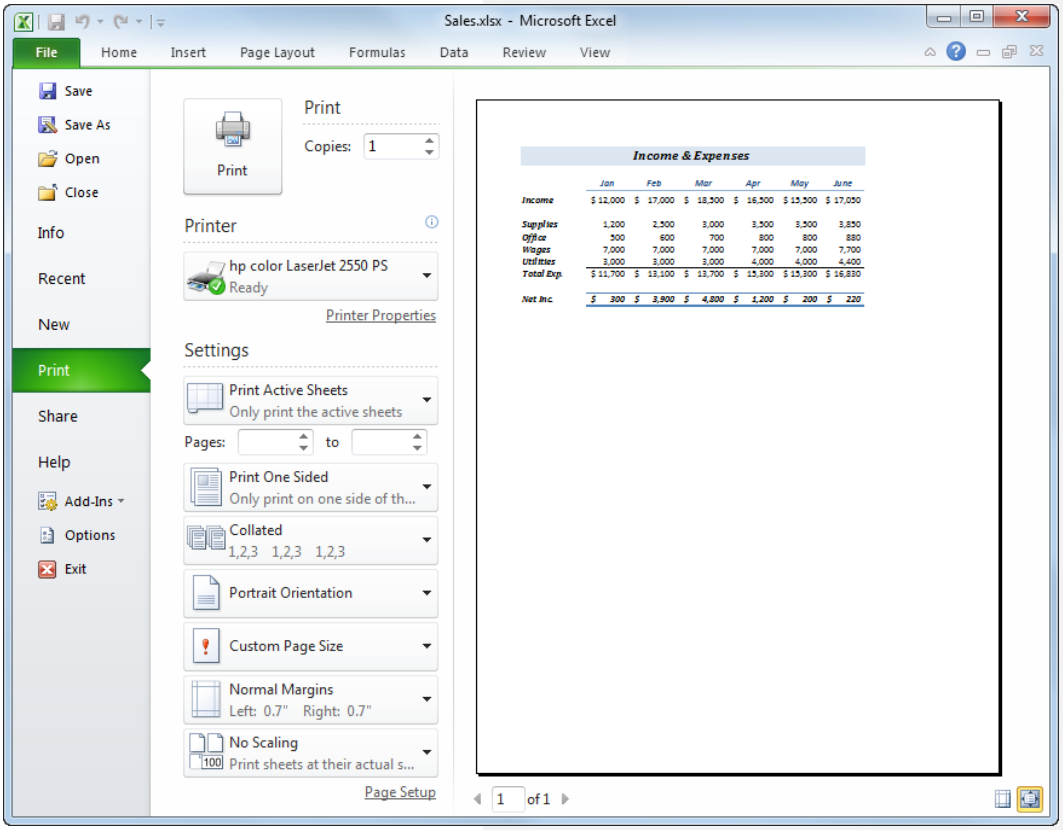


Figure 1-11: The Print settings and Print Preview as shown in Backstage view. Use the print settings in the left column to control how the document is printed. Use the print preview area in the right column to preview how the document will look when printed.

Saving a Workbook

After you've created a workbook, you need to save it if you want to use it again. Also, if you make changes to a workbook you'll want to save it. You can even save a copy of an existing workbook with a new name, to a different location, or using a different file type.

Save a new workbook

1. Click the **Save** button on the Quick Access Toolbar.

   The Save As dialog box appears.

   Other Ways to Save:
   Press **<Ctrl>** + **<S>**. Or, click the **File** tab and select **Save**.

2. Specify the drive and/or folder where you want to save your workbook.

   The Save As dialog box has several controls that make it easy to navigate to locations on your computer:

   - **Address bar:** Click a location in the Address bar to open it. Click the arrow to the right of a location to view a list of folders within that location. Select a folder from the list to open it.
   - **Folders List:** Shortcuts to common locations on your computer, such as the Desktop and Documents library.
   - **Search box:** This searches the contents—including subfolders—of that window for the text that you type. If a file's name, file content, tags, or other file properties match the searched text, it will appear in the search results. Search results appear as you enter text in the search box.

3. Enter the file name in the File name text box.

4. Click **Save**.

Exercise Notes

- **Exercise File:** None required.
- **Exercise:** Create a new workbook and save it with the file name "Saved Workbook." Type your name in cell A1 and save the workbook with a new name: "Updated Workbook".

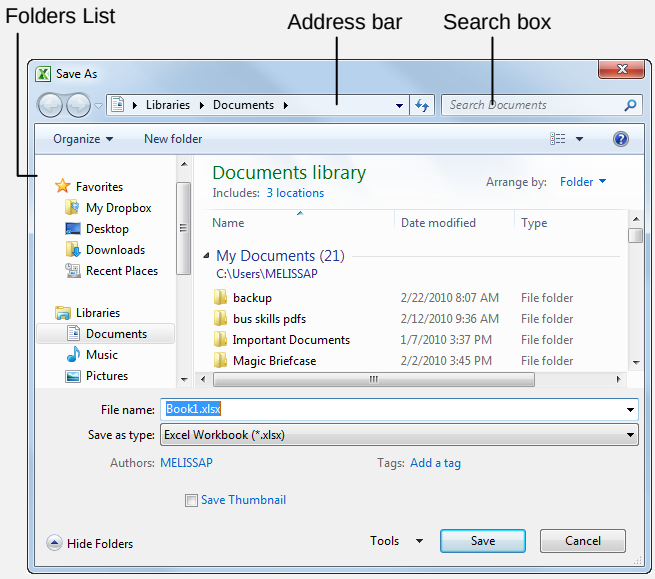


Figure 1-12: The Save As dialog box. The Documents library is the default location for saving, but you can change the save location as necessary.

Save workbook changes

Once you make changes to a workbook you've saved before, you need to save it again.

1. Click the **Save** button on the Quick Access Toolbar.

   Any changes you have made to the workbook are saved.

   Other Ways to Save:
   Press **<Ctrl>** + **<S>**. Or, click the **File** tab and select **Save**.

Save a workbook under a different name and/or location

You can save another copy of a saved document using a new name or in a new location.

1. Click the **File** tab and select **Save As**.

   The Save As dialog box appears.

2. Enter a different name for the file in the File name text box

   Navigate to a new location to save the file as necessary.

3. Click **Save**.

Save a workbook as a different file type

Just as some people can speak several languages, Excel can read and write in other file formats, making it easier to share information between programs.

1. Click the **File** tab and select **Save As**.

   The Save As dialog box appears.

2. Click the **Save as type** list arrow and select a file format.

3. Click **Save**.

Table 1-3: Common Excel File Formats

File Type	Description
Excel Workbook (.xlsx)	The default format for Excel 2010 workbooks.
Excel Macro-Enabled Workbook (.xlsm)	This file format supports macros in Excel 2010.
Excel 97- Excel 2003 Workbook (.xls)	Workbooks in this format can be used by all versions of Excel. Does not support XML.
PDF (.pdf)	Use this format for files you want to share, but do not want to be changed.
Web page (.htm, .html)	This format is used to create Web pages.
XML Data (.xml)	This file type is used exclusively for XML-enabled workbooks.
CSV (.csv)	Use this to share workbook data with other programs or lists, such as databases.

Closing a Workbook

When you're done working on a workbook, you need to close it.

1. Click the **File** tab on the Ribbon and select **Close**.

The workbook closes. You can access the file again by opening it later.

Other Ways to Close a Workbook:
Press **<Ctrl>** + **<W>**. Or, click the **Close** button in the upper right corner of the workbook window (do not confuse this with the program Close button on the title bar).

Tip: If you have multiple workbooks open, clicking the active workbook's **Close** button only closes that one workbook. The other workbooks remain open in the window until you click their close buttons as well.

Trap: The Close button located in the title bar closes only the active workbook if there is more than workbook open. However, if there is only one workbook open, it closes the workbook *and* causes you to exit the Excel program entirely.

Exercise Notes

- **Exercise File:** Any open workbook.
- **Exercise:** Close all open workbooks.

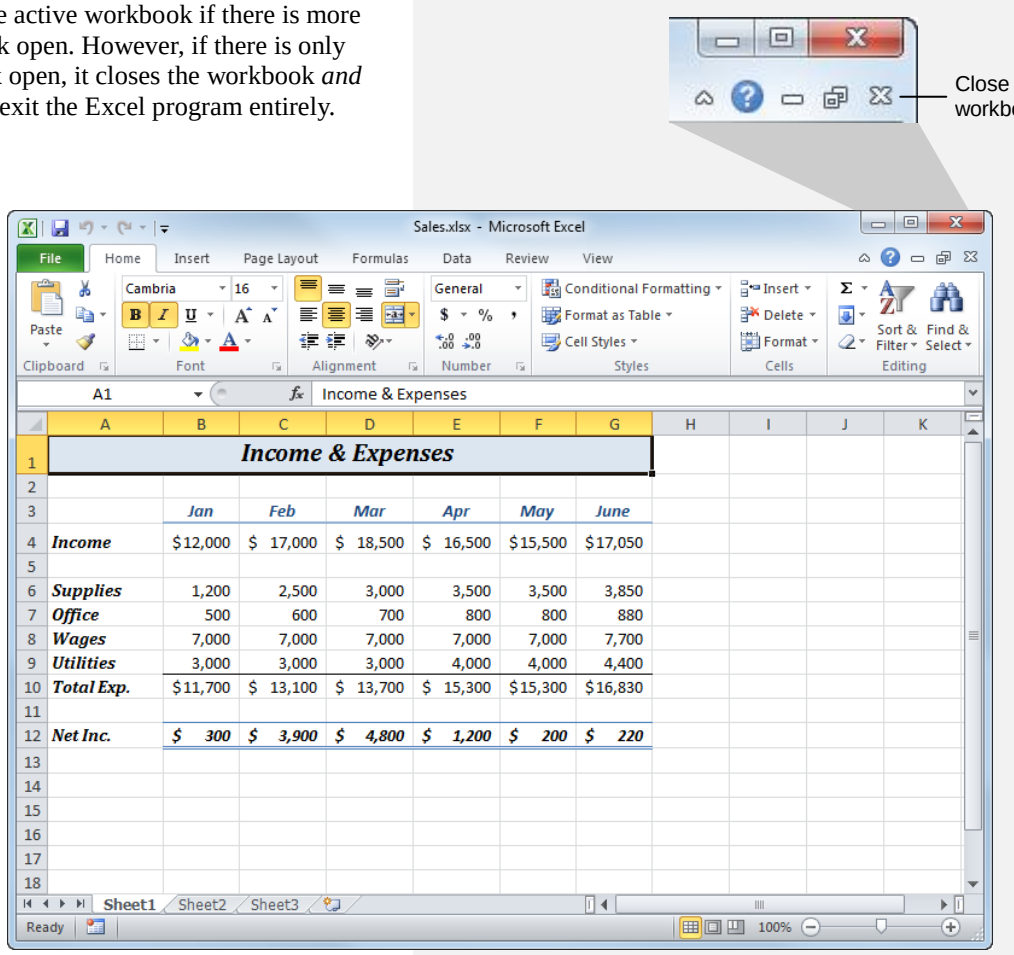


Figure 1-13: Closing a workbook.

Using Help

When you don't know how to do something in Excel 2010, look up your question in the Excel Help files. The Excel Help files can answer your questions, offer tips, and provide help for all of Excel's features.

Search for help

1. Click the **Microsoft Excel Help** button () on the Ribbon.

   The Excel Help window appears.

   Other Ways to Open the Help window: Press **<F1>**.

2. Type what you want to search for in the "Type words to search for" box and press **<Enter>**.

   A list of help topics appears.

3. Click the topic that best answers your question.

   Excel displays information regarding the selected topic.

Browse for help

1. Click the **Microsoft Excel Help** button () on the Ribbon.

   The Excel Help window appears.

2. Click the category that you want to browse.

   The topics within the selected category appear.

3. Click the topic that best answers your question.

   Excel displays information regarding the selected topic.

Choose the Help source

If you are connected to the Internet, Excel 2010 retrieves help from the Office Online database by default. You can easily change this to meet your needs.

1. Click the **Search** button list arrow in the Excel Help window.

   A list of help sources appears.

2. Select an option from the list.

   Now you can search from that source.

Exercise

- **Exercise File:** None required.
- **Exercise:** Search the term "formulas". Browse topics in the "Formulas" category of Help.

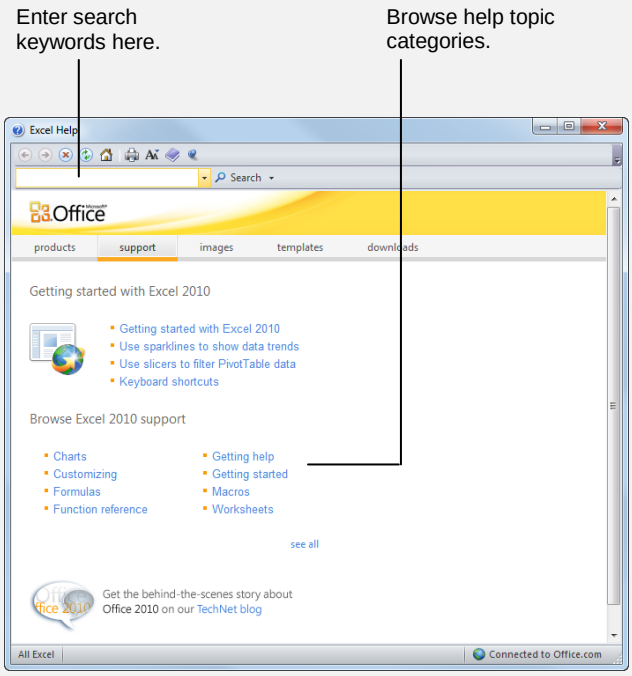


Figure 1-14: The Excel Help window.

Tips

- ✓ Office 2010 offers enhanced ScreenTips for many buttons on the Ribbon. You can use these ScreenTips to learn more about what a button does and, where available, view a keystroke shortcut for the command. If you see the message "Press F1 for more help", press <F1> to get more information relative to that command.
- ✓ When you are working in a dialog box, click the **Help** button () in the up per right-hand corner to get help regarding the commands in the dialog box.

Table 1-4: Help buttons

	**Back**	Return to the previous help topic.
	**Forward**	Return to move forward to the next help topic after clicking Back.
	**Stop**	Stop the transfer of information from the online Help database.
	**Refresh**	Refresh the page to correct page layout or get the latest data.
	**Home**	Click here to return to the Help home page.
	**Print**	Click here to print the current help topic.
	**Change Font Size**	Click here to change the size of the text in the Help window.
	**Show Table of Contents**	Click here to browse for help using the Table of Contents.
	**Keep On Top**	Click here to layer the Help window so that it appears behind all other Microsoft Office programs.

Exiting Excel

When you're finished using Excel 2010, you should exit it. *Exiting* a program closes it until you need to use it again.

1. Click the **File** tab.
2. Click the **Exit** button.

   The Excel program window closes.

Other Ways to Exit Excel:
If there is only one Excel program window open, click the **Close** button in the title bar. Or, right-click the **Excel** button on the taskbar and select **Close window** from the Jump List.

Tips

✓ Having too many programs open at a time could slow down your computer, so it's a good idea to exit all programs that aren't being used.

Exercise

- **Exercise File:** None required.
- **Exercise:** Exit the Microsoft Office Excel 2010 program.

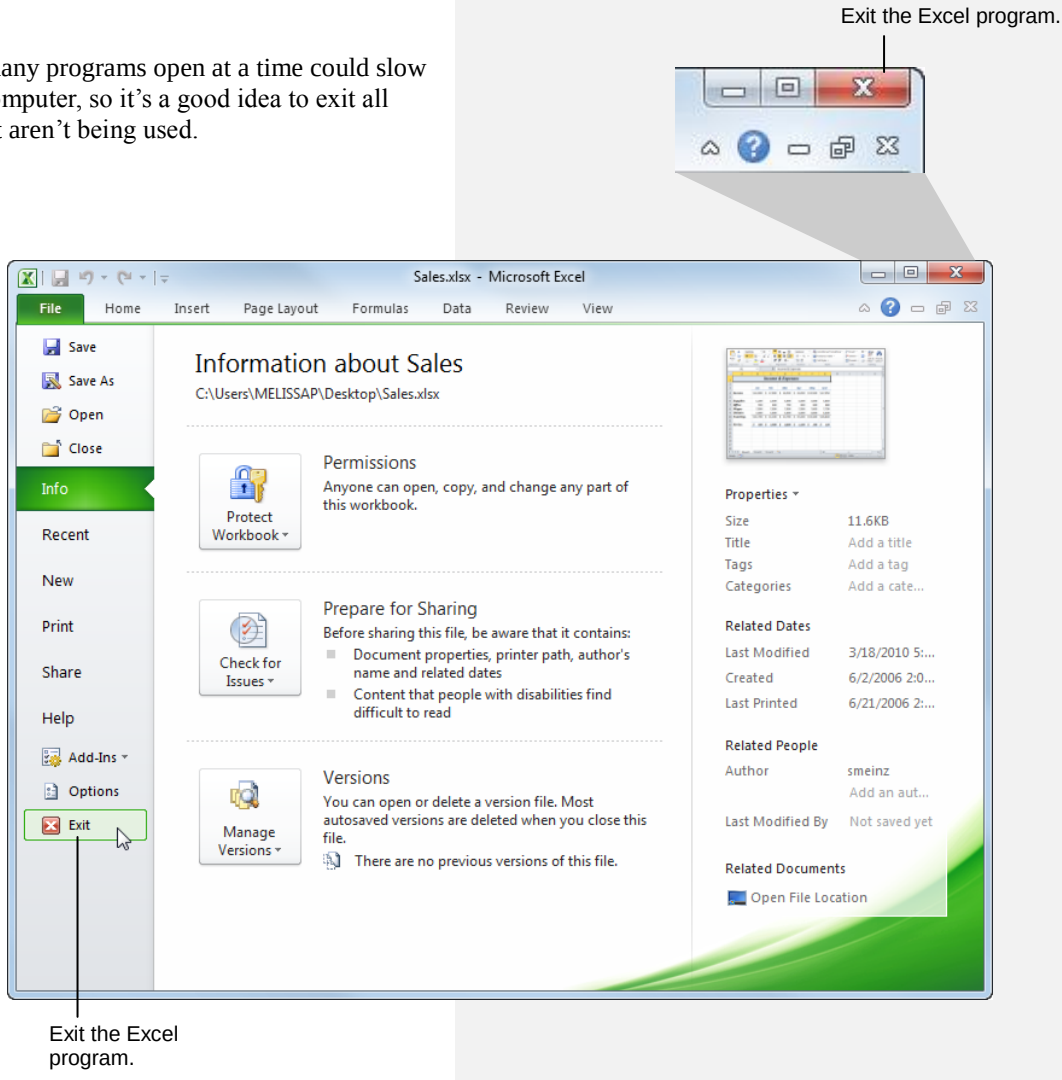


Figure 1-15: There are two ways to exit Excel.

Program Fundamentals Review

Quiz Questions

1. Excel automatically opens with Windows. (True or False?)

2. Which of the following is NOT a new feature in Excel 2010?
   A. Backstage view
   B. Improved picture editing
   C. The Ribbon
   D. Paste with Live Preview

3. The Ribbon can be hidden so that only tab names appear. (True or False?)

4. The File tab contains basic file commands. (True or False?)

5. What is the Quick Access Toolbar?
   A. There are no toolbars in Excel 2010.
   B. What appears when you select text.
   C. A customizable toolbar of common commands that appears above or below the Ribbon.
   D. An extension of the Windows taskbar.

6. Which of the following is NOT a common keystroke shortcut in Excel?
   A. <Ctrl> + <Alt> + <Delete>
   B. <Ctrl> + <S>
   C. <Ctrl> + <O>
   D. <Ctrl> + <Home>

7. You can only create a new workbook by launching the Excel program. (True or False?)

8. To open a workbook, click the File tab and select _____.
   A. Open
   B. Find
   C. Look in
   D. Search

9. Print settings and print preview appear side by side in Backstage view. (True or False?)

10. When you save a workbook with a different name, the old workbook is deleted. (True or False?)

11. You can close a workbook which one of the following ways?
   A. Press <Ctrl> + <C>.
   B. Click and drag the workbook window to the Recycle Bin.
   C. Click the workbook's Close button.

D. Press <Delete>.

12. What key can you press to get help in Excel?
    A. <Esc>
    B. <Ctrl> + <H>
    C. <F1>
    D. <F11>

13. Which of the following are ways to exit Excel? (Select all that apply.)
    A. Click the File tab and click Exit Excel.
    B. Click the Office Button and click Close Excel.
    C. Click the Close button on the title bar.
    D. Click the Close button on the Quick Access Toolbar.

Quiz Answers

1. False. You must start Excel to begin using it.

2. C. The Ribbon was introduced in Excel 2007, so it is not new in Excel 2010. It has been improved, however, so that it is possible to customize tabs and groups on the Ribbon.

3. True. Double-click a tab to hide the Ribbon, then click any tab to view commands once again.

4. True. The File tab contains basic file commands, similar to the File menu of previous versions.

5. C. The Quick Access Toolbar is a customizable toolbar of common commands that appears above or below the Ribbon.

6. A. <Ctrl> + <Alt> + <Delete> is a Windows command, not an Excel command.

7. False. It's true that a new workbook appears automatically when you open Excel. However, that is not the only way to create a new workbook.

8. A. Select Open and then navigate to the saved file you want to open.

9. True. In Backstage view, print settings appear alongside a preview of how the document will look when printed.

10. False. The original workbook remains intact, with its original name.

11. C. Click the Close button or press <Ctrl> + <W> to close a workbook.

12. C. Press <F1> to access help in Excel.

13. A and C. Click the File tab and click Exit, or click the Close button on the title bar.

2

Getting Started with Worksheets

This chapter will show you the most basic tasks in Excel: entering labels and numbers, and entering formulas.

Using Exercise Files

This chapter suggests exercises to practice the topic of each lesson. There are two ways you may follow along with the exercise files:

- Open the exercise file for a lesson, perform the lesson exercise, and close the exercise file.
- Open the exercise file for a lesson, perform the lesson exercise, and keep the file open to perform the remaining lesson exercises for the chapter.

The exercises are written so that you may "build upon them", meaning the exercises in a chapter can be performed in succession from the first lesson to the last.

Navigating a Worksheet

Before you start entering data into a worksheet, you need to learn how to move around in one. You must make a cell active by selecting it before you can enter information in it. You can make a cell active by using:

- **The Mouse:** Click any cell with the white cross pointer.
- **The Keyboard:** Move the cell pointer using the keyboard's arrow keys.

To help you know where you are in a worksheet, Excel displays row headings, indentified by numbers, on the left side of the worksheet, and column headings, identified by letters, at the top of the worksheet. Each cell in a worksheet has its own *cell address* made from its column letter and row number—such as cell A1, A2, B1, B2, etc. You can immediately find the address of a cell by looking at the *Name Box*, which shows the current cell address.

1. Click any **cell** to make it active.

The cell address appears in the name box.

Now that you're familiar with moving the cell pointer with the mouse, try using the keyboard.

2. Press **<Tab>**.

The active cell is one cell to the right of the previous cell. Refer to Table 2-1: Navigation Shortcuts for more information on navigating shortcuts.

Tips

✓ Excel 2010 worksheets have 1,048,576 rows and 16,384 columns! To view the off-screen portions of the worksheet, use the scroll bars.

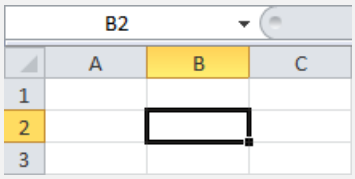
✓ Using the <Ctrl> key with arrow keys is very powerful. These key combinations jump to the edges of data. For example, if you have a group of data in columns A-G and another group in columns R-Z, <Ctrl> + < → > jumps between each group of data.

Exercise Notes

- **Exercise File:** Sales2-1.xlsx
- **Exercise:** Practice moving around in the worksheet using both the mouse and keyboard.

	A	B	C
1	A1	B1	C1
2	A2	B2	C2
3	A3	B3	C4

Cells are referenced as A1, A2, B1, B2, and so on, with the letter representing a column and the number representing a row.



The active cell is in: The **B** column and the **2** row, so its cell reference is **B2**.

Figure 2-1: Examples of cell references.

Table 2-1: Navigation Shortcuts

Press	To Move
→ or <Tab>	One cell to the right.
← or <Shift> + <Tab>	One cell to the left.
↑ or <Shift> + <Enter>	One cell up.
↓ or <Enter>	One cell down.
<Home>	To column A in the current row.
<Ctrl> + <Home>	To the first cell (A1) in the worksheet.
<Ctrl> + <End>	To the last cell with data in the worksheet.
<Page Up>	Up one screen.
<Page Down>	Down one screen.
<F5> or <Ctrl> + <G>	Opens the Go To dialog box where you can go to a specific cell address.

Entering Labels and Values

Now that you're familiar with worksheet navigation in Excel, you're ready to start entering data. There are two basic types of information you can enter in a cell:

- **Labels:** Any information not used in calculations. Labels are used for headings in columns and rows, and as data in columns and rows. Excel treats cell data containing letters or non-numerical punctuation as text and automatically left-aligns it inside the cell.
- **Values:** Numerical data, including: numbers, percentages, fractions, currencies, dates, or times, usually used in formulas or calculations. Excel treats information that contains numbers, dates or times as a value and automatically right-aligns it in the cell.

  Excel even treats dates as values, makes it possible to perform calculations and formulas on the labels. For example, you can subtract one date from another to find how many days are between them. You can control how dates appear with cell formatting.

1. Select the cell where you want to enter data.
2. Type the data in the cell.
3. Press the **<Enter>** or **<Tab>** key.

   The cell entry is confirmed and the next cell becomes active.

   Other Ways to Confirm a Cell Entry:
   Click the **Enter** button on the Formula Bar.

   If the contents do not fit in the cell, the text spills into the empty cell to the right. If that cell is not empty, Excel truncates the data so only part of it is visible.

Tips

- ✓ If you want to start a label with a number, type an apostrophe at the beginning of the label. This tells Excel that the cell contents are a label, not a value.
- ✓ AutoComplete can help you enter labels. Enter the first few characters of a label; Excel displays the label if it appeared previously in the column. Press **<Enter>** to accept the entry or resume typing to ignore the suggestion.
- ✓ You can reformat dates after entering them. For example, if you enter 4/4/12, you can easily reformat to April 4, 2012. This is covered in another lesson.

Exercise Notes

- **Exercise File:** Sales2-1.xlsx
- **Exercise:** Type the label "Sales and Expenses" in cell A1. Enter the following labels in cell range A7:A11: Supplies, Office, Salaries, Utilities, Total

  Enter the following values in the cell range D4:F4: 18500, 16500, 15500

  Enter today's date in B13.

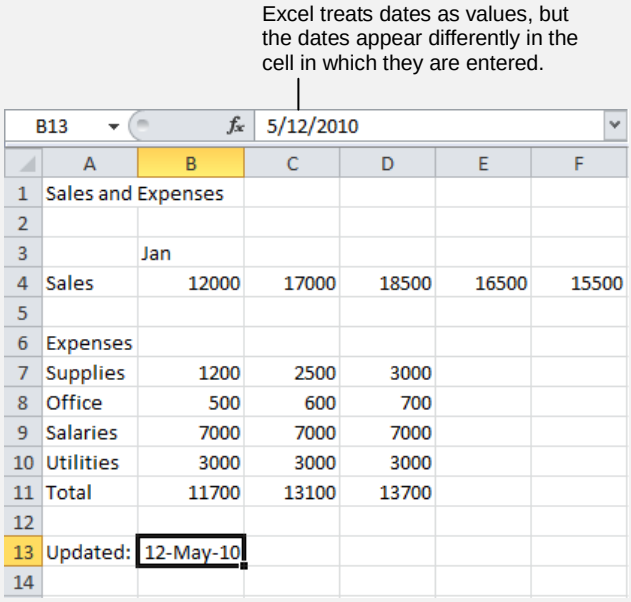


Figure 2-2: A worksheet with labels and values.

Table 2-2: Examples of Valid Date and Time Entries

October 17, 2010	5:45 PM
10/17/10	5:45 AM
10-17-10	5:45 (Excel assumes 5:45 AM)
17-Oct-10	17:45 (5:45 PM on a 24-hour clock)
Oct-17 (Excel assumes the current year.)	17:45:20 (5:45 PM and 20 seconds)

Selecting a Cell Range and Entering Data in a Cell Range

Selecting a cell range

To work with a range of cells, you need to know how to select multiple cells.

1. Click the first cell you want to select in the cell range and hold the mouse button.
2. Drag to select multiple cells.

   As you drag, the selected cells are highlighted.
3. Release the mouse button.

   The cell range is selected.

   Other Ways to Select a Cell Range:
   Select the first cell of the cell range. Press and hold the **<Shift>** key and select the last cell of the cell range.

Tips

- ✓ To select all the cells in a worksheet, click the **Select All** button where the row and column headers come together, or press **<Ctrl>** + **<A>**.
- ✓ To select multiple non-adjacent cells, select a cell or cell range and hold down the **<Ctrl>** key while you select other cells.

Entering data in a cell range

When you have to enter a lot of data, selecting the range makes data entry easier and faster. Selecting a range of cells restricts the cell pointer so it can only move inside the selected range.

1. Select the range of cells in which you want to enter data.

   By selecting a range, you restrict where the cell pointer can move and can concentrate on data entry instead of moving the cell pointer back and forth.
2. Enter the data in the first cell. Press **<Tab>** or **<Enter>** to move on to the next cell.

   When the active cells reaches the end of a column or row, the next time your press <Tab> or <Enter>, the cell pointer moves to the next cell in the selected range.
3. Click any cell in the worksheet to deselect the range.

Exercise Notes

- **Exercise File:** Sales2-2.xlsx
- **Exercise:** Select the cell range E7:F10 and then enter the data below in cell range E7:F10.

	E	F
7	2500	1500
8	400	400
9	7000	7000
10	3000	3000

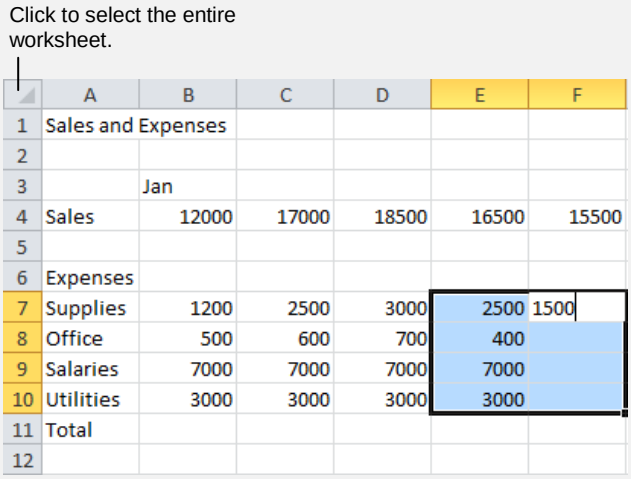


Figure 2-3: Entering text in a selected cell range.

Table 2-3: Navigating in a Selected Cell Range

Down	**<Enter>**
Up	**<Shift>** + **<Enter>**
Right	**<Tab>**
Left	**<Shift>** + **<Tab>**

Overview of Formulas and Cell References

This lesson introduces formulas and the different elements that are required to write a formula.

Values

Values are any numerical data entered in a worksheet. Once values are entered in the worksheet, they can be used in formulas.

Formulas

Formulas are values, but unlike regular values, formulas contain information to perform a numerical calculation, such as adding, subtracting, or multiplying. A cell with the formula =5+3 will display the result of the calculation: 8.

All formulas must start with an equal sign (=). Then you specify more information: the values you want to calculate and the arithmetic operator(s) or function name(s) you want to use to calculate the values.

- **Operators** are the basic symbols used in mathematics: + (plus), - (minus), / (divide), * (multiply). In Excel, you use these just as you would to write out a math problem.
- **Functions** are used more often in Excel. Functions are pre-made formulas that you can use as shortcuts, or to perform calculations that are more complicated.

Relative and absolute cell references

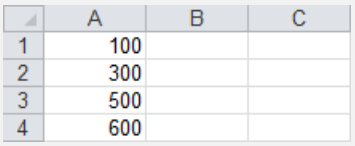
Formulas can contain numbers, like 5 or 8, but more often they reference the contents of cells. A *cell reference* tells Excel where to look for values you want to use in a formula. For example, the formula =A5+A6 adds the values in cells A5 and A6.

Using cell references is advantageous 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:** Relative references refer to cells in relation to the cell that contains the formula. When the formula is moved, it references new cells based on their location relative to the formula. Relative references are the default type of references in Excel.
- **Absolute:** Absolute references always refer to the same cell, even when the formula is copied. Absolute references are indicated with dollar signs ($A$1) in formulas. Pressing <F4> changes a cell reference to absolute.

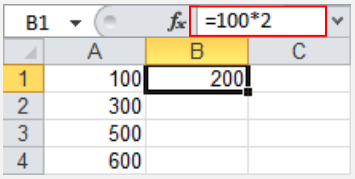
Exercise Notes

- **Exercise File:** None required.
- **Exercise:** Understand how formulas are used in Excel.



	A	B	C
1	100		
2	300		
3	500		
4	600		

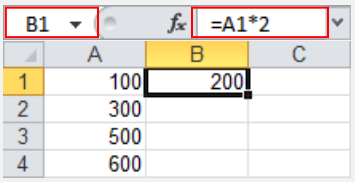
Values
Values in Column A.



B1 =100*2

	A	B	C
1	100	200	
2	300		
3	500		
4	600		

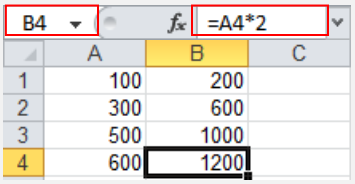
Formulas
A formula in cell B1 using the multiplication operator.
The cell displays the result of the formula, while the Formula Bar displays the formula.



B1 =A1*2

	A	B	C
1	100	200	
2	300		
3	500		
4	600		

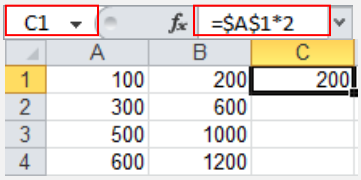
Relative cell reference
When the formula in cell B1 is copied to the rest of the cells in column B, the cell references are updated in each row.



B4 =A4*2

	A	B	C
1	100	200	
2	300	600	
3	500	1000	
4	600	1200	

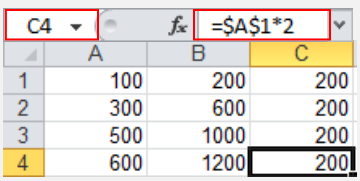
The results of each formula are different because each formula refers to a different cell.



C1 =$A$1*2

	A	B	C
1	100	200	200
2	300	600	
3	500	1000	
4	600	1200	

Absolute cell reference
When the formula in cell C1 is copied to the rest of the cells in column C, the cell references are not updated.



C4 =$A$1*2

	A	B	C
1	100	200	200
2	300	600	200
3	500	1000	200
4	600	1200	200

The results of each formula are the same because each formula refers to the same cell.

Entering Formulas

This lesson takes a look at how to enter formulas in a cell. A formula starts with an equal sign, followed by:

- Values or cell references joined by an operator.

  Example: =5+3 *or* =A1+A2

- A function name followed by parentheses containing function arguments. Functions are the most common way to enter formulas in Excel.

  Example: =SUM(A1:A2)

Enter a formula with an operator

1. Click a cell where you want to enter a formula.
2. Type =, then type cell references and operators.

   You can also enter the formula in the Formula Bar.
3. Press **<Enter>**.

   The formula calculates the result and displays it in the cell where you entered it.

Enter a formula with a function

1. Click a cell where you want to enter a formula.
2. Click the **Insert Function** button in the Formula Bar.

   If you know the name of the function you want to use, you can type it out instead of selecting it from the Function button.

   Other Ways to Enter a Function:
   Click the **Formulas** tab on the Ribbon and click the **Insert Function** button in the Function Library group.
3. Select the function you want to use and click **OK**.

   The Function Arguments dialog box appears.
4. Enter the function arguments and click **OK**.

   The result of the formula appears in the cell.

Tips

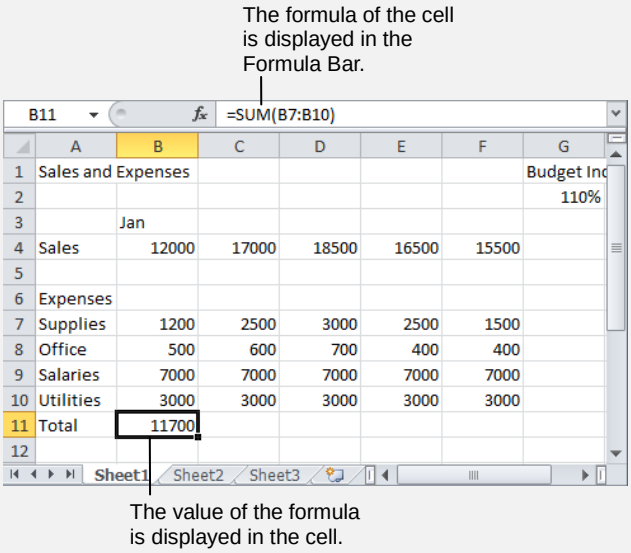
✓ You can use the Formula AutoComplete feature to help you create and edit complex formulas. Type an = (equal sign) in a cell or the Formula Bar and start typing the formula. A list of functions and names that match the text you entered appears. Select an item from the list to insert it into the formula.

Exercise Notes

- **Exercise File:** Sales2-3.xlsx
- **Exercise:** In cell B11, total the values in B7:B10

  In cell G4, multiply F4 by G2, making G2 an absolute cell reference.
  In cell G7, multiply F7 by G2, making G2 an absolute cell reference.

  In cell C11, AutoSum the column C expense values.



	A	B	C	D	E	F	G
1	Sales and Expenses						Budget Inc
2							110%
3		Jan					
4	Sales	12000	17000	18500	16500	15500	
5							
6	Expenses						
7	Supplies	1200	2500	3000	2500	1500	
8	Office	500	600	700	400	400	
9	Salaries	7000	7000	7000	7000	7000	
10	Utilities	3000	3000	3000	3000	3000	
11	Total	11700					
12							

Figure 2-4: Entering a formula in a worksheet.

Table 2-4: Examples of Operators and Functions

=	All formulas start with an equal sign.
+	=A1+B1
-	=A1-B1
*	=B1*2
/	=A1/C2
SUM	=SUM(A1:A3)
AVERAGE	=AVERAGE(A2,B1,C3)
COUNT	=COUNT(A2:C3)

Enter an absolute cell reference in a formula

1. Enter the formula using operators or functions.

2. Click the cell you want to reference and press the **<F4>** key.

   Dollar signs $ are added to the cell reference in the formula.

   Other Ways to Add an Absolute Cell Reference in a Formula:
   Type the address of the cell with $ (dollar signs) before every reference heading. (For example, type $B$4).

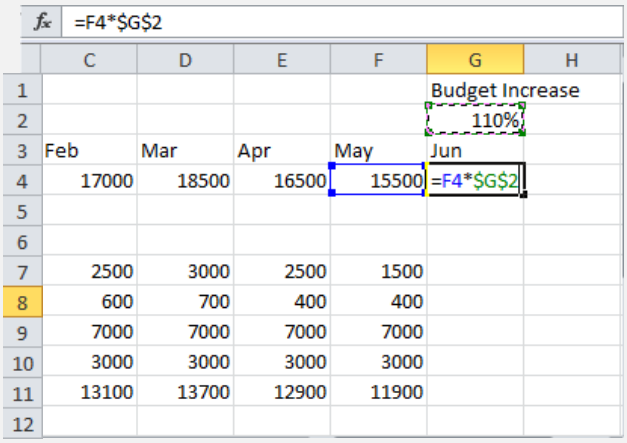


Figure 2-5: A formula with a relative (F4) and an absolute ($G$2) cell reference.

Total values automatically with AutoSum

Adding up the values in a range of cells is the most popular formula in Excel, so they've made this easy to do with the AutoSum feature. AutoSum inserts the SUM function (which adds all the values in a range of cells) and selects the range of cells Excel thinks you want totaled.

1. Click a **cell** next to the column or row of numbers you want to sum.

   For example, if you want to add up a column of numbers, click the cell at the bottom of the column. Or, if you want to add up a row of numbers, click the cell to the right of the row.

2. Click the **Home** tab and click the **AutoSum** button in the Editing group.

   The SUM function appears in the cell and a moving dotted line appears around the cell range that Excel thinks you want to sum. If the range is not correct, click and drag to select the correct range.

   Tip: Click the **AutoSum** button list arrow to choose from other common functions, such as Average.

   Other Ways to Enter AutoSum:
   Press **<Alt>** + **<=>**.

3. Press the **<Enter>** key to confirm the action.

   The cell range is totaled in the cell. If you change a value in the summed range, the formula will automatically update to show the new sum.

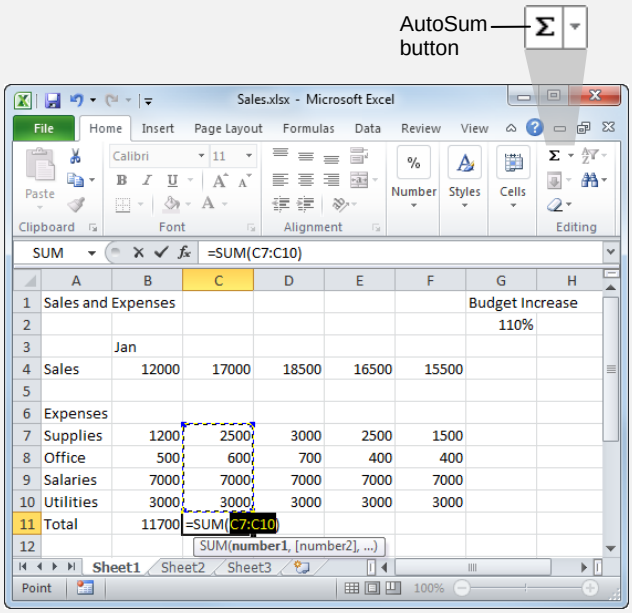


Figure 2-6: AutoSum automatically enters a SUM formula and selects the cells it thinks you want to total.

Entering Content Automatically

Since entering data is a major task in Excel, this lesson covers three tools that make are very useful in data entry: Fill, AutoComplete, and PickList.

Use Fill

Fill is a great way to enter sequential numbers, months or days quickly. Fill looks at cells that you have already filled in and makes a guess about how you want to fill in the rest of the series. For example, if you enter January, Fill will fill in the following months for you. You can also use Fill to copy formulas to adjacent cells.

1. Select a cell or cell range that contains the data and increment you want to use.

   Excel can detect patterns pretty easily. A series of 1, 2, 3, 4 is easy to detect, as is 5, 10, 15, 20. It can also detect a pattern with mixed numbers and letters, such as UPV-3592, UPV-3593, UPV-3594.

   Tip: If you select only one cell, that same value is copied to the adjacent cells when you Fill—unless Excel recognizes it as a date or time, in which case it will fill in the next logical date or time period.

2. Position the mouse pointer over the fill handle (the tiny box in the cell's lower-right corner) until the pointer changes to a plus sign +.

3. Click and drag the fill handle to the cells that you want to fill with the information.

   As you click and drag, a screen tip appears previewing the value that will be entered in the cell once you release the mouse button.

Table 2-5: Fill Series Examples

Selected Cell(s)	Entries in Next Three Cells
January	February, March, April
Jan	Feb, Mar, Apr
5:00	6:00, 7:00, 8:00
Qtr 1	Qtr 2, Qtr 3, Qtr 4
5 10	15, 20, 25
1/20/12	1/21/12, 1/22/12, 1/23/12
UPV-3592	UPV-3593, UPV-3594, UPV-3595

Exercise Notes

- **Exercise File:** Sales2-4.xlsx
- **Exercise:** Fill in the month labels in row 3. Labels should start with Jan in column B and end with Jun in column G.

  Copy the formula in cell G7 to cells G8:G10. Copy the formula in cell C11 over to columns D, E, F, and G.

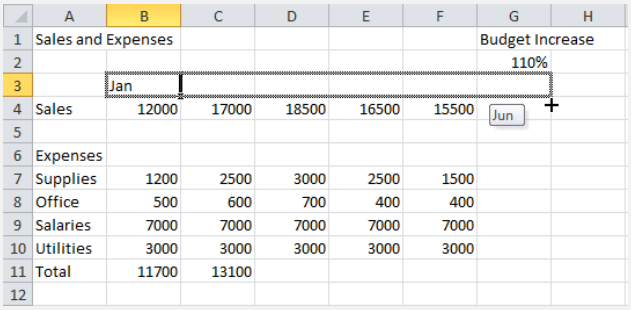


Figure 2-7: Fill fills in months after January into the selected cells. Notice that a screen tip previews the content being filled into the cells.

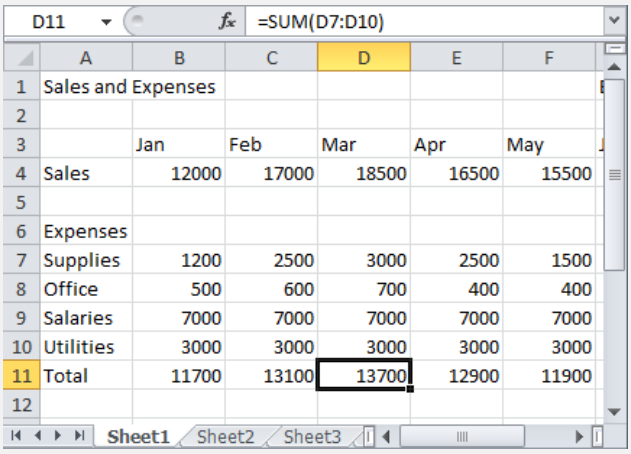


Figure 2-8: Formulas that are copied with Fill are updated relative to their location. This formula copied from C11 is updated to use cell references from the D column.

Control fill options

If Fill doesn't enter cell content the way you expected, you can correct the content using AutoFill Options. This button appears after using the Fill command, and it offers valuable control over how the Fill command works.

1. Enter cell content using Fill.

   After releasing the mouse button, the Fill Options button appears.

2. Click the **Fill Options** button.

   A list of ways you can control the cell content that is entered appears.

3. Select a fill option from the list.

   The cell content is changed according to the fill option you chose.

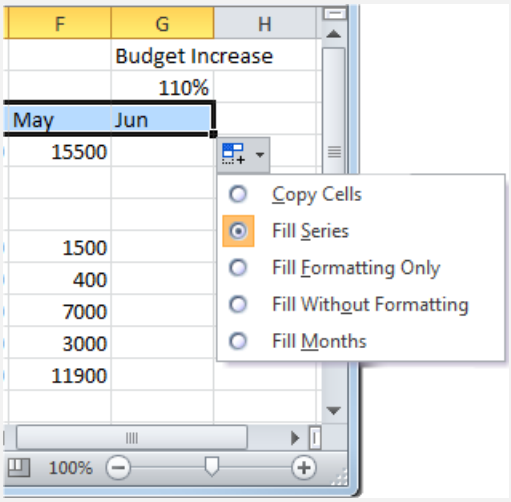


Figure 2-9: Click the AutoFill Options button to choose a different result of the Fill.

Repeat values in a column

Excel's AutoComplete feature helps speed up data entry, especially if you're using repetitive information.

1. Type the first few characters of a label.

   Excel displays the label, if it appears previously in the column.

2. Press **<Enter>**.

   Excel accepts the entry.

   If a suggestion appears and you don't want to use it, resume typing to ignore the suggestion.

Select contents from a list

The PickList is a list of data you've used and helps keep your information consistent.

1. Right-click the cell where you want to enter a label and select **Pick from Drop-down List** from the contextual menu.

   A list appears under the cell.

2. Select an entry from the list.

   The data is entered and the list disappears.

Getting Started with Worksheets Review

Quiz Questions

14. Press _____ to move the cell pointer one cell to the left.
    A. <Enter>
    B. <Shift> + <Tab>
    C. The up arrow key
    D. <Tab>

15. You can select all the cells in a worksheet at once. (True or False?)

Quiz Answers

14. B. Pressing <Shift> + <Tab> moves the cell pointer one cell to the left.

15. True. You can select all cells at once by pressing Ctrl + A.

3Editing a Worksheet

This chapter will show you how to edit your Excel worksheets. You'll learn how to edit cell contents; cut, copy and paste information; insert and delete columns and rows; undo any mistakes you might make; and even correct your spelling errors.

Using Exercise Files

This chapter suggests exercises to practice the topic of each lesson. There are two ways you may follow along with the exercise files:

- Open the exercise file for a lesson, perform the lesson exercise, and close the exercise file.
- Open the exercise file for a lesson, perform the lesson exercise, and keep the file open to perform the remaining lesson exercises for the chapter.

The exercises are written so that you may "build upon them", meaning the exercises in a chapter can be performed in succession from the first lesson to the last.

Editing Cell Contents

Once you've entered data into a cell, you can edit, clear, or replace those cell contents.

Edit cell contents

1. Double-click the cell you want to edit.

   The cell is in edit mode.

   In Edit mode, the arrow keys move from character to character in the cell instead of from cell to cell. While Excel is in Edit mode you can also move the insertion point by clicking the I-beam pointer where you want to insert text.

   Other Ways to Enter Edit Mode:
   Select the cell. Click anywhere in the Formula Bar, or press **<F2>**.

2. Edit the contents of the cell.

   Use the arrow keys and the <Delete> and <Backspace> keys to help you edit the cell contents.

3. Press **<Enter>**.

   Other Ways to Edit Cell Contents:
   Select the cell, then edit the cell's contents in the Formula Bar and. Press **<Enter>** or click the **Enter** button on the Formula bar.

Replace cell contents

1. Select the cell.

2. Enter new data.

3. Press **<Enter>**.

   The newly typed information replaces the previous cell contents.

Clear cell contents

1. Select the cell.

2. Press **<Delete>**.

   Other Ways to Clear Cell Contents:
   Under the Home tab on the Ribbon, click the **Clear** button in the Editing group.

   Tip: Note that this clears the cell contents, not the actual cell.

Exercise Notes

- **Exercise File:** Mileage3-1.xlsx
- **Exercise:** Edit cell A1 so it reads "Mileage Report". Edit cell B3 so it reads "Destination". Edit C3 to read "Beginning". Edit D3 to read "Ending".

  Clear the contents of cells G3:G10.

  Edit the formula in F4 to use an absolute reference to F2 instead of the value "0.3".
  Then copy the formula in F4 to F5:F12.

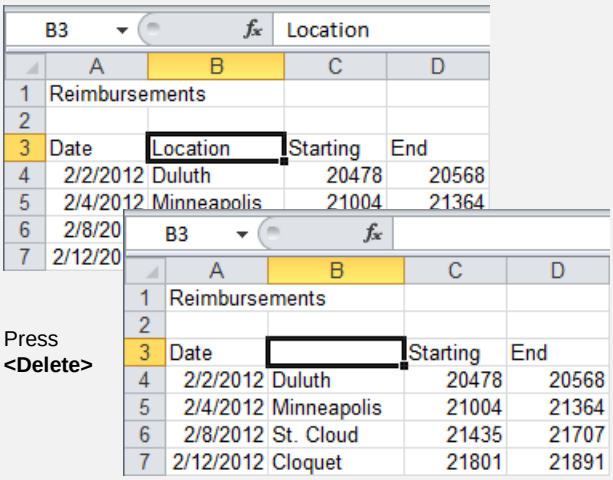


Figure 3-1: Clearing cell contents.

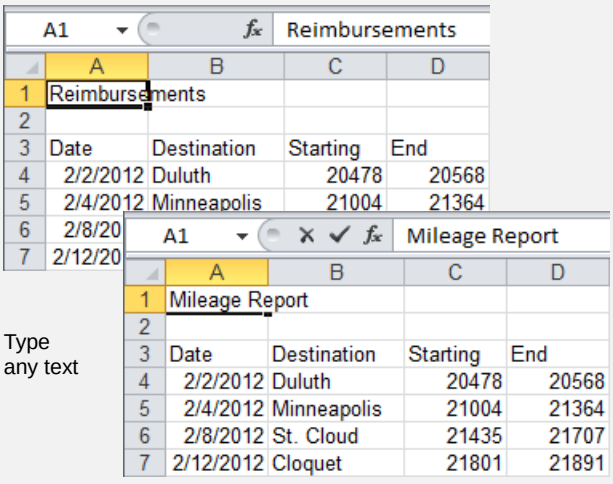


Figure 3-2: Replacing cell contents.

Copying and Moving Cells

You can move or copy information in an Excel worksheet by cutting or copying, and then pasting the cell data in a new place. You can work with one cell at a time or ranges of cells.

Tips

✓ You may cut, copy, and paste any item in a worksheet, such as clip art or a picture, in addition to cell data.

Copy cells

When you *copy* a cell, the selected cell data remains in its original location and is added to the Clipboard.

1. Select the cell(s) you want to copy.

   Tip: If you want to cut or copy only selected parts of a cell's contents, double-click the cell to display a cursor and select the characters you want to cut.

2. Click the **Home** tab on the Ribbon and click the **Copy** button in the Clipboard group.

   Other Ways to Copy Cells:
   Press **<Ctrl>** + **<C>**. Or, right-click the selection and select **Copy** from the contextual menu.

3. Select the cell where you want to paste the copied content.

   When you select a destination to paste a range of cells you only have to designate the first cell where you want to paste the cell range.

4. Click the **Home** tab on the Ribbon and click the **Paste** button in the Clipboard group.

   The copied cell data is pasted in the new location.

   Other Ways to Paste Cells:
   Press **<Ctrl>** + **<V>**. Or, right-click where you want to paste and select **Paste** from the contextual menu.

Exercise Notes

- **Exercise File:** Mileage3-2.xlsx
- **Exercise:** Copy cell B5 and paste it in cell B11. Move cells A3:F12 to A9:F18.

  Using click and drag, move the cells back to A3:F12.

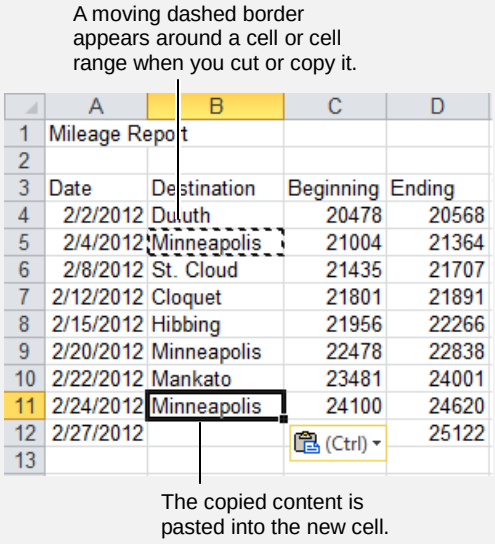


Figure 3-3: Copying and pasting a cell.

Move cells

Moving cells typically involves a process of cutting and pasting. When you *cut* a cell, it is removed from its original location and placed in a temporary storage area called the Clipboard.

1. Select the cell(s) you want to move.

2. Click the **Home** tab on the Ribbon and click the **Cut** button in the Clipboard group.

   A line of marching ants appears around the selected cells and the message "Select destination and press ENTER or choose Paste" appears on the status bar.

   Other Ways to Cut Cells:
   Press **<Ctrl>** + **<X>**. Or, right-click the selection and select **Cut** from the contextual menu.

3. Select the cell to which you want to move the cells.

   When you select a destination to paste a range of cells, you only have to designate the first cell where you want to paste the cell range.

4. Click the **Home** tab on the Ribbon and click the **Paste** button in the Clipboard group.

   The copied cell data is pasted in the new location.

   Other Ways to Paste Cells:
   Press **<Ctrl>** + **<V>**. Or, right-click where you want to paste and select **Paste** from the contextual menu. Or, select the destination and press **<Enter>**.

Moving and copying cells using the mouse

Using the mouse to move and copy cells is even faster and more convenient than using the cut, copy and paste commands.

1. Select the cell(s) you want to move.

2. Point to the border of the cell or cell range.

3. Click and hold the mouse button.

4. Drag the pointer to where you want to move the selected cell(s) and then release the mouse button.

Tips

✓ Press and hold the **<Ctrl>** key while clicking and dragging to copy the selection.

	A	B	C	D	E	F	G
1	Mileage Report						
2					Cost/Mile	$0.50	
3							
4							
5							
6							
7							
8							
9	Date	Destination	Beginning	Ending	Total Miles	Amuont	
10	2/2/2012	Duluth	20478	20568	90	$45.00	
11	2/4/2012	Minneapolis	21004	21364	360	$180.00	
12	2/8/2012	St. Cloud	21435	21707	272	$136.00	
13	2/12/2012	Cloquet	21801	21891	90	$45.00	
14	2/15/2012	Hibbing	21956	22266	310	$155.00	
15	2/20/2012	Minneapolis	22478	22838	360	$180.00	
16	2/22/2012	Mankato	23481	24001	520	$260.00	
17	2/24/2012	Minneapolis	24100	24620	520	$260.00	
18	2/27/2012	Minneapolis	24850	25122	272	$136.00	
19							

Figure 3-4: When cells are cut and pasted, they are moved to a new location in the worksheet.

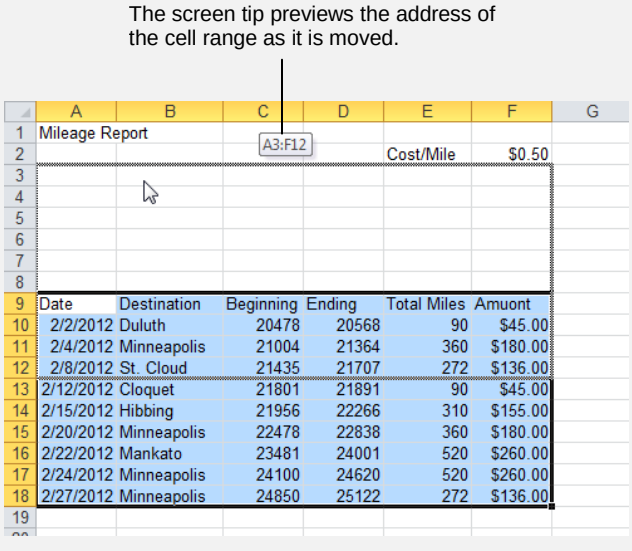


Figure 3-5: Moving a cell range using the mouse.

Controlling How Cells Are Moved or Copied

You can control how cell content looks or behaves when it is pasted. For example, you can keep the data's formatting, or have it take on the formatting properties of the destination cells.

Use Paste Options

You can control how content is pasted in your spreadsheets using the Paste Options in Excel.

1. Paste the content in the spreadsheet and click the **Paste Options** button.

   The Paste Options button appears in the lower-right corner of the pasted content. A list of different ways you can paste the content appears.

   Other Ways to Use Paste Options: Before pasting, click the **Paste** button list arrow in the Clipboard group on the Home tab and select a paste option from the list.

   Tip: The options available depend on the type of content being pasted. For example, content that contains formulas will have more paste options than content that contains only text.

2. Point at a paste option.

   A live preview of how the content will look using that paste option appears.

3. Click a paste option.

   The data is pasted using the selected option.

Exercise Notes

- **Exercise File:** Mileage3-3.xlsx
- **Exercise:** Use Paste Options to copy the values only from E4:E12 to E14:E22.

  Enter the value 1.25 in cell G4. Use paste special to multiply E4:E12 by this value.

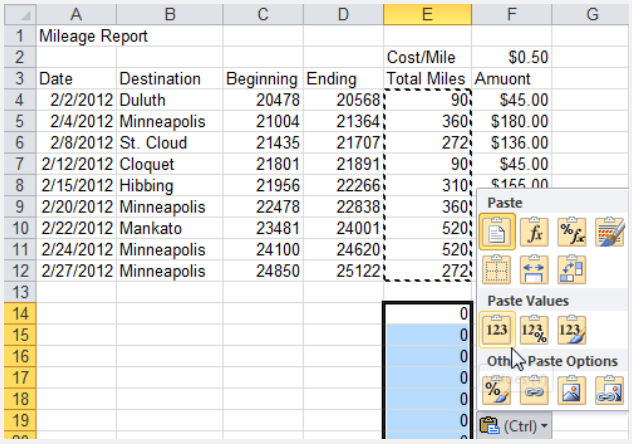


Figure 3-6: The Paste Options button appears after pasting so you can specify how data is pasted into your worksheet.

Table 3-1: Paste Option Commands

Paste	Paste using default settings.	**Values**	Paste only values from cells.
Formulas	Paste only formulas from cells.	**Values & Number Formatting**	Paste the values and number formatting from cells.
Formulas & Number Formatting	Paste formulas and number formatting.	**Values & Source Formatting**	Paste the values and all formatting from source cells.
Keep Source Formatting	Paste using formatting from the original cells.	**Formatting**	Paste only the formatting used in source cells.
No Borders	Remove borders from pasted cells.	**Paste Link**	Paste a link to the selected cells.
Keep Source Column Widths	Keep the width of the original cells.	**Picture**	Paste a picture of the selected cells.
Transpose	Flip the data so the rows are flipped to columns and vice versa.	**Linked Picture**	Paste a picture of the cells with a link to the original cells.

Use Paste Special commands

You can also control how content is pasted using the Paste Special command.

1. Copy or cut an item as you normally would.
2. Click the cell where you want to paste the item.
3. Click the **Home** tab and click the **Paste** button list arrow in the Clipboard group.

   Now open the Paste Special dialog box.
4. Select **Paste Special**.

   The Paste Special dialog box appears.

   Other Ways to Open Paste Special:
   Press **<Ctrl>** + **<Alt>** + **<V>**.
5. Select a paste option and click **OK**.

   The content is pasted into the spreadsheet using the selected option.
6. Press **<Enter>**.

   The pasted content is deselected.

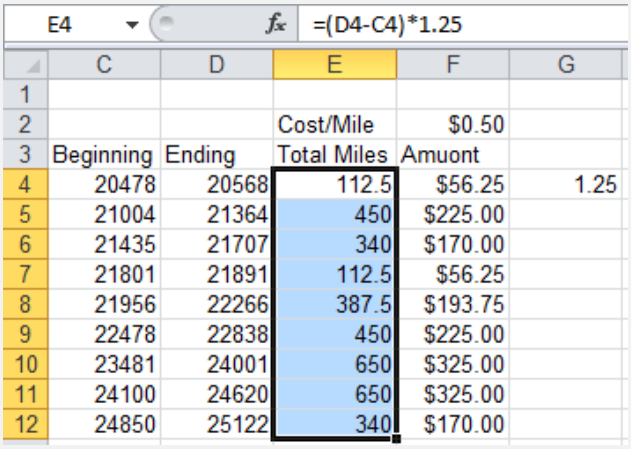


Figure 3-7: Paste Special multiplies the value of the copied cell (G4) with the values in the selected cell range (E4:E12).

Table 3-2: Paste Special Commands

Paste Option	Description
All	Pastes all cell contents and formatting. Same as the Paste command.
Formulas	Pastes only the formulas as entered in the formula bar.
Values	Pastes only the values as displayed in the cells.
Formats	Pastes only cell formatting. Same as using the Format Painter button.
Comments	Pastes only comments attached to the cell.
Validation	Pastes data validation rules for the copied cells to the paste area.
All using Source theme	Pastes all cell contents and formatting, including the theme, if one was applied to the source data.
All except borders	Pastes all cell contents and formatting applied to the copied cell except borders.
Column widths	Pastes only the width of the source cell's column to the destination cell's column.
Formulas and number formats	Pastes only the formulas and number formats.
Values and number formats	Pastes only the values and number formats.
Operation (several options)	Specifies which mathematical operation, if any, you want to apply to the copied data.
Skip blanks	Avoids replacing values in your paste area when blank cells occur in the copy area.
Transpose	Changes columns of copied data to rows, and vice versa.
Paste Link	Links the pasted data to the source data by pasting a formula reference to the source data.

Collecting Items to Move or Copy

If you do a lot of cutting, copying, and pasting you will appreciate the Office Clipboard. The Clipboard lets you collect multiple cut or copied items at a time, which you can then paste as needed. You can even use it to collect and paste items from other Office programs.

1. Click the **Home** tab on the Ribbon and click the **Dialog Box Launcher** in the Clipboard group.

   The Clipboard task pane appears along the left side of the window.

2. Cut and copy items as you normally would.

   The Clipboard can hold 24 items at a time. As long as the Clipboard is open, it collects items that are cut or copied from all Office programs. The icon next to each item indicates the program the item is from. See Table 3-3: Icons in the Clipboard Task Pane for examples of some common icons.

3. Click where you want to paste an item from the Clipboard.

4. Click the item in the Clipboard.

   The item is pasted in the workbook.

Tips

- ✓ While the Clipboard is displayed, each cut or copied item is saved to the Clipboard. If the Clipboard is not displayed, the last cut or copied item is replaced.
- ✓ To remove an item from the Clipboard, click the item's list arrow and select **Delete**. Click the **Clear All** button in the task pane to remove all items from the Clipboard.

Exercise Notes

- **Exercise File:** Mileage3-4.xlsx
- **Exercise:** Display the Clipboard. Copy these cell ranges: A6:F6; A10:F10; A12:F12.

  Paste the copied items in A14, A15, and A16.

  Close the Clipboard and clear the contents of cells A14:F16.

Table 3-3: Icons in the Clipboard Task Pane

	Content cut or copied from Microsoft Excel.
	Content cut or copied from Microsoft PowerPoint.
	Content cut or copied from Microsoft Word.
	Content cut or copied from Microsoft Outlook.
	Cut or copied graphic object.
	Web page contents cut or copied from a Web browser.
	Content cut or copied from a program other than Microsoft Office.

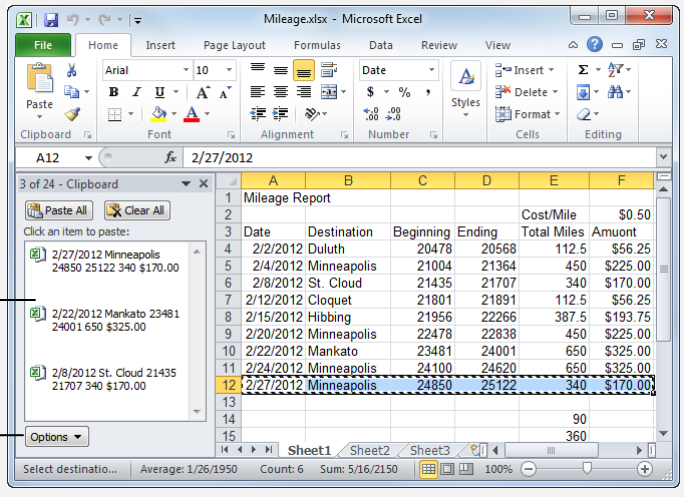


Figure 3-8: A worksheet with the Clipboard task pane displayed.

Checking Your Spelling

You can use Excel's spell checker to find and correct spelling errors in your worksheets. To check the spelling of a worksheet all at once, use the Spelling dialog box.

1. Click the **Review** tab on the Ribbon and click the **Spelling** button in the Proofing group.

Excel begins checking spelling with the active cell.

Tip: Depending on which cell is active when you start the spell check, you may see a dialog box that asks you if you want to start your spell check from the beginning of the sheet. Select **Yes**.

Other Ways to Check Spelling:
Press **<F7>**.

If Excel finds an error, the Spelling dialog box appears with the misspelling in the "Not in Dictionary" text box. You have several options to choose from when the Spelling dialog box opens:

- **Ignore Once:** Accepts the spelling and moves on to the next spelling error.
- **Ignore All:** Accepts the spelling and ignores all future occurrences of the word in the worksheet.
- **Add to Dictionary:** If a word is not recognized in the Microsoft Office Dictionary, it is marked as misspelled. This command adds the word to the dictionary so it is recognized in the future.
- **Change:** Changes the spelling of the word to the spelling that is selected in the Suggestions list.
- **Change All:** Changes all occurrences of the word in the worksheet to the selected spelling.

  Trap: Exercise caution when using this command—you might end up changing something you didn't want to change.

- **AutoCorrect:** Changes the spelling of the word to the spelling that is selected in the Suggestions list, and adds the misspelled word to the AutoCorrect list so that Excel will automatically fix it whenever you type it in the future.

2. If the word is spelled incorrectly, select the correct spelling from the Suggestions list. Then click **Change**, **Change All**, or **AutoCorrect**. If the word is spelled correctly, click **Ignore Once**, **Ignore All**, **Add to Dictionary**.

Excel applies the command and moves on to the next misspelling.

Exercise Notes

- **Exercise File:** Mileage3-5.xlsx
- **Exercise:** Run spell check and correct spelling for the entire worksheet.

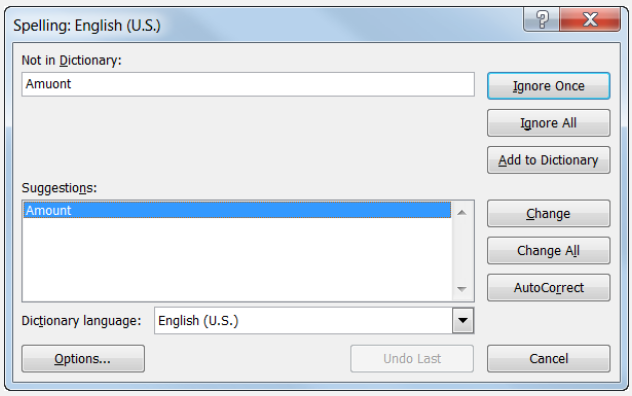


Figure 3-9: The Spelling dialog box.

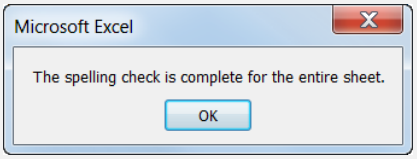


Figure 3-10: This message appears when Excel is finished checking the worksheet.

Once Excel has finished checking your worksheet for spelling errors, a dialog box appears, telling you the spelling check is complete.

3. Click **OK**.

   The dialog box closes.

Turn the spell checker on or off

By default, Excel checks for spelling errors as you type. To turn this feature on or off:

1. Click the **File** tab on the Ribbon and click the **Options** button.

   The Excel Options dialog box appears.

2. Click the **Proofing** tab and click the **Check spelling as you type** check box.

3. Click **OK**.

Tips

- ✓ The AutoCorrect feature automatically corrects commonly misspelled words for you as you type.

Inserting Cells, Rows, and Columns

While working on a worksheet, you may need to insert new cells, columns, or rows. When you insert cells, the existing cells shift to make room for the new cells.

Insert cells

1. Select the cell or cell range where you want to insert cells.

   The number of cells you select is the number of cells that will be inserted.

2. Click the **Home** tab on the Ribbon and click the **Insert** button list arrow in the Cells group. Select **Insert Cells**.

   The Insert dialog box appears. Here you can tell Excel how you want to move the existing cells to make room for the new ones by selecting "Shift cells right" or "Shift cells down."

   You can also select "Entire row" or "Entire column" in the Insert dialog box to insert an entire row or column and not just a cell or cells.

3. Select the insert option you want to use and click **OK**.

   The cell(s) are inserted and the existing cells shift.

   Other Ways to Insert Cells:
   Right-click the selected cell(s) and select **Insert** from the contextual menu. Select an option and click **OK**.

Insert rows or columns

1. Select the **row heading** below or **column heading** to the right of where you want to insert the new row or column.

   The number of row or column headings you select is the number of row or columns that will be inserted.

2. Click the **Home** tab on the Ribbon and click the **Insert** list arrow in the Cells group. Select **Insert Rows** or **Insert Columns**.

   The row or column is inserted. Existing rows are shifted downward, while existing columns are shifted to the right.

   Other Ways to Insert Rows or Columns:
   Right-click a row or column heading and select **Insert** from the contextual menu.

Exercise Notes

- **Exercise File:** Mileage3-6.xlsx
- **Exercise:** Insert new cells in A2:F2 and shift cells down.

  Insert news cells in F3:F13 and shift cells to the right.

  Insert two new rows above row 2.

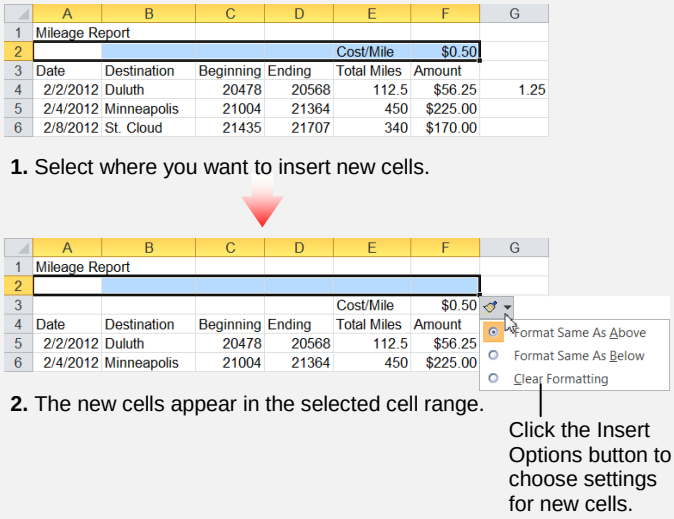


Figure 3-11: Existing cells shift down to make room for the inserted cells.

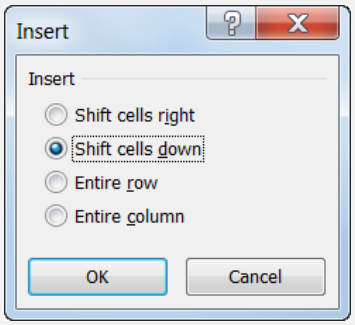


Figure 3-12: The Insert dialog box.

Deleting Cells, Rows, and Columns

You can quickly delete existing cells, columns, or rows from a worksheet. When you delete cells the existing cells shift to fill the space left by the deletion.

Delete cells

1. Select the cell(s) you want to delete.

2. Click the **Home** tab on the Ribbon and click the **Delete** list arrow in the Cells group. Select **Delete Cells**.

   The Delete dialog box appears. Here you can tell Excel how you want to move the remaining cells to cover the hole left by the deleted cell(s) by selecting "Shift cells left" or "Shift cells up."

   Tip: You can also select **Entire row** or **Entire column** in the Delete dialog box to delete an entire row or column.

3. Select an option and click **OK**.

   The cell(s) are deleted and the remaining cells are shifted.

   Trap: Pressing the <Delete> key only clears a cell's contents; it doesn't delete the actual cell.

   Other Ways to Delete Cells:
   Right-click the selection and select **Delete** from the contextual menu. Select an option and click **OK**.

Delete rows or columns

1. Select the **row** or **column heading(s)** you want to delete.

2. Click the **Home** tab on the Ribbon and click the **Delete** button in the Cells group.

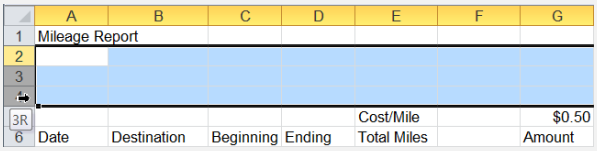
   The rows or columns are deleted. Remaining rows are shifted up, while remaining columns are shifted to the left.

   Other Ways to Delete Rows or Columns:
   Select the column or row heading(s) you want to delete, right-click any of them, and select **Delete** from the contextual menu. Or, click the **Delete** list arrow and select **Delete Sheet Rows** or **Delete Sheet Columns**. The row or column of the active cell is deleted.

Exercise Notes

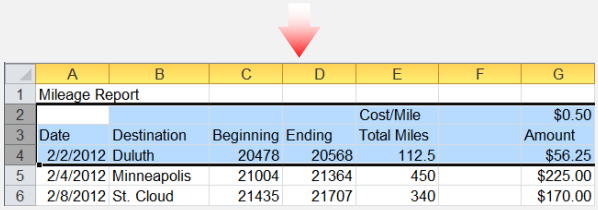
- **Exercise File:** Mileage3-7.xlsx
- **Exercise:** Delete rows 2, 3, and 4.

  Delete cells F2:F12 and shift cells left.



	A	B	C	D	E	F	G
1	Mileage Report						
2							
3							
3R					Cost/Mile		$0.50
6	Date	Destination	Beginning	Ending	Total Miles		Amount

1. Select rows you want to delete.



	A	B	C	D	E	F	G
1	Mileage Report						
2					Cost/Mile		$0.50
3	Date	Destination	Beginning	Ending	Total Miles		Amount
4	2/2/2012	Duluth	20478	20568	112.5		$56.25
5	2/4/2012	Minneapolis	21004	21364	450		$225.00
6	2/8/2012	St. Cloud	21435	21707	340		$170.00

2. The existing cells shift up to replace the deleted rows.

Figure 3-13: Existing cells shift up to replace deleted cells.

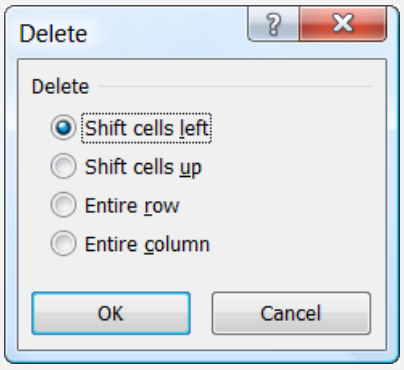


Figure 3-14: The Delete dialog box.

Using Undo and Redo

The undo and redo commands are very useful commands for working with cell contents and cell formatting.

Undo an action

Undo does just that—it undoes any actions as though they never happened.

1. Click the **Undo** button on the Quick Access Toolbar.

   Your last action is undone. For example, if you had deleted an item and then decided you wanted to keep it after all, undo would make it reappear.

   Other Ways to Undo:
   Press **<Ctrl>** + **<Z>**.

Redo an action

Redo is the opposite of undo: it redoes an action you have undone. For example, if you decide that you do, after all, want to delete an item that you have just brought back with undo, you can redo the delete action.

1. Click the **Redo** button on the Quick Access Toolbar.

   The last action you undid is redone.

   Other Ways to Redo an Action:
   Press **<Ctrl>** + **<Y>**.

   Tip: Click the **Redo** button list arrow to redo multiple actions.

Undo or redo multiple actions

1. Click the **Undo** button list arrow or **Redo** button list arrow on the Quick Access Toolbar.

   A list of the actions in Excel appears. To undo or redo multiple actions, point to the command you want to undo or redo.

   For example, to undo the last three actions, point at the third action in the list. Each action done before the one you select is also undone.

   Tip: You can undo or redo up to 100 actions in Excel, even after saving the workbook.

2. Click the last action you want to undo or redo in the list.

   The command you select and all subsequent actions are undone or redone.

Exercise Notes

- **Exercise File:** Mileage3-8.xlsx
- **Exercise:** Delete the contents of cell A1. Undo the action, then redo the action.

  Enter ".35" in F2. Delete rows 4 and 5. Undo both actions, then redo both actions.

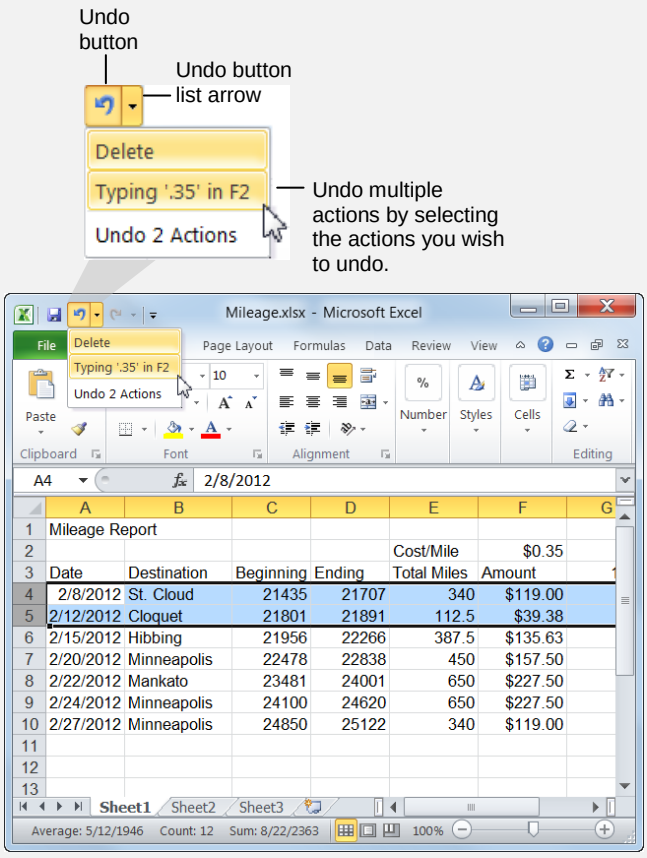


Figure 3-15: Using the Undo command.

Finding and Replacing Content

Don't waste time scanning your worksheet for labels and values that you want to replace with something new: Excel's find and replace commands can do this for you with just a few clicks of your mouse.

Find

The Find feature makes it very easy to find specific words and values in a worksheet.

1. Click the **Home** tab on the Ribbon and click the **Find & Select** button in the Editing group. Select **Find** from the list.

   The Find tab of the Find and Replace dialog box appears.

   Other Ways to Find Text:
   Press **<Ctrl>** + **<F>**.

2. Type the text or value you want to find in the "Find what" text box.

3. Click the **Find Next** button.

   Excel jumps to the first occurrence of the word, phrase, or value that you entered.

4. Click the **Find Next** button again to move on to other occurrences. When you're finished, click **Close**.

Replace

Replace finds specific words and values, and then replaces them with something else.

1. Click the **Home** tab on the Ribbon and click the **Find & Select** button in the Editing group. Select **Replace** from the list.

   The Replace tab of the Find and Replace dialog box appears.

   Other Ways to Replace Text:
   Press **<Ctrl>** + **<H>**.

2. Type the text or value you want replace in the "Find what" text box.

3. Type the replacement text or value in the "Replace with" text box.

Exercise Notes

- **Exercise File:** Mileage3-9.xlsx
- **Exercise:** Find all instances of "Minneapolis" in the worksheet.

  Replace all instances of "Mankato" with "Blaine".

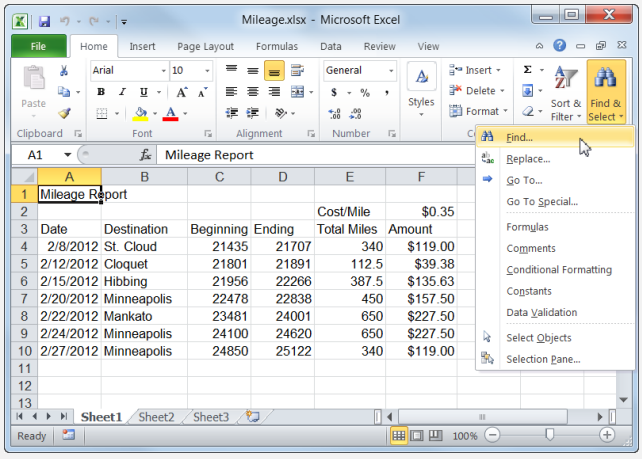


Figure 3-16: Opening the Find and Replace dialog box.

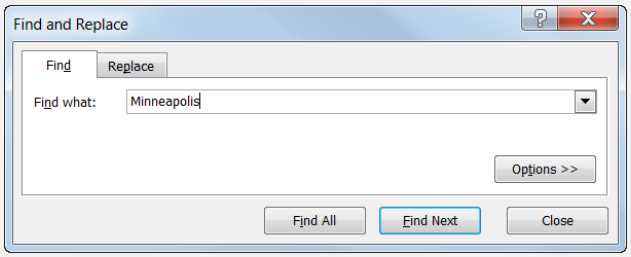


Figure 3-17: The Find tab of the Find and Replace dialog box.

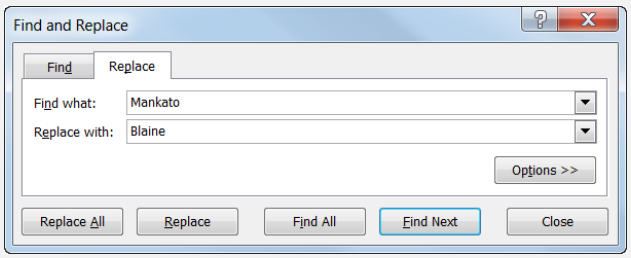


Figure 3-18: The Replace tab of the Find and Replace dialog box.

4. Click the **Find Next** button.

   Excel jumps to the first occurrence of the word, phrase, or value in the "Find what" box.

5. Choose how you want to replace the text:

   - **Replace:** Click to replace the current item.
   - **Replace All:** Click to replace each item found in the document. Use this command with caution: you might replace something you didn't want to replace.

6. Click **Close**.

Search options

Use Excel's search options to change how Excel searches in the document.

1. Click the **More** button in the Find and Replace dialog box to specify how to search for data.

   Table 3-4: Find and Replace Search Options describes the Search Options available under the Find and Replace tabs.

   Trap: If you specify Search Options, make sure to turn them off when you are finished. Otherwise, subsequent find or replace commands will use the same search options.

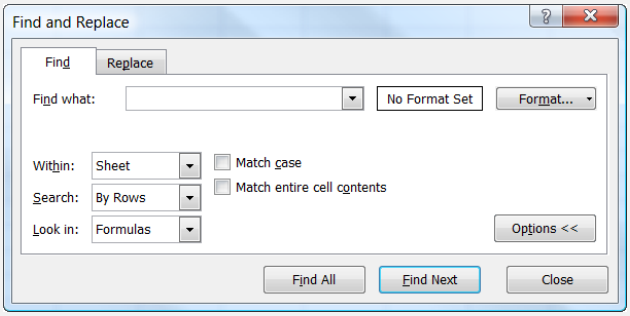


Figure 3-19: The Find and Replace dialog box with search options displayed.

Table 3-4: Find and Replace Search Options

Within	Choose whether to search within just the current sheet or the entire workbook.
Search	Search by rows (left to right, then top to bottom) or columns (top to bottom, then left to right).
Look in	Specify which kinds of data you want to search in, such as formulas, values, or comments.
Match case	Searches exactly as text is typed in the text box.
Match entire cell contents	Searches only for cells that match the contents in the text box entirely. Parts of phrases or words are not included.
Format button	Specify formatting characteristics you want to find attached to the text in the Find what text box.

Adding Comments to Cells

Sometimes you may need to add notes to a workbook to document complicated formulas or questionable values, or 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 Post-It Notes that you can attach to any cell. Cell comments appear whenever you point at the cell they're attached to.

Insert a comment

1. Click the cell you want to attach a comment to.
2. Click the **Review** tab on the Ribbon and click the **New Comment** button in the Comments group.
3. Type a comment.
4. Click outside the comment area when you're finished.

   Other Ways to Insert a Comment: Right-click the cell you want to attach a comment to and select **New Comment** from the contextual menu. Type a comment.

View a comment

1. Point to the red triangle-shaped comment marker that's located in the cell with the comment.

   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. Or, click the **Show All Comments** button in the Comments group to display all the comments in a worksheet at once.

Edit a comment

1. Click the cell that contains the comment you want to edit.
2. Click the **Review** tab on the Ribbon and click the **Edit Comment** button in the Comments group.
3. Edit the comment.

   You can change the size of a comment text box by clicking and dragging one of the eight sizing handles that surrounds the comment.

Exercise Notes

- **Exercise File:** Mileage3-10.xlsx
- **Exercise:** Add a comment to cell A10 that reads, "This date may be incorrect."

  View the comment.

  Edit the comment to add the sentence, "Would you please check my receipts to verify this?"

  Delete the comment.

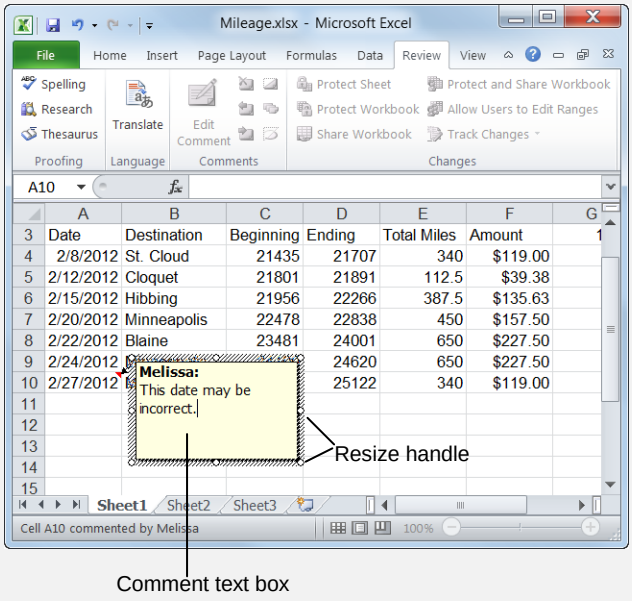


Figure 3-20: Cells with comments have a red comment indicator in the upper right corner of the cell.

4. Click outside the comment area when you're finished.

   Other Ways to Edit a Comment:
   Right-click the cell with the comment you want to edit and select **Edit Comment** from the contextual menu. Edit the comment.

Delete a comment

1. Click the cell that contains the comment you want to delete.

2. Click the **Review** tab on the Ribbon and click the **Delete** button in the Comments group.

   Other Ways to Delete a Comment:
   Right-click the cell you want to delete and select **Delete Comment** from the contextual menu.

Editing a Worksheet Review

Quiz Questions

16. You can replace cell contents by typing over the current contents. (True or False?)

17. To copy cells using the mouse, press and hold the _____ key while clicking and dragging the selection.
    A. <Alt>
    B. <Ctrl>
    C. <Shift>
    D. <F4>

18. The Paste Options button appears after pasting cells in Excel. (True or False?)

19. With the Paste Special command, you can choose to paste only _____.
    A. values
    B. formulas
    C. cell comments
    D. All of these are correct.

20. The Office Clipboard is available in other Office programs besides Excel. (True or False?)

21. Which button should you click to leave misspelled text alone and move to the next questionable word?
    A. Ignore Once
    B. Ignore All
    C. Add to Dictionary
    D. Change

22. When you insert a row, the existing rows are shifted in which direction?
    A. Left
    B. Upward
    C. Downward
    D. Right

23. Pressing the <Delete> key deletes the selected cell and its contents. (True or False?)

24. You can undo multiple actions in Excel. (True or False?)

25. To access the find and replace commands, click the Find & Select button in the _____ group on the Home tab.
    A. Editing
    B. Cells
    C. Number
    D. Clipboard

26. You can delete a cell comment, but you can't edit one. (True or False?)

Quiz Answers

16. True. Simply click a cell and type to replace its contents.

17. B. Press and hold the <Ctrl> key to copy cells using the mouse.

18. True. The Paste Options button appears after pasting cells in Excel.

19. D. You can use the Paste Special command to paste any of these elements.

20. True. The Office Clipboard can be used in all Office programs.

21. A. Click the Ignore Once button to leave text alone and move to the next questionable word.

22. C. The existing rows are shifted downward when you insert a row.

23. False. Pressing the <Delete> key only deletes the cell's contents.

24. True. You can undo multiple actions in Excel.

25. A. Editing

26. False. You can edit or delete a cell comment.

4Formatting a Worksheet

You probably have a few colleagues that dazzle everyone at meetings with their sharp-looking worksheets that use colorful fonts and borders.

This chapter explains how to format a worksheet to make it more visually attractive and easier to read.

You will learn how to change the appearance, size, and color of text and how to align text inside a cell. You will learn how to add borders and shading and how to use cell styles, as well as many other tools that will help your worksheets look more organized and professional.

Using Exercise Files

This chapter suggests exercises to practice the topic of each lesson. There are two ways you may follow along with the exercise files:

- Open the exercise file for a lesson, perform the lesson exercise, and close the exercise file.
- Open the exercise file for a lesson, perform the lesson exercise, and keep the file open to perform the remaining lesson exercises for the chapter.

The exercises are written so that you may "build upon them", meaning the exercises in a chapter can be performed in succession from the first lesson to the last.

Formatting Text

You can emphasize text in a worksheet by making the text darker and heavier (**bold**), slanted (*italics*), or in a different typeface (font). The Font group on the Home tab makes it easy to apply character formatting.

1. Click the cell(s) with the label you want to format.

2. Click the **Home** tab on the Ribbon and click a formatting button in the Font group.

   The text is formatted.

   Other Ways to Format Text:
   Right-click the cell(s) you want to format. Click a formatting button on the Mini Toolbar. Or, right-click the cell(s) you want to format and select **Format Cells** from the contextual menu or click the **Dialog Box Launcher** in the Font group. Select formatting options on the Font tab in the Format Cells dialog box.

Tips

- ✓ To use different font formats for different characters within the same cell, make the formatting changes while in edit mode.
- ✓ The formatting buttons in the Font group, such as Font Color and Font Size, are not just for formatting labels—you can use them to format values as well.
- ✓ Text is often called a "label" in Excel, because text usually acts as a label to the data in the worksheet.

Exercise Notes

- **Exercise File:** Sales4-1.xlsx
- **Exercise:** Format cell A1 with 14 pt Cambria font, then format the cell ranges B3:G3 and A4:A12 with bold Cambria font.

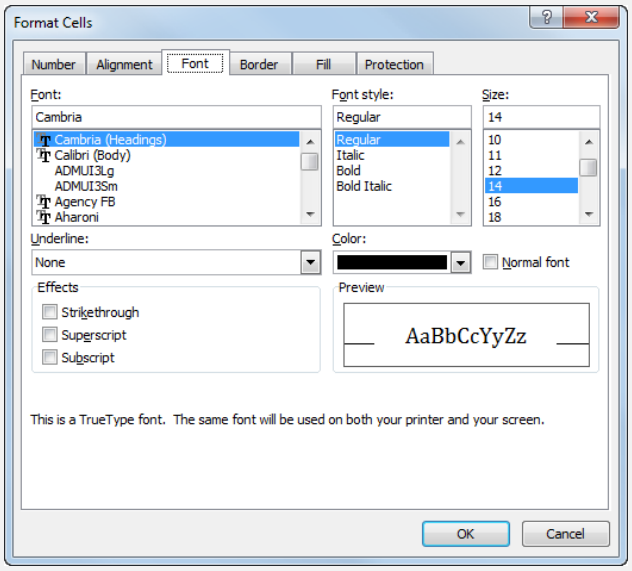


Figure 4-1: The Format Cells dialog box

Table 4-1: Font Formatting Buttons

Bold	Make text **darker and heavier**.
Italic	Make text *slant*.
Underline	Add a line or double line under text.
Font	Select a different font.
Font Size	Adjust font size.
Increase/Decrease Font Size	Adjust font size by one increment, either larger or smaller.
Font Color	Adjust text color.

Formatting Values

Applying number formatting changes how values are displayed—it doesn't change the actual information. Excel is often smart enough to apply some number formatting automatically. For example, if you use a dollar sign to indicate currency, such as $548.67, Excel will automatically apply the currency number format for you.

1. Click the cell(s) with the value(s) you want to format.

2. Click the **Home** tab on the Ribbon and click a formatting button in the Number group.

   The values are formatted. See the table below for more information on buttons in the Number group.

   Other Ways to Format Values:
   Right-click the cell(s) you want to format. Click a formatting button on the Mini Toolbar. Or, right-click the cell(s) you want to format and select **Format Cells** from the contextual menu or click the Number group's **Dialog Box Launcher**. Select formatting options on the Number tab in the Format Cells dialog box.

Tips

✓ Create custom number formats in the Format Cells dialog box by selecting the Custom category, selecting a number format code in the list, and editing it in the Type text box. Watch the sample area to see how the custom number format you create will be displayed.

✓ The formatting buttons in the Font group, such as Font Color and Font Size, are not just for formatting labels—you can use them to format values as well.

Exercise Notes

- **Exercise File:** Sales4-2.xlsx
- **Exercise:** Format the cell range B4:G12 with the Accounting number format and decrease the decimal places so no decimals are shown.

  Select the range B6:G10 and display the Format Cells dialog box. Select the Accounting category and remove the dollar symbols from the range (select None as the symbol).

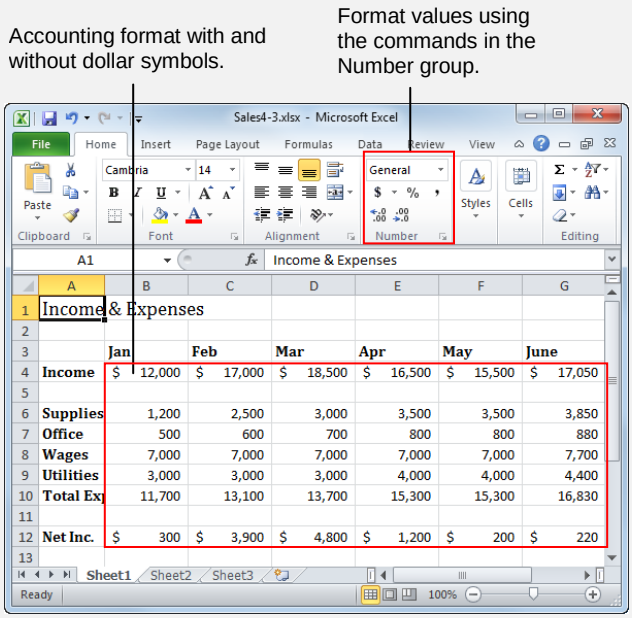


Figure 4-2: Formatted values.

Table 4-2: Number Formatting Buttons

General **Number Format**	1000	Select from several number formats—like General, Number, or Time—or click More to see all available formats.
$ **Accounting Number Format**	$1,000.00	Apply the Accounting number format, which adds a dollar sign ($) and decimal point.
% **Percent Style**	100%	Apply the Percent format, which converts the value to a percentage and adds a percent symbol (%).
, **Comma Style**	1,000	Add a thousands separator.
.0 .00 .00 .0 **Increase/Decrease Decimal**	1000.00 or 1000.0	Increase or decrease the number of digits shown after the decimal point.

Adjusting Row Height and Column Width

When you start working on a worksheet, all the rows and columns are the same size. As you enter information into the worksheet, you will quickly discover that some of the columns or rows are not large enough to display the information they contain.

Adjust column width

1. Point to the column header's right border until the pointer changes to a ↔.

2. Click and drag to the left or right to adjust the width.

   A dotted line appears as you drag, showing you where the new column border will be.

   Other Ways to Adjust Column Width: Right-click the column header(s), select **Column Width** from the contextual menu, and enter the column width. Or, select the column header(s), click the **Format** button in the Cells group on the Home tab, select **Width**, and enter column width.

Adjust row height

1. Point to the row header's bottom border until the pointer changes to a ↕.

2. Click and drag up or down to adjust the height.

   A dotted line appears as you drag, showing you where the new row border will be.

   Other Ways to Adjust Row Height: Right-click the row header(s), select **Row Height** from the contextual menu, and enter the row height. Or, select the row header(s), click the **Format** button in the Cells group on the Home tab, select **Height**, and enter the row height.

AutoFit columns or rows

The AutoFit feature automatically resizes columns or rows to fit the cell in each column or row that has the widest or tallest contents.

1. Double-click the right border of the column(s) or bottom border of the row(s).

Tips

✓ To AutoFit multiple rows or columns, select the rows and columns, then double-click the corresponding border to adjust all selected rows or columns.

Exercise Notes

- **Exercise File:** Sales4-3.xlsx
- **Exercise:** Adjust the width of column A to 13.00 points and the height of row 1 to 24.00 points.

  AutoFit columns B through G.

The screen tip displays the width of the column as the size changes.

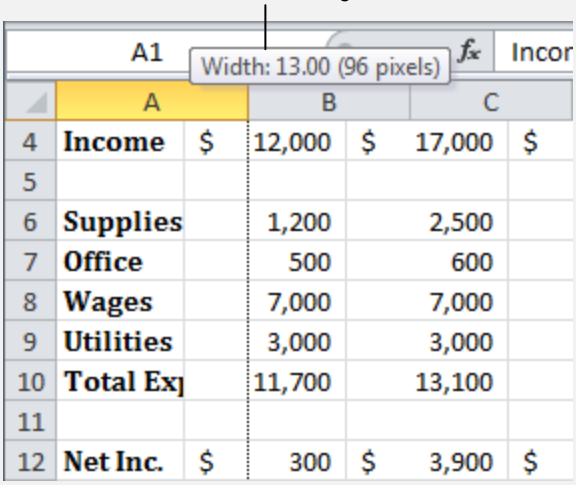


Figure 4-3: Increasing the width of column A.

Working with Cell Alignment

By default, the contents of a cell appear at the bottom of the cell, with values (numbers) aligned to the right and labels (text) aligned to the left. This lesson explains how to control the alignment of data in a cell.

1. Select the cell(s) you want to align.

2. Click the **Home** tab on the Ribbon and click an alignment button in the Alignment group.

   The cell contents are realigned. See Table 4-3: Cell Alignment Buttons in the Alignment Group for more information about alignment options in Excel.

   Other Ways to Align Cells:
   Right-click the cell(s) you want to align. Click an alignment button on the Mini Toolbar. Or, right-click the cell(s) you want to align and select **Format Cells** from the contextual menu or click the **Dialog Box Launcher** in the Alignment group. Select alignment options on the Alignment tab in the Format Cells dialog box.

Exercise Notes

- **Exercise File:** Sales4-4.xlsx
- **Exercise:** Center align the labels in cells B3:G3. Merge and center the label "Income & Expenses" across cells A1:G1.

	A	B
1	Left Aligned	
2	Centered	
3	Right Aligned	
4	Merged and Centered	
5	Indented	
6	The text in this cell is wrapped.	

Figure 4-4: An example of horizontal alignment options.

	A	B	C
1	Top Aligned	Middle Aligned	Bottom Aligned

Figure 4-5: An example of vertical alignment options.

Table 4-3: Cell Alignment Buttons in the Alignment Group

Top/Middle/Bottom Align	Align cell contents to the top, middle, or bottom of the cell using these three buttons.
Align Left/Center/Right	Align cell contents to the left side, center, or right side of the cell using these three buttons.
Orientation	Align cell contents diagonally or vertically.
Decrease/Increase Indent	Increase or decrease the margin between the cell contents and the cell border with these two buttons.
Wrap Text	Make all cell contents visible by displaying them on multiple lines within the cell (this increases the row's height).
Merge & Center list arrow	Select from a few options for merging cells together and centering cell contents within the merged cells.

Adding Cell Borders and Background Colors

Adding cell borders and filling cells with colors and patterns can make them more attractive, organized and easy to read.

Add a cell border

Borders are lines that you can add to the top, bottom, left, or right of cells.

1. Select the cell(s) you want to add the border to.

2. Click the **Home** tab on the Ribbon and click the **Border** list arrow in the Font group.

   A list of borders you can add to the selected cell(s) appears. Use the examples shown next to each border option to guide your decision.

   If the border configuration you want doesn't appear in the list, add one border at a time.

3. Select a border type.

   The border is applied.

   Tip: To remove a border, click the **Border** list arrow in the Font group and select **No Border**.

   Notice that the border option you chose now appears as the selected border type on the Border button. If you want to apply the some border to another cell, just click the Border button.

   Other Ways to Add a Border:
   Right-click the cell(s) you want to add the border to. Click the **Border** list arrow on the Mini Toolbar and select a border. Or, right-click the cell(s) you want to format and select **Format Cells** from the contextual menu or click the **Dialog Box Launcher** in the Font group. Click the **Border** tab in the Format Cells dialog box and select border options.

Draw a cell border

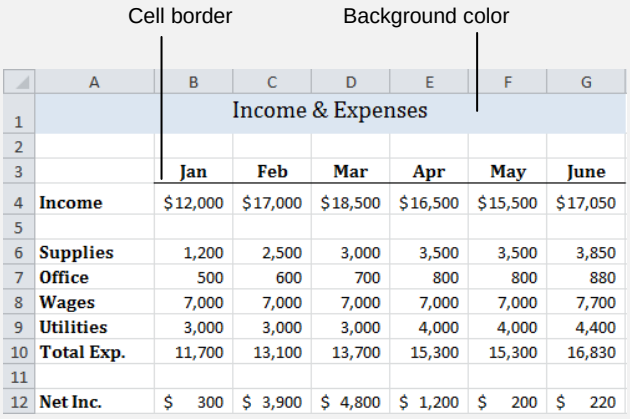
Sometimes it's easier to draw the borders you want to use in cells, so you can see the borders as they are applied.

1. Click the **Border** button list arrow in the Font group of the Home tab and select **Draw Border**.

   The cursor changes into a pencil shape.

Exercise Notes

- **Exercise File:** Sales4-5.xlsx
- **Exercise:** Add a bottom border to cells B3:G3 and B9:G9. Add a light blue fill color (Accent 1, Lighter 80%) to the Income & Expenses merged cell.



	A	B	C	D	E	F	G
1		Income & Expenses					
2							
3		Jan	Feb	Mar	Apr	May	June
4	Income	$12,000	$17,000	$18,500	$16,500	$15,500	$17,050
5							
6	Supplies	1,200	2,500	3,000	3,500	3,500	3,850
7	Office	500	600	700	800	800	880
8	Wages	7,000	7,000	7,000	7,000	7,000	7,700
9	Utilities	3,000	3,000	3,000	4,000	4,000	4,400
10	Total Exp.	11,700	13,100	13,700	15,300	15,300	16,830
11							
12	Net Inc.	$ 300	$ 3,900	$ 4,800	$ 1,200	$ 200	$ 220

Figure 4-6: Worksheet with cell borders and a background color applied.

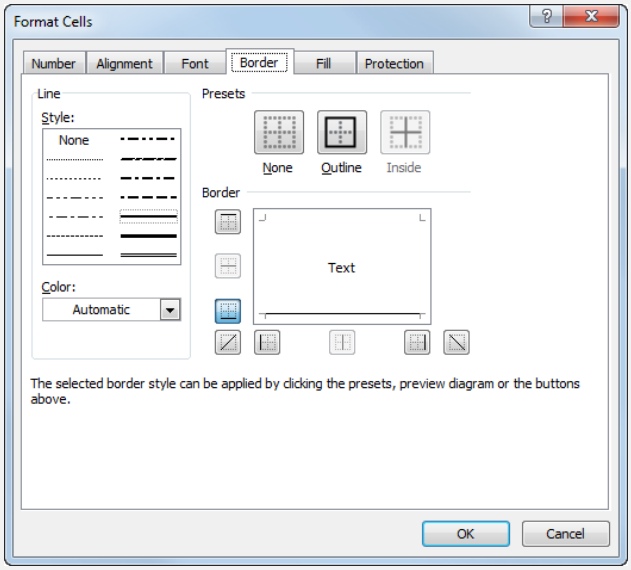


Figure 4-7: The Format Cells dialog box with the Border tab displayed.

2. Click and drag the cell gridlines where you want to apply the border.

   The borders are applied to cells as indicated.

Tips

✓ To change the style or color of the lines used by the Draw Border tool, click the **Border** button list arrow in the Font group and select the **Line Color** and **Line Style** you want to use.

Add a cell background color

Fill the background of a cell by adding a color or pattern.

1. Select the cell(s) you want to add the color to.

2. Click the **Home** tab on the Ribbon and click the **Fill Color** list arrow in the Font group.

   A list of colors you can add to the selected cell(s) appears.

3. Select the color you want to use.

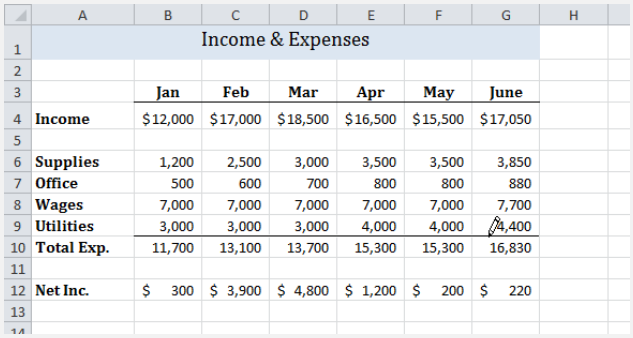
   The fill color is applied.

   Notice that the color you chose now appears as the selected color on the button. If you want to apply the shading to another paragraph, just click the button to apply the displayed shading color.

   Other Ways to Apply Background Color: Right-click the cell selection and click the **Fill Color** list arrow on the Mini Toolbar. Select a color. Or, right-click the cell(s) you want to format and select **Format Cells** from the contextual menu or click the **Dialog Box Launcher** in the Font group. Click the **Fill** tab in the Format Cells dialog box and select a background color or fill effects.

Tips

✓ You can use an image as the background of a worksheet. Click the **Page Layout** tab and click the **Background** button. Browse to and select the image you want to use as the worksheet background. Click **Insert**.



	A	B	C	D	E	F	G	H
1	Income & Expenses							
2								
3		Jan	Feb	Mar	Apr	May	June	
4	Income	$12,000	$17,000	$18,500	$16,500	$15,500	$17,050	
5								
6	Supplies	1,200	2,500	3,000	3,500	3,500	3,850	
7	Office	500	600	700	800	800	880	
8	Wages	7,000	7,000	7,000	7,000	7,000	7,700	
9	Utilities	3,000	3,000	3,000	4,000	4,000	4,400	
10	Total Exp.	11,700	13,100	13,700	15,300	15,300	16,830	
11								
12	Net Inc.	$ 300	$ 3,900	$ 4,800	$ 1,200	$ 200	$ 220	
13								

Figure 4-8: Click and drag the Draw Border tool to add borders to cells.

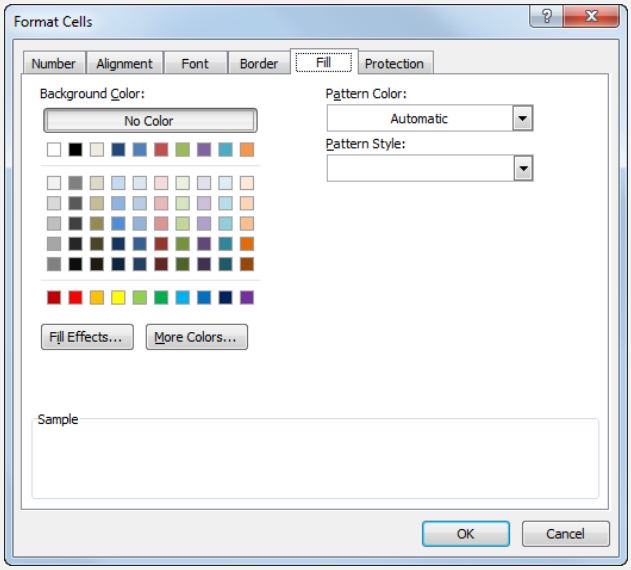


Figure 4-9: The Fill tab of the Format Cells dialog box.

Copying Formatting

If you find yourself applying the same cell formatting again and again, then you should familiarize yourself with the Format Painter tool. The Format Painter allows you to copy the formatting of a cell or cell range and apply it elsewhere.

1. Select the cell(s) with the formatting you want to copy.

2. Click the **Home** tab on the Ribbon and click the **Format Painter** button in the Clipboard group.

   Other Ways to Access the Format Painter Button:
   Select the cell(s) with the formatting options you want to copy, then right-click the selection. Click the **Format Painter** button on the Mini Toolbar.

   The mouse pointer changes to indicate it is ready to apply the copied formatting.

   Tip: Single-click the **Format Painter** button to apply copied formatting once. Double-click the **Format Painter** button to apply copied formatting as many times as necessary, then click it again or press the **<Esc>** key to deactivate the Format Painter.

3. Click the cell to which you want to apply the copied formatting.

   The copied formatting is applied.

Exercise

- **Exercise File:** Sales4-6.xlsx
- **Exercise:** Use the Format Painter to copy the value formatting from the cell B4 to the range B10:G10.

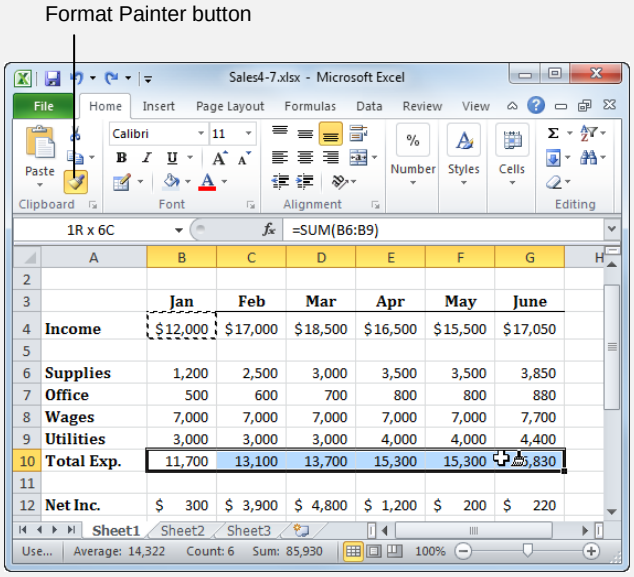


Figure 4-10: Using the Format Painter tool to copy formatting from cells in row 4 to cells in row 10.

Applying and Removing Cell Styles

Styles contain preset font formatting, cell shading, and other formatting items that can be applied to a cell or cell range all at once. This is a convenient and easy formatting option for your cells.

Apply a cell style

1. Select the cell(s) you want to format.
2. Click the **Home** tab and click the **Cell Styles** button in the Styles group.

   A gallery of styles appears.
3. Select a cell style.

   Tip: Hover the pointer over a style to preview how it will look before selecting it.

Remove a cell style

1. Select the cell(s) that have the cell style applied.
2. Click the **Home** tab and click the **Cell Styles** button in the Styles group.
3. Click **Normal**.

Tips

- ✓ 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.
- ✓ If you have another workbook that contains styles that you want to copy into the current workbook, click the **Cell Styles** button in the Styles group and select **Merge Styles**.

Exercise

- **Exercise File:** Sales4-7.xlsx
- **Exercise:** Apply the "Heading 3" cell style to the cell range B3:G3.
  Apply the "Heading 4" cell style to the cell range A4:A12.
  Apply the "Total" cell style to the cell range B12:G12.

  Remove the "Heading 4" cell style from the range A4:A12.

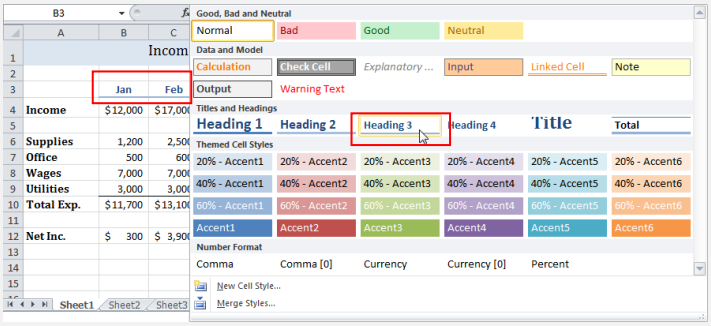


Figure 4-11: A preview of how the cell style will look appears as you hover over styles in the Cell Styles gallery.

Creating and Modifying Cell Styles

You can modify cell styles and create new styles.

Create a new cell style

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

1. Select the cell that has the formatting you want to use for the style.

   The new style will use these formatting properties.

   If you need, you will be able to modify the formatting further before the style is created.

2. Click the **Home** tab and click the **More** button in the Cell Styles gallery of the Styles group.

   A list of all the available cell styles appears.

3. Select **New Cell Style**.

   The Style dialog box appears with the formatting for the selected cell. You can further define the formatting for the cell if you wish.

4. Type a name for the style in the Style name text box.

   The name should be easy to identify.

5. (Optional) Check or uncheck "Style includes" boxes to select which formatting items you want the style to include.

   If you leave a check box empty, the default settings will be used for the cell.

6. (Optional) Click the **Format** button and define formatting as needed.

7. Click **OK**.

   The Format dialog box closes.

8. Click **OK**.

   The Style dialog box closes and the new style is available in the Cell Styles gallery.

9. Reapply the new style to the cell.

Tips

✓ New styles are added to the theme that is currently applied to the workbook.

Exercise

- **Exercise File:** Sales4-8.xlsx
- **Exercise:** Create a new style using the formatting in cell A1, and name the style Income&Expenses.

  Modify the Income&Expenses style: change the font size to 16 pt. and add Bold formatting.

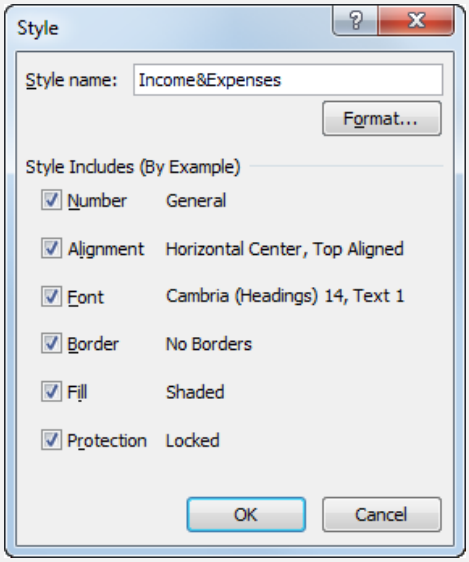


Figure 4-12: The Style dialog box.

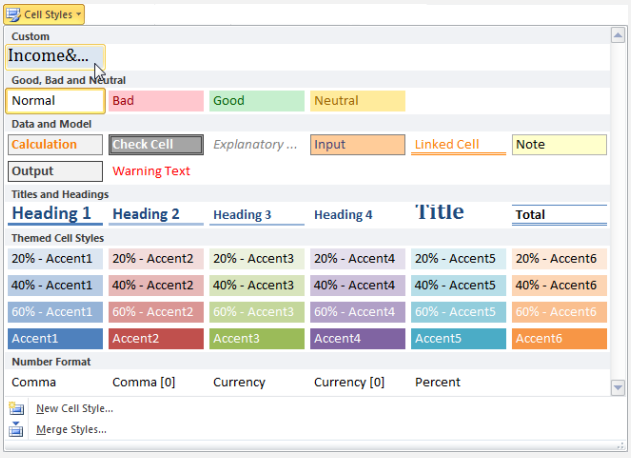


Figure 4-13: The new style appears under the Custom section of the Cell Styles gallery.

✓ If you have another workbook that contains styles that you want to copy into the current workbook, click the **Cell Styles** button in the Styles group and select **Merge Styles**.

Modify a cell style

1. Click the **Home** tab and click the **Cell Styles** button in the Styles group.

2. Right-click the cell style you want to modify and select **Modify**.

   The Style dialog box appears. This is where you can change the appearance of the style being modified or duplicated.

   Trap: Selecting **Modify** changes the style, while selecting **Duplicate** adds a new custom style and leaves the original built-in style alone.

3. Click the **Format** button and change formatting items on each tab, as needed. Click **OK**.

   The Format dialog box closes.

4. Click **OK**.

   The Style dialog box closes and the style is modified.

Tips

✓ To duplicate and then modify a cell style, right-click a style and select **Duplicate**. This creates a new custom style.

✓ To remove a cell style from all cells and delete the cell style itself, click the **Home** tab on the Ribbon and click the **Cell Styles** button in the Styles group. Right-click the style you want to delete and select **Delete**.

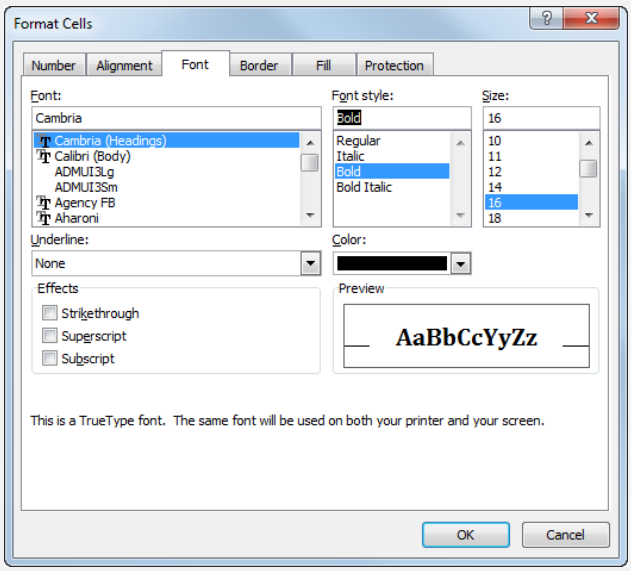


Figure 4-14: Change the formatting properties of a style as needed in the Format Cells dialog box.

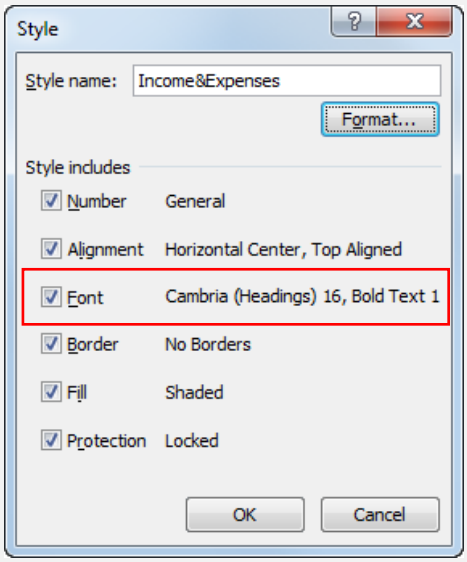


Figure 4-15: The Style dialog box shows updates to formatting after changes are applied in the Format Cells dialog box.

Using Document Themes

A theme is a set of unified design elements that you can apply to a worksheet to give it a consistent look and feel. Document themes coordinate the look of a worksheet with theme colors, theme fonts, and theme effects.

- **Theme Colors:** A set of eight coordinated colors used in formatting text and objects in the worksheet.
- **Theme Fonts:** A set of coordinated heading and body font types.
- **Theme Effects:** A set of coordinated formatting properties for shapes and objects in the document.

Apply a document theme

Applying a document theme affects all elements of the worksheet: colors, fonts, and effects.

1. Click the **Page Layout** tab on the Ribbon and click the **Themes** button in the Themes group.

   A list of built-in document themes appears. The default theme is "Office."

   Tip: You may browse for additional themes online by clicking **More Themes on Microsoft Office Online**. Or, if a theme is saved elsewhere on your computer or network location, click **Browse for Themes** to go to the theme's location.

2. Click the document theme you want to apply.

   The formatting associated with the selected document theme is applied to the worksheet.

Mix and match document themes

You are not bound to 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.

   The change is applied to the document. The document theme isn't changed, it is just no longer applied. If you want to use this set of theme items together again, you'll have to save them as a new document theme.

Exercise

- **Exercise File:** Sales4-9.xlsx
- **Exercise:** Apply the Black Tie document theme.

  Apply the Civic theme color set.

  Save these settings as a new document using the name "Income&Expenses".

  Change the workbook back to the Office document theme.

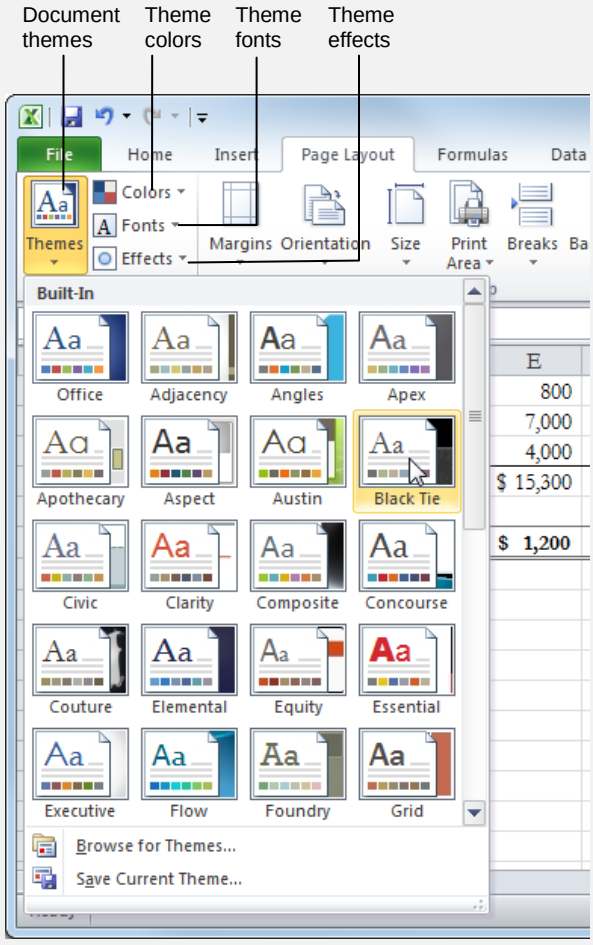


Figure 4-16: Selecting a document theme.

Create new theme colors and fonts

You can also change which colors or fonts make up the theme colors and theme fonts. This can be useful if you want to create a document theme that is customized for your company or for a special project.

1. Click the **Page Layout** tab on the Ribbon.
2. Click the **Theme Colors** or **Theme Fonts** button.
3. Select **Create New Theme Colors** or **Create New Theme Fonts** from the list.

   A dialog box appears where you can select colors or fonts.
4. Select the colors or fonts you want to use.

   Once the color or font theme looks the way you want it to, save it.
5. Type a name for the new theme in the "Name" text box.

   If you want to coordinate new theme colors and fonts, save them under the same name, just as they are with built-in themes.
6. Click **Save**.

Save a new document theme

Finally, you can save any combination of theme colors, theme fonts, and theme effects as a new document theme.

1. Apply the colors, fonts, and effects you want to use in the new document theme.
2. Click the **Page Layout** tab on the Ribbon and click the **Themes** button in the Themes group.
3. Select **Save Current Theme**.

   The Save Current Theme dialog box appears.
4. Type a name for the theme in the File name box.
5. Click **Save**.

Tips

- ✓ When you save a new theme color or font, or save a new document theme, it becomes available in all Office programs.
- ✓ To remove a custom theme or theme element, right-click the theme and select **Edit**. Click **Delete** in the dialog box and click **Yes** to confirm the deletion.

Applying Conditional Formatting

Conditional formatting formats cells only if a specified condition is true. For example, you could use conditional formatting to display weekly sales totals that exceeded $50,000 in bright red boldface formatting, and bright blue italics formatting if the sales totals were under $20,000. If the value of the cell changes and no longer meets the specified condition, the cell returns to its original formatting.

Apply Highlight Cells Rules and Top/Bottom Rules

You can highlight specific cells in a range using a comparison operator; only cells that meet the specified criteria will be formatted. For example, you can highlight cells with values that are greater than a certain value.

1. Select the cell range you want to format.

2. Click the **Home** tab on the Ribbon and click the **Conditional Formatting** button in the Styles group.

   A menu appears. Here you have several conditional formatting rules to choose from:

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

   Top/Bottom Rules: These conditions 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.

3. Point to **Highlight Cells Rules** or **Top/Bottom Rules** and select a conditional formatting rule.

   A dialog box appears, allowing you to specify the details relating to the rule.

   For example, if you selected the Greater Than rule, in the "Format cells that are GREATER THAN:" box you can enter a value or click a cell to enter a cell reference. Then you can click the list arrow and select the formatting you want to apply to cells that fit the criteria you set—in this example, cells that are greater than the value you entered.

4. Complete the dialog box to define the condition.

5. Click **OK**.

   The conditional formatting is applied to the cells.

Exercise

- **Exercise File:** Sales4-10.xlsx
- **Exercise:** Use conditional formatting to highlight cells that are below average in cell range B4:G4.

  Add Blue data bars to cells B10:G10.

  Add the 3 Arrows (colored) icon set to cells B12:G12. (You may need to widen columns so the contents are visible.)

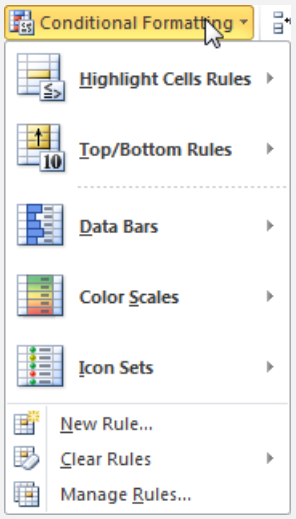


Figure 4-17: This list of options appears when you click the Conditional Formatting button in the Styles group.

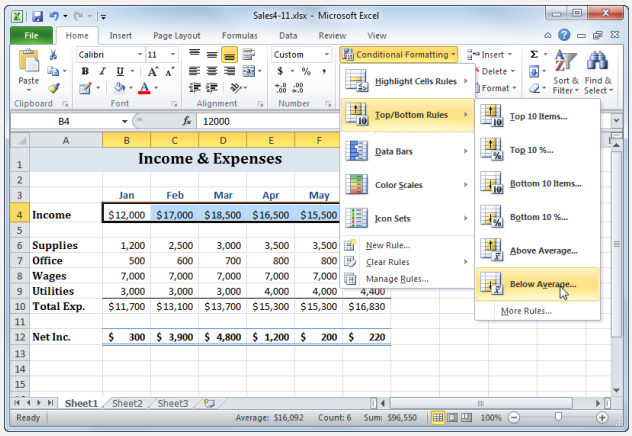


Figure 4-18: Applying conditional formatting.

Apply Data Bars, Color Scales and Icon Sets

You can also format cells with data bars, color scales, or icon sets to visually display variations in the values of cells in a range.

1. Select the cell range you want to format.

2. Click the **Home** tab on the Ribbon and click the **Conditional Formatting** button in the Styles group.

   Let's take a closer look at three similar types of conditional formatting:

   Data Bars: Colored bars appear in the cells. The longer the bar, the higher the value in that cell. You can choose from different bar colors.

   Color Scales: Cells are shaded different color gradients depending on the relative value of each cell compared to the other cells in the range. You can choose from different colors.

   Icon Sets: Different shaped or colored icons appear in cells, based on each cell's value. You can choose from several types and colors of icons.

3. Point to **Data Bars**, **Color Scales** or **Icon Sets**.

   A menu appears, differing based on your selection.

4. Select a data bar, 2- or 3-color scale, or icon set.

   The conditional formatting is applied to the cells.

Tips

- ✓ Additional options for data bars have been added to Excel 2010. You can apply solid fills and borders, and even change the direction of the bar. Data bars also have a new way to display negative values
- ✓ More icon sets have been added to Excel 2010. You can also specify which icons appear from an icon set.

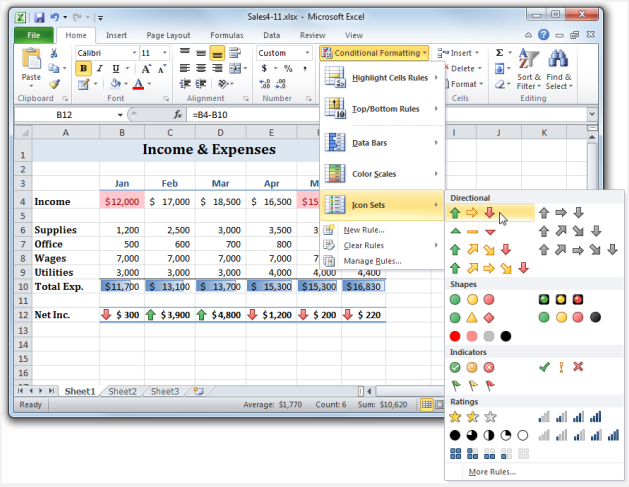


Figure 4-19: Applying conditional formatting.

	A	B	C	D	E	F	G
1	Income & Expenses						
2							
3		Jan	Feb	Mar	Apr	May	June
4	Income	$12,000	$ 17,000	$ 18,500	$ 16,500	$15,500	$17,050
5							
6	Supplies	1,200	2,500	3,000	3,500	3,500	3,850
7	Office	500	600	700	800	800	880
8	Wages	7,000	7,000	7,000	7,000	7,000	7,700
9	Utilities	3,000	3,000	3,000	4,000	4,000	4,400
10	Total Exp.	$11,700	$ 13,100	$ 13,700	$ 15,300	$15,300	$16,830
11							
12	Net Inc.	$ 300	$3,900	$4,800	$1,200	$ 200	$ 220
13							

Figure 4-20: The worksheet with conditional formatting applied.

Creating and Managing Conditional Formatting Rules

You can create and manage new conditional formatting rules that follow the parameters and formatting you specify.

Create a new rule

1. Select the cell range you want to format with a customized rule.

2. Click the **Home** tab on the Ribbon and click the **Conditional Formatting** button in the Styles group.

3. Select **New Rule**.

   The New Formatting Rule dialog box appears.

4. Select a rule type in the Select a Rule Type list.

5. Complete the fields in the Edit the Rule Description area.

   This area will display different fields depending on the type of rule you selected.

   Tip: Click **Preview** in the New Formatting Rule dialog box if you want to see how the rule will appear before you apply it.

6. Click **OK**.

   The new rule is created and formatting is applied.

   Other Ways to Create a New Rule:
   Click the **Home** tab on the Ribbon and click the **Conditional Formatting** button in the Styles group. Click **Manage Rules**, then click **New Rule**. Or, click the **Home** tab on the Ribbon and click the **Conditional Formatting** list arrow in the Styles group. Click one of the rule types, then click **More Rules**.

Manage rules

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

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

2. Click the **Home** tab on the Ribbon and click the **Conditional Formatting** button in the Styles group.

Exercise

- **Exercise File:** Sales4-11.xlsx
- **Exercise:** Create and apply a new formatting rule that applies bold formatting to values that are below average for cell range B4:G4.

  Select cells B12:G12 and edit the rule so that the green icon appears for values greater than or equal to 60% and the yellow for values greater than or equal to 30%.

  Clear all the conditional formatting on the worksheet.

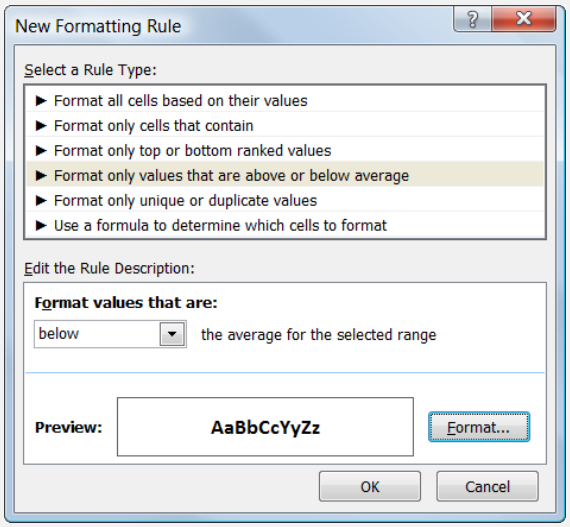


Figure 4-21: Creating a new conditional formatting rule.

3. 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 formatting rule.
   - **Delete Rule:** Delete the selected rule from the worksheet.

   Tip: If you don't select a cell range where conditional formatting is applied, you can view all the rules in the worksheet. Click the **Show formatting rules for** list arrow and select **This Worksheet**.

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

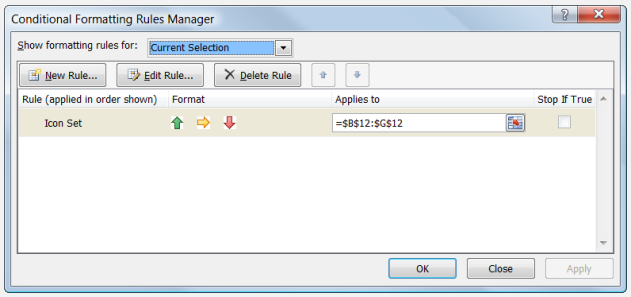


Figure 4-22: The Conditional Formatting Rules Manager dialog box.

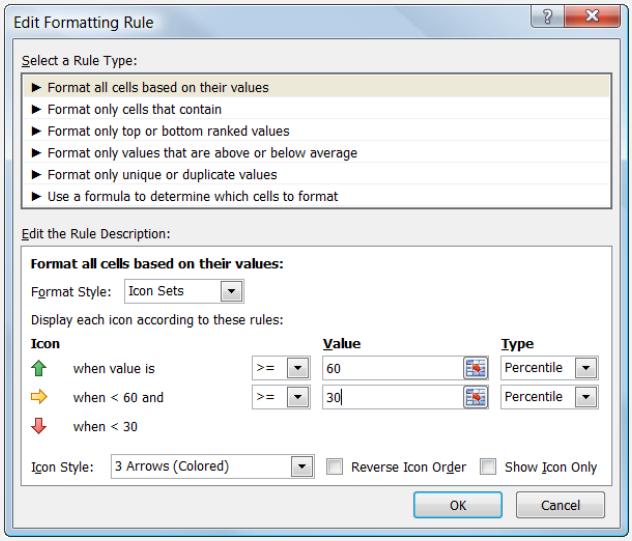


Figure 4-23: Editing a formatting rule.

Remove conditional formatting

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

1. Click the **Home** tab on the Ribbon and click the **Conditional Formatting** list arrow in the Styles group.

   If you want to clear only a selection of cells, first select the cell range.

2. Point to **Clear Rules**.

3. Select **Clear Rules from Selected Cells** or **Clear Rules from Entire Sheet**.

   Conditional formatting is cleared either from the cells you've selected or the entire worksheet.

	A	B	C	D	E	F	G	H
1		Income & Expenses						
2								
3		Jan	Feb	Mar	Apr	May	June	
4	Income	$12,000	$ 17,000	$ 18,500	$ 16,500	$15,500	$17,050	
5								
6	Supplies	1,200	2,500	3,000	3,500	3,500	3,850	
7	Office	500	600	700	800	800	880	
8	Wages	7,000	7,000	7,000	7,000	7,000	7,700	
9	Utilities	3,000	3,000	3,000	4,000	4,000	4,400	
10	Total Exp.	$11,700	$ 13,100	$ 13,700	$ 15,300	$15,300	$16,830	
11								
12	Net Inc.	$ 300	$3,900	$4,800	$1,200	$ 200	$ 220	
13								

Figure 4-24: The worksheet with edited conditional formatting.

Finding and Replacing Formatting

Excel's Find and Replace features can find and/or replace formatting in addition to text and information.

1. Click the **Home** tab on the Ribbon and click the **Find & Select** button in the Editing group.

2. Select **Replace**.

   The Find and Replace dialog box appears, displaying the Replace tab.

   Other Ways to Open Find and Replace: Press **<Ctrl>** + **<H>**.

3. Click the **Options** button.

   The dialog box expands to display more search options.

4. Click the top **Format** button.

   The Find Format dialog box appears.

5. Select the formatting options you want to find and then click **OK**.

6. Click the bottom **Format** button.

   The Replace Format dialog box appears.

7. Select the new formatting options you want to use and click **OK**.

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

8. Click **Find Next** to find each occurrence of the cell formatting. Click **Replace** to replace the cell formatting.

   After you replace an occurrence, Excel automatically moves to the next occurrence, so you only need to click Find Next if you want to skip an occurrence without replacing the formatting.

Tips

- ✓ Click **Replace All** to replace all occurrences of the cell formatting at once.
- ✓ To find other types of items, click the **Find & Select** button and then select one of the Find options: Formulas, Comments, Conditional Formatting, Constants, or Data Validation.

Exercise

- **Exercise File:** Sales4-12.xlsx
- **Exercise:** Replace all bold formatting in the worksheet with bold italic formatting.

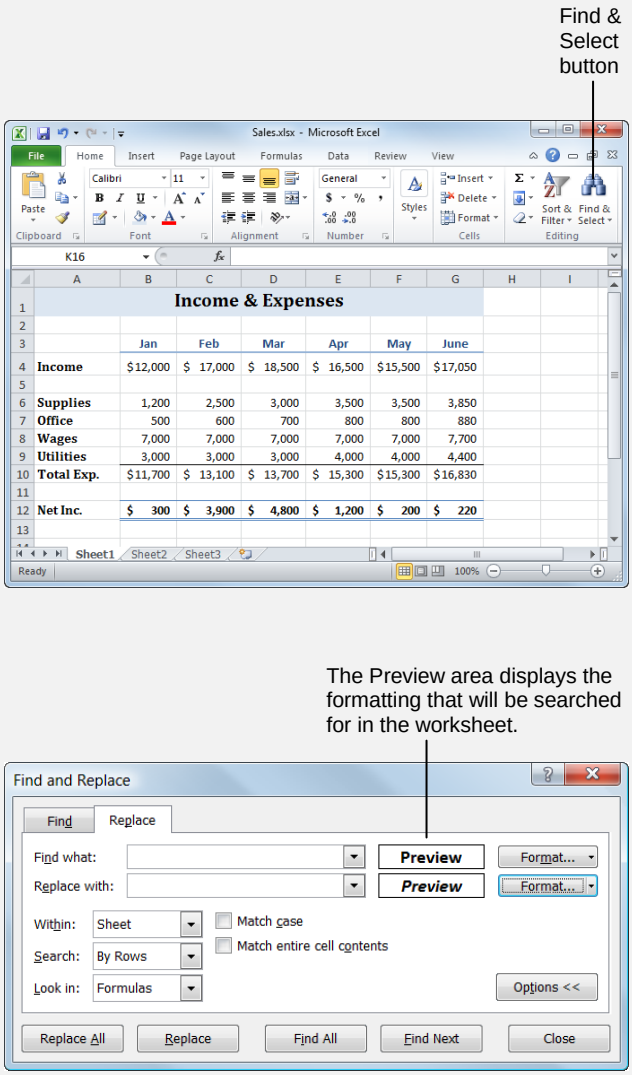


Figure 4-25: The Replace tab of the Find and Replace dialog box.

	A	B	C	D	E	F	G
1		Income & Expenses					
2							
3		Jan	Feb	Mar	Apr	May	June
4	*Income*	$12,000	$ 17,000	$ 18,500	$ 16,500	$15,500	$17,050
5							
6	*Supplies*	1,200	2,500	3,000	3,500	3,500	3,850
7	*Office*	500	600	700	800	800	880
8	*Wages*	7,000	7,000	7,000	7,000	7,000	7,700
9	*Utilities*	3,000	3,000	3,000	4,000	4,000	4,400
10	*Total Exp.*	$11,700	$ 13,100	$ 13,700	$ 15,300	$15,300	$16,830
11							
12	*Net Inc.*	*$ 300*	*$ 3,900*	*$ 4,800*	*$ 1,200*	*$ 200*	*$ 220*
13							

Figure 4-26: The formatting of headings in cell range B3:G3 is updated through finding and replacing formatting.

Formatting a Worksheet Review

Quiz Questions

27. Which of the following is NOT a type of font formatting?
    A. Bold
    B. Italic
    C. Underline
    D. Comma Style

28. Which of the following is NOT a type of number formatting?
    A. Number
    B. Accounting
    C. Dollar
    D. Percentage

29. The _____ feature automatically resizes columns or rows to best fit cell contents.
    A. AutoFit
    B. AutoSize
    C. AutoAdjust
    D. FitRight

30. You can align cell contents horizontally but not vertically within a cell. (True or False?)

31. The Border list arrow is located in the _____ group on the Home tab.
    A. Alignment
    B. Clipboard
    C. Font
    D. Number

32. Click the Format Painter button once to apply it once or twice to apply it multiple times. (True or False?)

33. Excel contains preset formatting styles that you can quickly apply to cells. (True or False?)

34. Which of these formatting properties can be included in style formatting?
    A. Number
    B. Font
    C. Fill and Border.
    D. All of these.

35. Document themes consist of:
    A. Theme colors
    B. Theme fonts
    C. Theme effects
    D. All of these

36. _____ allows you to highlight cells that meet specific criteria.
    A. Conditional formatting
    B. Font formatting
    C. Filtering
    D. Find and replace

37. Which of the following is not a conditional format that can be applied to cells?
    A. Data Bars
    B. Characters
    C. Color Scales
    D. Icon Sets

38. You can preview how a new conditional formatting rule looks before you apply it. (True or False?)

39. You cannot edit a conditional formatting rule after you've created it. (True or False?)

40. Which of the following types of items can NOT be found using Excel's Find feature?
    A. Formulas
    B. Comments
    C. Conditional Formatting
    D. Styles

Quiz Answers

27. D. Comma Style is not a type of font formatting.

28. C. Dollar is not a type of number formatting.

29. A. AutoFit resizes columns or rows to best fit cell contents.

30. False. You can align cell contents vertically and horizontally within a cell.

31. C. The Border list arrow is located in the Font group.

32. True. Click the Format Painter button once to apply it once or twice to apply it multiple times.

33. True. Excel contains preset formatting styles that are all ready for you to apply to cells.

34. D. Number, Font, Fill and Border, are all available in cell styles. You can also include Alignment and Protection formatting in the style.

35. D. Document themes consist of theme colors, fonts, and effects.

36. A. Conditional formatting allows you to highlight cells that meet specific criteria.

37. B. Characters is not a conditional formatting option in Excel.

38. True. Click Preview in the New Formatting Rule dialog box to see how new conditional formatting will look before you apply it.

39. False. You can edit a conditional formatting rule.

40. D. Styles cannot be found using the Find feature.

5

5Creating and Working with Charts

Charts allow you to present data, relationships, or trends graphically. Charts are often better at presenting information than hard-to-read numbers in a table or spreadsheet.

In this chapter, you will learn how to create, edit and format dynamic looking charts.

Using Exercise Files

This chapter suggests exercises to practice the topic of each lesson. There are two ways you may follow along with the exercise files:

- Open the exercise file for a lesson, perform the lesson exercise, and close the exercise file.
- Open the exercise file for a lesson, perform the lesson exercise, and keep the file open to perform the remaining lesson exercises for the chapter.

The exercises are written so that you may "build upon them", meaning the exercises in a chapter can be performed in succession from the first lesson to the last.

Choosing and Selecting the Source Data

Charts are a great way to share data and information. 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 data

When you realize that you need a chart, you have to decide what data needs to be included in it.

- **What is the main point?**
  What is the purpose of the chart? Identify the point of the chart, and then include the data that illustrates this point and puts it in context.
- **What is the truth?**
  Avoid spinning the data. Communicate what the data shows, not what you want it to say.
- **Keep it simple.**
  Only show the data that is relevant. This makes it easier to process the information that is important. Make sure that that the rest of the data is available so that your conclusions are backed up with ample evidence.

Select the data

Once you know what data and labels you wish to include in the chart, select them.

1. Click and drag to select the cells you want to include in the chart. To select multiple non-adjacent cells, select a cell or cell range and hold down the **<Ctrl>** key while you select other cells.

   Include labels for rows and columns in the cells you select. These labels provide context for the chart data.

Tips

✓ If a value changes in the chart's data source, that change is automatically updated in the chart.

✓ If you do not include labels in the selected cell range, Excel will insert placeholders in the chart.

Exercise

- **Exercise File:** Survey5-1.xlsx
- **Exercise:** Select A4:D9 and A12:D12.

	A	B	C	D	E
1	North Shore Travel - Northern Division				
2	Travel Purpose Survey Results				
3					
4		Business	Leisure	Other	Total
5	Australia	25	15	3	**43**
6	Canada	35	40	10	**85**
7	China	63	58	16	**137**
8	Europe	97	150	20	**267**
9	Japan	48	32	7	**87**
10	Middle Eas	18	12	2	**32**
11	South Afri	4	5	0	**9**
12	U.S.	135	122	90	**347**

Figure 5-1: An example of results from a survey. You want to show that among all travel destinations, the most popular destination for trips taken for leisure is Europe.

Labels identify the data listed in the worksheet. In this example, the labels appear in column A and row 4.

	A	B	C	D	E
1	North Shore Travel - Northern Division				
2	Travel Purpose Survey Results				
3					
4		Business	Leisure	Other	Total
5	Australia	25	15	3	**43**
6	Canada	35	40	10	**85**
7	China	134	58	16	**208**
8	Europe	97	150	20	**267**
9	Japan	48	32	7	**87**
10	Middle East	18	12	2	**32**
11	South Africa	4	5	0	**9**
12	United State	135	122	90	**347**

Figure 5-2: In this example, the data labels in column A and row 4 are selected along with the values in B5:D9 and B12:D12.

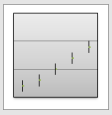
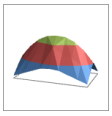
Choosing the Right Chart

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.

Exercise

- **Exercise File:** None required.
- **Exercise:** Review the different types of charts available in Excel.

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 area beneath the lines is 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.
	**Doughnut**	A doughnut chart shows the relationship of parts to a whole, but it can contain more than one data series. (You may want to try stacked column or stacked bar charts instead.)
	**Bubble**	Bubble charts are similar to XY Scatter charts, but they compare three sets of values instead of two, with the third set determining the size of the bubble.
	**Radar**	Radar charts compare the aggregate values of a number of data series.

Inserting a Chart

Once you've chosen the type of chart you wish to use, insert the chart in your worksheet.

1. Make sure the cell range containing the data and labels you want to chart are selected.

   Tip: You can chart non-adjacent cells if you hold down the **<Ctrl>** key while selecting the cells.

2. Click the **Insert** tab on the Ribbon.

   In the Charts group, there are several chart types to choose from. Each of the chart types then has several charts to choose from.

3. Click a **chart type** button in the Charts group.

   A list of charts for the selected chart type appears.

4. Select the chart you want to use from the list.

   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.

Tips

- ✓ To see all available chart types, click any chart type in the Charts group, and then select **All Chart Types**. The Insert Chart dialog box appears, displaying every chart type that is available.

Move a chart within a worksheet

Usually you will have to move a chart after it is inserted because it covers up the data on the worksheet.

1. Select the chart.

2. Point to the chart's border.

   The pointer changes to a cross-arrow pointer.

3. Click and drag the chart in the worksheet.

Move a chart to another worksheet

You can move a chart to another worksheet as an embedded object or move it to its own worksheet.

1. Under Chart Tools on the Ribbon, click the **Design** tab and click the **Move Chart** button in the Location group.

   The Move Chart dialog box appears, displaying two options:

Exercise

- **Exercise File:** Survey5-3.xlsx
- **Exercise:** Select cell range A4:D9 and insert a 2-D Clustered Column chart.

  Move the chart so that the upper left corner is in cell A14.

  Resize the chart so that it covers A14:F28.

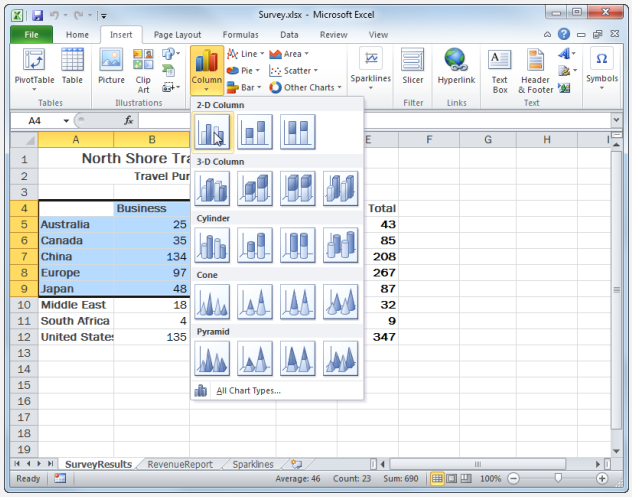


Figure 5-3: Selecting a chart to insert.

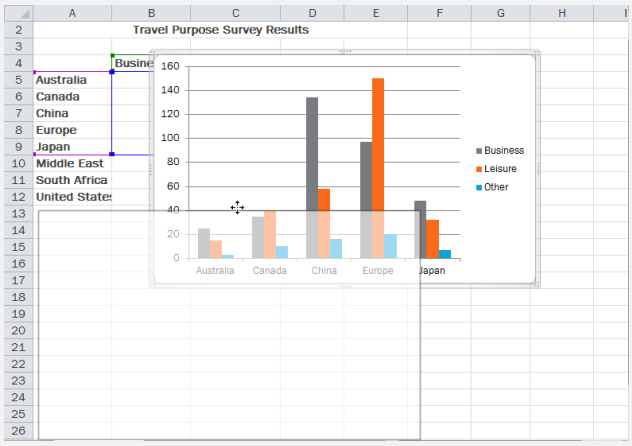


Figure 5-4: To move a chart within a worksheet, click and drag the chart to a new location.

- **New sheet:** Moves the chart to its own worksheet.
- **Object in:** Allows you to embed the chart in another existing worksheet.

2. Select the option you want to use and enter or select a worksheet name.
3. Click **OK**.

Resize the chart

1. Select the 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.

   Tip: Clicking a chart displays the Chart Tools on the Ribbon, which include the Design, Layout, and Format tabs.

2. Click a sizing handle and drag it to resize the chart.

   The chart is resized.

   Tip: A faint outline appears as you drag the chart border so that you can preview the size of the chart before releasing the mouse button.

   Other Ways to Resize a Chart:
   Under Chart Tools on the Ribbon, click the **Format** tab and use the Height and Width fields in the Size group.

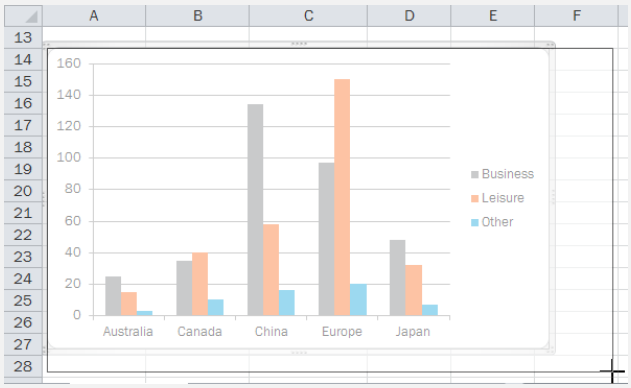


Figure 5-5: To resize a chart, click and drag the corner of the chart.

Editing, Adding, and Removing Chart Data

After you've inserted the chart, you'll probably still change the data. You can edit, add, and remove chart data even after you've inserted your chart.

Edit chart source data

The values in a chart are linked to the worksheet data from which the chart is created. If you change the source data, the chart will automatically chart the new values.

1. Replace and edit values in the source data.

   The changes are automatically reflected in the chart.

Add a data series

You can always add data to a chart after it has been created. Here's how to add a data series.

1. Select the chart; then click the **Design** tab and click the **Select Data** button in the Data group.

   The Select Data Source dialog box appears.

2. Click the **Add** button under Legend Entries (Series).

   The Edit Series dialog box appears.

3. In the "Series name" box, select the name of the series from the worksheet or type the series name.

4. In the "Series values" box, select the data range of the data series or type the cell range reference.

   Tip: Remove placeholder text before selecting the series values. For example, if a {1} appears in the Series values text box, remove these characters so only the equals sign (=) remains. Then you are ready to enter or select values.

5. Click **OK**.

   The Edit Series dialog box closes.

6. Click **OK**.

   The Select Data Source dialog box closes, and the data is added to the chart.

   Other Ways to Add Data to a Chart:
   If the chart uses adjacent cells for source data, click and drag the **sizing handles** around the source data on the worksheet.

Exercise

- **Exercise File:** Survey5-4.xlsx
- **Exercise:** Change the value in cell B7 to "134".

  Add the "Total" data series to the chart.

  Add the "Middle East" category to the chart.

  Remove the "Total" data series from the chart.

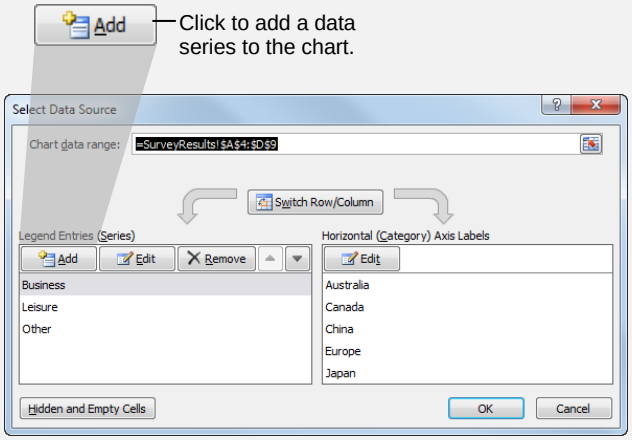
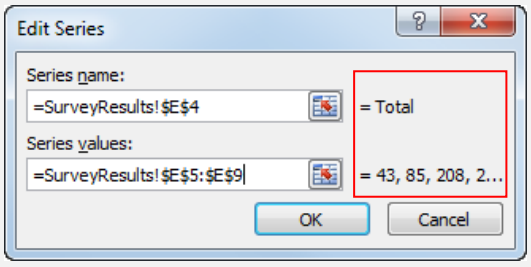


Figure 5-6: The Select Data Source dialog box.



A preview of the values is displayed along the right side of the dialog box.

Figure 5-7: Adding a new data series.

	A	B	C	D	E	F
1	North Shore Travel - Northern Division					
2	Travel Purpose Survey Results					
3						
4		Business	Leisure	Other	Total	
5	Australia	25	15	3	43	
6	Canada	35	40	10	85	
7	China	134	58	16	208	
8	Europe	97	150	20	267	
9	Japan	48	32	7	87	
10	Middle East	18	12	2	32	
11	South Africa	4	5	0	9	
12	U.S.	135	122	90	347	
13						

Figure 5-8: Another way to add and remove data in a chart is to click and drag the sizing handles around the source cells. These sizing handles only appear if the source data is adjacent.

Copy data into a chart

Another way to add data to a chart is to copy it into the chart. This is useful if your chart uses non-adjacent cells for source data or if the chart and source data are not on the same worksheet.

1. Select the cells containing the data you wish to add to the chart, including labels for the data.
2. Click the **Home** tab on the Ribbon and click the **Copy** button in the Clipboard group.

   The data is copied to the clipboard.
3. Select the chart to which you wish to add the data.
4. Click the **Paste** button in the Clipboard group.

   The chart is updated to include the pasted data.

Remove a data series

If you need to simplify your chart or you need to get rid of some data, it's easy to remove a data series from the chart.

1. Under Chart Tools on the Ribbon, click the **Design** tab and click the **Select Data** button in the Data group.

   The Select Data Source dialog box appears.
2. Select the data series you want to remove under Legend Entries (Series).
3. Click the **Remove** button under Legend Entries (Series).

   The data series is removed from the chart.

   Other Ways to Delete Data:
   Select the source data you want to remove from the chart and press **<Delete>**.
4. Click **OK**.

   The Select Data Source dialog box closes and the chart is updated.

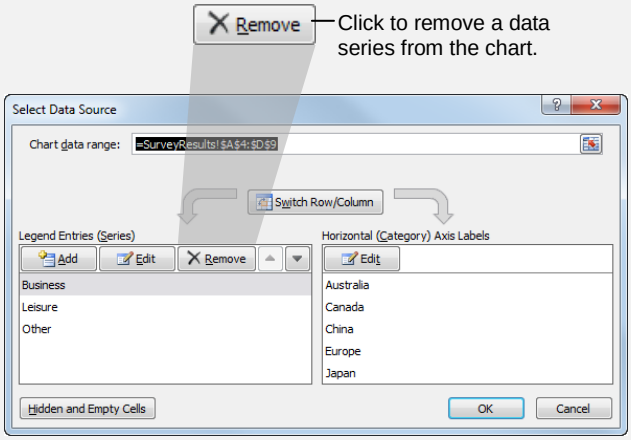


Figure 5-9: The Select Data Source dialog box.

Changing Chart Data

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

Change the source cell range

If you need to use a new set of data for your chart, you can change the data source.

1. Under Chart Tools on the Ribbon, click the **Design** tab and click the **Select Data** button in the Data group.

   The Select Data Source dialog box appears.

2. Click the **Chart Data Range** reference button and select the cell(s) you want to use as the data source. Press and hold the **<Ctrl>** key to include non-adjacent cells in the data source.

3. Press **<Enter>**.

   The Select Data Source dialog box expands. The new cell range for the source data is selected in the Chart data range text box.

4. Click **OK**.

   The dialog box closes and the chart is updated with the new data.

Rename or edit 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. Under Chart Tools on the Ribbon, click the **Design** tab and click the **Select Data** button in the Data group.

   The Select Data Source dialog box appears.

2. Select the series you want to change under Legend Entries (Series).

3. Click the **Edit** button.

   The Edit Series dialog box appears.

4. In the "Series name" box, type the label you want to use for the series, or select the label from the worksheet.

   Tip: If you type a name for the data series, that name is not added to the worksheet, it only appears in the chart.

Exercise

- **Exercise File:** Survey5-5.xlsx
- **Exercise:** Change the source cell range to A4:D4, A6:D9, A12:D12.

  Rename the "Other" data series "Adventure" without changing the source data.

  Reorder the data series to this order:
  Leisure
  Business
  Adventure

  Rename the "United States" category "U.S."

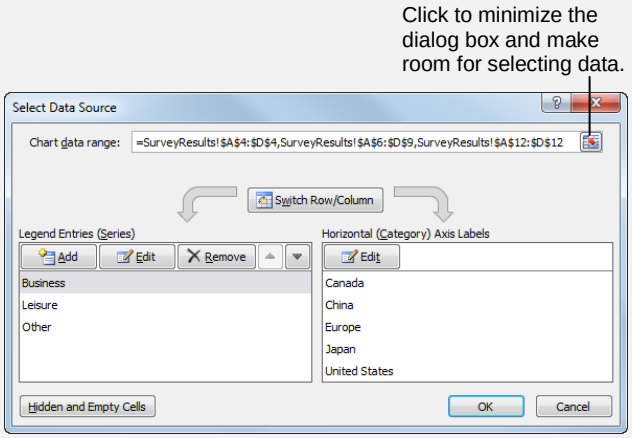


Figure 5-10: The Select Data Source dialog box.

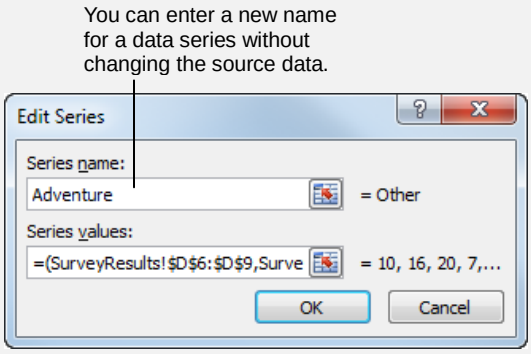


Figure 5-11: The Edit Series dialog box.

5. In the "Series values" box, select the data range of the data series, or type the cell range reference.

   Other Ways to Enter Cell Range Values:
   You can type values for the data series in the "Series values" box. These values will not be added to the worksheet; they only appear in the chart.

6. Click **OK**.

   The Edit Series dialog box closes and the updated series label appears in the Select Data Source dialog box.

7. Click **OK**.

   The Select Data Source dialog box closes and the changes are displayed in the chart.

Reorder the data series

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

1. Under Chart Tools on the Ribbon, click the **Design** tab and click the **Select Data** button in the Data group.

   The Select Data Source dialog box appears.

2. Select the data series you want to move under Legend Entries (Series).

3. Click the **Move Up** or **Move Down** arrows to reorder the data series.

   The chart is updated to display the new order of data.

Update horizontal axis labels

You can update or change the horizontal axis labels by selecting a cell range of labels in the worksheet.

1. Under Chart Tools on the Ribbon, click the **Design** tab and click the **Select Data** button in the Data group.

2. Click the **Edit** button under the Horizontal (Category) Axis Labels.

3. Select the range of cells you wish to use for the axis labels.

4. Click **OK**.

   Other Ways to Update Axis Labels:
   Edit the label in the source data.

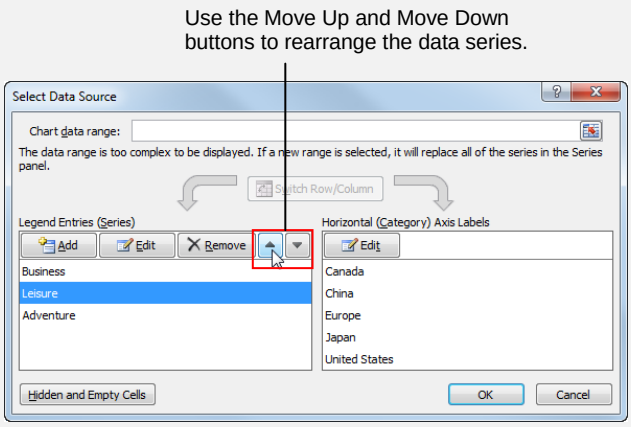


Figure 5-12: The Select Data Source dialog box.

Changing Chart Layout and Style

An easy way to change the look and feel of a chart is by applying one of the built-in layouts and styles that are available in Excel 2010.

Apply a chart layout

Built-in chart layouts allow you to quickly adjust the overall layout of your chart with different combinations of titles, labels, and chart orientations.

1. Select the chart.

   The Chart Tools appear on the Ribbon.

2. Under Chart Tools on the Ribbon, click the **Design** tab.

   Here you can see the Chart Layouts and Chart Styles groups.

3. Select the option you want to use from the Chart Layouts gallery in the Chart Layouts group. Or, click the **Quick Layout** button in the Chart Layouts group and select an option.

   The chart changes to the selected layout.

Apply a chart style

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

1. Select the chart.

   The Chart Tools appear on the Ribbon.

2. Under Chart Tools on the Ribbon, click the **Design** tab.

3. Select the option you want to use from the Chart Styles gallery in the Chart Styles group.

   The new style is applied.

Tips

✓ The Chart Layouts and Chart Styles groups offer many formatting options. A few are displayed by default, but you can click the arrow buttons to scroll down and access additional layouts and styles, or you can click the **More** button to expand a gallery.

Exercise

- **Exercise File:** Survey5-6.xlsx
- **Exercise:** Apply built-in Layout 9 and Style 1 to the chart.

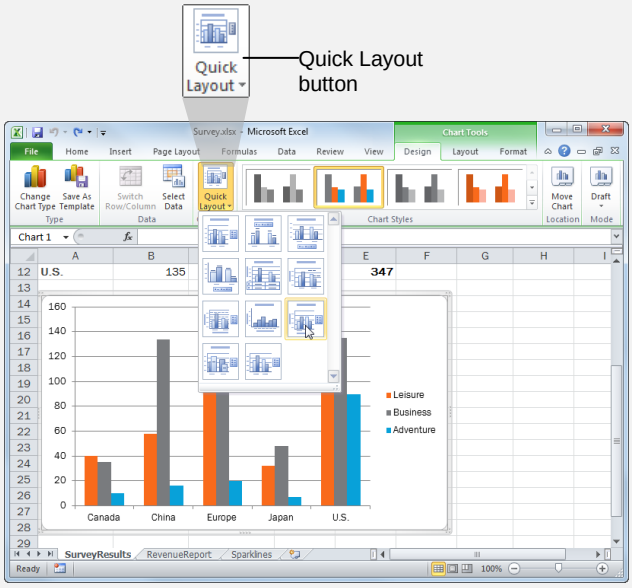


Figure 5-13: The Chart Layouts group.

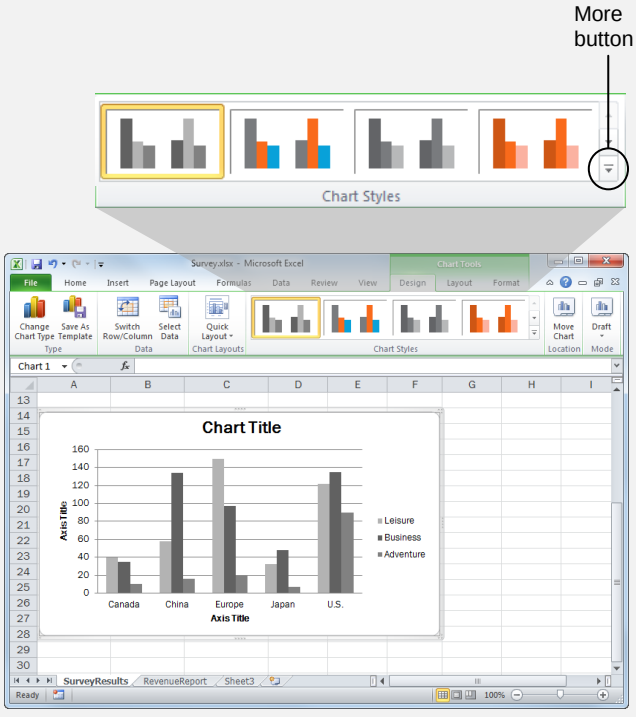


Figure 5-14: The Chart Styles group.

Working with Chart Labels

If you have a specific layout in mind for your chart's labels, you can add, remove, and format the labels as needed.

Edit chart label text

It's easy to edit the text of a label that already appears in the chart.

1. Select the chart and double-click the label you wish to edit.

   A cursor appears in the label.

2. Edit the label text and click the chart.

Tips

✓ Text that is linked to worksheet data cannot be directly edited. To edit these labels, you need to edit the labels and data in the actual worksheet.

Add or move a chart label

Labels can be moved to different locations or layouts on the chart.

1. Select the chart.

2. Under Chart Tools on the Ribbon, click the **Layout** tab.

   In the Labels group, there are several labels to choose from, as shown in Table 5-1: Chart Labels.

3. Click the button for the label you want to use in the Labels group.

   A list of options for that label appears.

   Tip: If you don't see a label option that suits you, click the **More Options** button at the bottom of the list to display the Format dialog box. Here you can fine-tune the label to your specifications.

4. Select the option you want to use from the list.

   The label appears on the chart. If you add a chart or axis title, placeholder text will appear that you can replace with your own text.

Tips

✓ To add data labels to one data series, select that data series instead of the entire chart area.

Exercise

- **Exercise File:** Survey5-7.xlsx
- **Exercise:** Replace existing chart label placeholders: Add the text "Popular Leisure Destinations" to the chart title. Add the text "Responses" to the Primary Vertical Axis Title.

  Move the legend to the bottom of the chart.

  Remove the Primary Horizontal Axis Title from the chart.

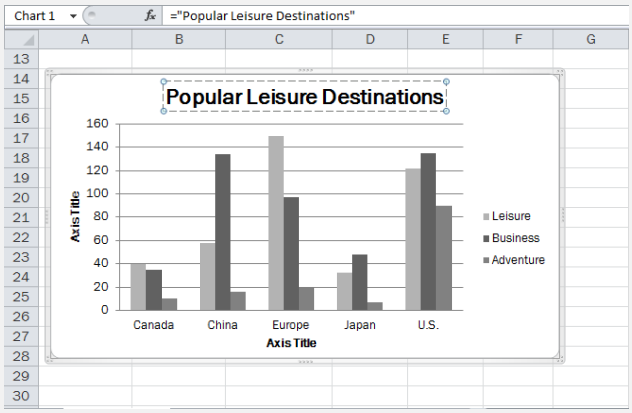


Figure 5-15: Editing a chart label.

Table 5-1: Chart Labels

	Chart Title: Tells people what the chart is about.
	Axis Titles: Tells people about the data being charted on the axis.
	Legend: Displays the name of a data series in the chart.
	Data Labels: Labels the specific values of data in the chart.
	Data Table: Adds a table that contains all the data in the chart.

Format a chart label

Labels can be moved to different locations on the chart.

1. Double-click the label.

   The Format dialog box appears with formatting options for the label.

2. Apply the formatting options you wish to use and click **Close**.

   The dialog box closes and formatting is applied to the label.

Remove a chart label

You may also remove labels from charts.

1. Select the chart.

2. Under Chart Tools on the Ribbon, click the **Layout** tab.

3. Click the button for the label you want to remove in the Labels group.

   A list of options for that label appears.

4. Select **None**.

   The label is removed from the chart.

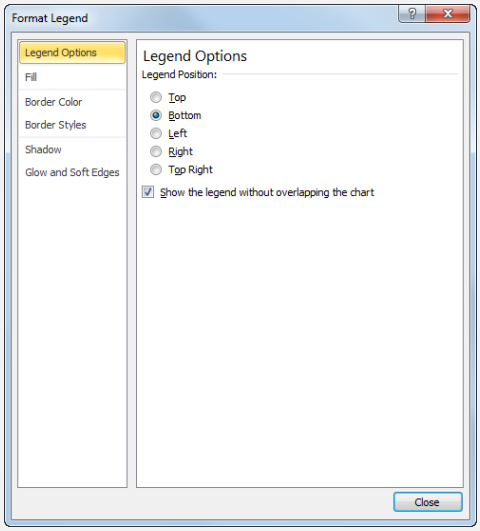


Figure 5-16: Formatting a chart label.

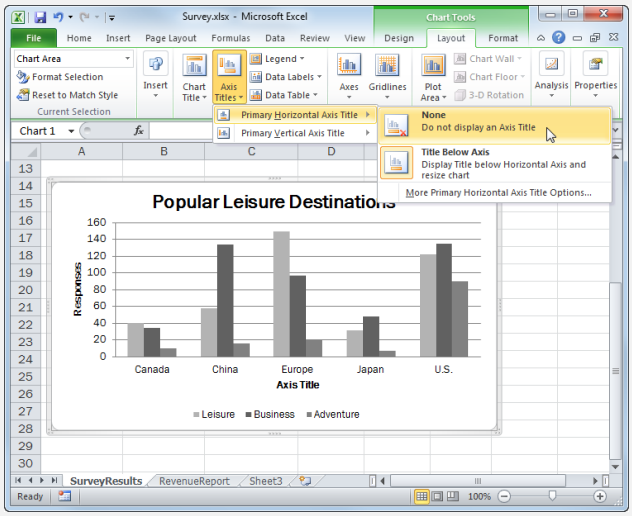


Figure 5-17: Removing a chart label.

Changing the 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. You can change how the gridlines stack up the data in the chart.

Choose major and minor gridlines

1. Select the chart.
2. Under Chart Tools on the Ribbon, click the **Layout** tab and click the **Gridlines** button in the Axes group.

   A menu appears, allowing you to select whether you want to work with the vertical or horizontal axis.
3. Select a gridline.

   A list appears with different display options for the vertical or horizontal gridlines. The table to the right, Table 5-2: Horizontal Gridline Examples, gives you an idea of available gridlines in Excel. The options for the vertical gridlines are the same, which you would most likely use for bar charts.
4. Select the gridline option you want to use.

   The chart is updated to show the gridlines as selected.

   Tip: To hide gridlines, select the **None** option.

Format gridlines

You can also change the line formatting used in gridlines.

1. Select the chart.
2. Under Chart Tools on the Ribbon, click the **Layout** tab and click the **Gridlines** button in the Axes group.
3. Select a gridline and select **More Primary Gridlines Options** from the list.

   The Format Gridlines dialog box appears.
4. Choose the formatting you wish to apply to gridlines and click **Close**.

   The dialog box closes and the gridline formatting is updated.

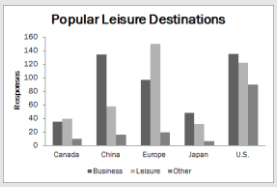
Exercise

- **Exercise File:** Survey5-8.xlsx
- **Exercise:** Show major and minor horizontal gridlines on the chart.

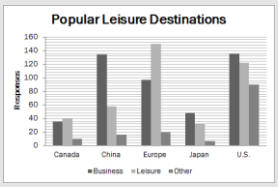
  Remove horizontal gridlines from the chart.

  Display only major horizontal gridlines on the chart.

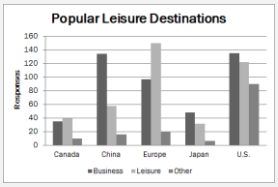
Table 5-2: Horizontal Gridline Examples



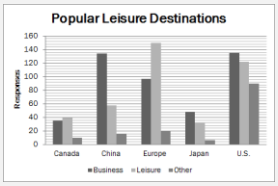
None



Minor Gridlines



Major Gridlines



Major & Minor Gridlines

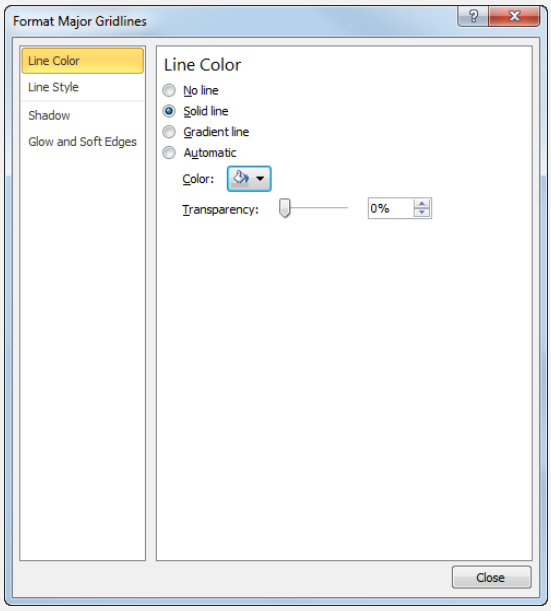


Figure 5-18: The Format Major Gridlines dialog box.

Changing the Scale

The scale of the chart is how it displays units of measurement. For example, in what units do you want to show the data (i.e. thousands, millions)? Should it show lines for every 20 units? How high should the scale be displayed? Here's how to change the scale of the chart.

Change display units

Changing the display units makes it easier to read charts that have large values.

1. Select the chart.
2. Under Chart Tools on the Ribbon, click the **Layout** tab and click the **Axes** button in the Axes group.
3. Select an axis and select the display unit in which you want to show the data.

   The chart is updated to show the units and the axis label shows the unit of measurement that is used.

   Tip: The axis you choose under the Axes button depends on the type of chart you're using. If you're using a column chart, select the vertical axis. If you're using a bar chart, select the horizontal axis.

Change the scale of the axis

The scale of the axis determines how information appears in the chart.

1. Select the chart.
2. Under Chart Tools on the Ribbon, click the **Layout** tab and click the **Axes** button in the Axes group.
3. Select an axis and select **More Primary Axis Options** from the list.

   The Axis Options tab is selected. Refer to Table 5-3: Format Axis Dialog Box for a description of the formatting options available in this tab.
4. Select the axis display options you want to use and click **Close**.

   The scale of the chart is changed according to the options you chose.

   Other Ways to Change Display Units: Right-click an axis in the chart and select **Format Axis** from the contextual menu.

Exercise

- **Exercise File:** Survey5-9.xlsx
- **Exercise:** Change the display units for the vertical axis to thousands. Change it back to the default display units.

  Change the scale of the vertical axis: change the major unit to 25 and change the maximum to 150.

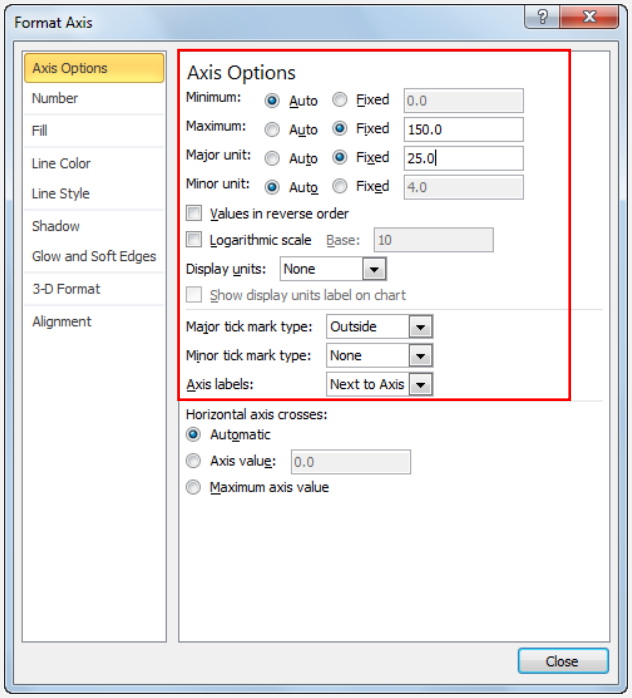


Figure 5-19: The Format Axis dialog box.

Table 5-3: Format Axis Dialog Box

Minimum/ maximum values	By default, Excel chooses the minimum and maximum axis values for you, but you can adjust the scale of an axis by selecting Fixed and entering your own values.
Major/minor unit	Excel determines the axis unit of measure by default, but you can select your own here.
Display units	Choose the units you want to use to display axis values—for example, in thousands or millions.
Major/minor tick mark type	Select whether or not you want to display major or minor tick marks, as well as whether they are displayed inside, outside, or across the axis.
Axis labels	Decide where you want axis labels located.

Change number formatting for axis values

You can change the number formatting used in an axis. For example, if the axis is displayed a monetary value, you can change the formatting to display the numbers with a currency symbol.

1. Select the chart.
2. Under Chart Tools on the Ribbon, click the **Layout** tab and click the **Axes** button in the Axes group.
3. Select an axis and select **More Primary Axis Options** from the list.
4. Click the **Number** tab and select the number formatting you wish to use.
5. Click **Close**.

   The formatting is applied to the axis.

   Other Ways to Change Number Formatting: Right-click an axis in the chart and select **Format Axis** from the contextual menu. Click the **Number** tab in the Format Axis dialog box.

Tips

- ✓ If the source data already has specific number formatting, it will be reflected in the chart axes.

Emphasizing 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 data series

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

1. Select the chart and click the **Layout** tab on the Ribbon.
2. Click the **Chart Elements** list arrow in the Current Selection group of the Layout tab.
3. Select the data series you want to change.
4. Click the **Format Selection** button in the Current Selection group.

   The Format Data Series dialog box appears.

   Other Ways to Format the Data Series: Double-click a data point in the series. Or, right-click a data point and select **Format Data Series** from the contextual menu.

5. Click the **Fill** tab and apply the fill properties you want to use for the data series.
6. Click **Close**.

   The formatting is applied to the data series.

Change the color of a single data point

If a single piece of data is what you want to focus on in a chart, you can change the formatting of that data to make it stand out.

1. Click the data series of which the data point is a part.

   Once the data series is selected, you can format the individual data point.

2. Double-click the data point you wish to format.

   The Format Data Point dialog box appears.

3. Click the **Fill** tab and apply the fill properties you want to use for the data point.
4. Click **Close**.

   The formatting is applied to the data point.

Exercise

- **Exercise File:** Survey5-10.xlsx
- **Exercise:** Emphasize the Leisure data series with an orange fill color.

  Emphasize the European Leisure data point with a dark orange fill color.

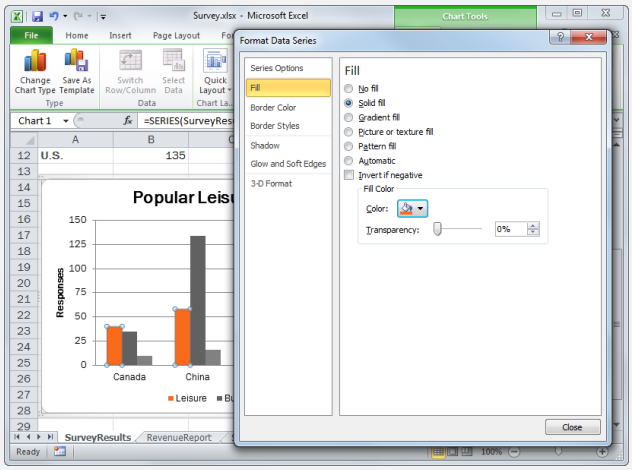


Figure 5-20: Changing the color of a data series in the chart.

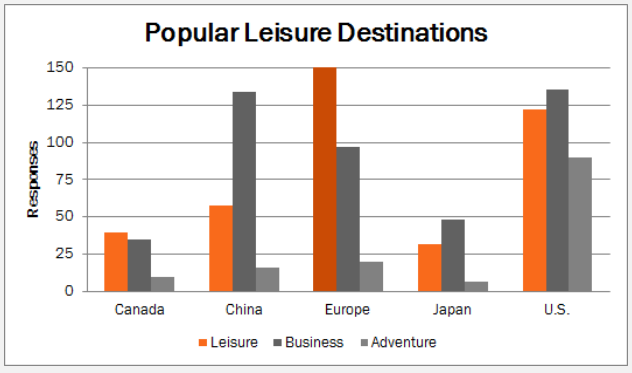


Figure 5-21: Changing the color of a single data point makes it stand out from the rest of the data series and chart.

Annotate the chart

You can add trend lines and other analytical elements to your chart using the Analysis commands.

1. Select the chart.
2. Under Chart Tools on the Ribbon, click the **Layout** tab.

   Here you can see the Analysis group, which contains four buttons:

   - **Trend line:** Add a linear trend line to the selected data series—works well with line-type charts.
   - **Lines:** Add drop lines (lines that connect a data series line to the horizontal axis) or high-low lines (lines that connect two data lines) in a line-type chart.
   - **Up/Down Bars:** Add bars that graph the distance between two lines in a line chart.
   - **Error Bars:** Add bars that show the margin of error on the chart.
3. Click the button you want to use in the Analysis group.

   A list appears, displaying different options depending on which button you clicked.
4. Select the option you want to use from the list.

   A dialog box may appear, depending on the option you chose. Complete the dialog box to finish the formatting as necessary.

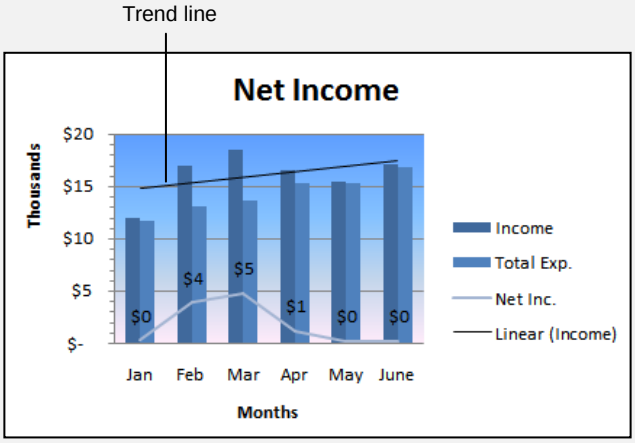


Figure 5-22: An example of an annotated combination chart. The Net Inc. data series uses a line chart type, while a linear trend line appears across the top of the chart.

Use a different chart type for a data series

Another way to make a data series stand out from the rest of the chart is to apply a different chart type to that series. This is called a *combination* chart. Combining charts can be a powerful way to show overarching trends in data.

One of the most common ways to do this is to make one of the data series in a column chart a line chart.

1. Right-click a single data series in the chart and select **Change Series Chart Type** from the contextual menu.
2. Select a new chart type for the single data series.

Using Chart Templates

You can save a template of a chart that you've customized with your own layouts and formatting. Then you can use the template to create similar charts 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. Select the chart you want to save as a template.
2. Under Chart Tools on the Ribbon, click the **Design** tab and click the **Save as Template** button in the Type group.

   The Save Chart Template dialog box appears.
3. Type a name for the template in the File name box and click **Save**.

Create a new chart using a template

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

1. Open a workbook and select the cell range you want to chart.
2. Click the **Insert** tab on the Ribbon and click the **Dialog Box Launcher** in the Charts group.

   The Insert Chart dialog box appears.
3. Click the **Templates** folder in the list on the left.

   The templates you've saved appear in the gallery.
4. Select the template you want to use from the gallery on the right and click **OK**.

Delete a template

If you decide you no longer need a certain chart template, you can delete it.

1. Click the **Insert** tab on the Ribbon and click the **Dialog Box Launcher** in the Charts group.

   The Insert Chart dialog box appears.
2. Click the **Manage Templates** button.

   The Charts folder is displayed.
3. Right-click the template file and select **Delete**.

   The file is deleted.

Exercise

- **Exercise File:** Survey5-11.xlsx
- **Exercise:** Save the chart in Survey5-9.xlsx as a template and name it "Survey Results".

  Open the Survey5-1.xlsx file and create a new chart using the "Survey Results" template. Include cells A4:E12 in the chart.

  Delete the "Survey Results" template.

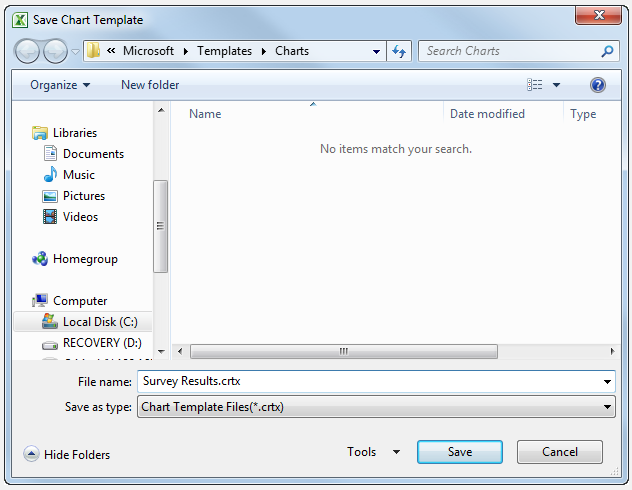


Figure 5-23: The Save Chart Template dialog box.

Changing Chart Type

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.

1. Select the chart.

   The Chart Tools appear on the Ribbon.

2. Under Chart Tools on the Ribbon, click the **Design** tab.

   Now you can see the Type group.

3. Click the **Change Chart Type** button in the Type group.

   The Change Chart Type dialog box appears. Here you can see the different types of charts that are available.

4. Select a chart type in the list on the left, then select a chart sub-type from the list on the right.

5. Click **OK**.

Tips

✓ You can also create a combination chart. Right-click a single data series in the chart and select **Change Series Chart Type** from the contextual menu. Select a new chart type for the single data series.

Swap data over the axes

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

1. Select the chart.

2. Under Chart Tools on the Ribbon, click the **Design** tab.

3. Click the **Switch Row/Column** button in the Data group.

   The chart is updated to the new data configuration.

   Trap: If the source data is too complicated (includes lots of nonadjacent cells), Excel cannot swap data over the axes.

Exercise

- **Exercise File:** Survey5-12.xlsx
- **Exercise:** Change the chart to a "Stacked Column" chart type.

  Change the chart to a pie chart. Swap the data over the axis to view data for Business, Leisure, and Other responses.

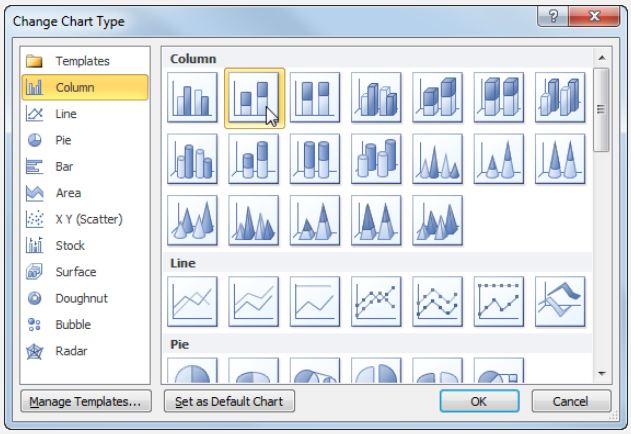


Figure 5-24: Selecting a Stacked Column chart in the Change Chart Type dialog box.

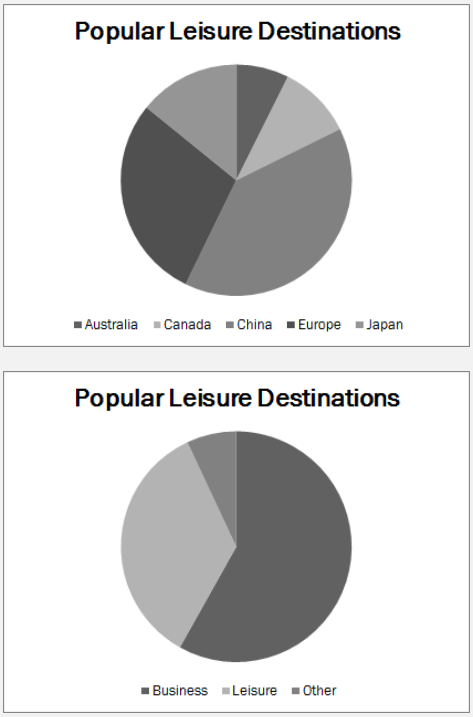


Figure 5-25: Sometimes you need to swap data over the axis to view the correct data after changing chart type.

Using Sparklines

Sparklines are a new feature in Excel 2010. They provide a new way to chart information in a worksheet: in individual cells. Sparklines are a great way to show a snapshot of data on a worksheet.

Insert a sparkline

1. Click the **Insert** tab on the Ribbon.

   There are three types of sparklines you can insert. Refer to the table to the right, Table 5-4: Available Sparklines for more information about each type.

2. Click sparkline you want to insert in the Sparklines group.

   A dialog box appears, asking you to define the range of cells that contain the data on which you want to base the sparklines.

3. Select the data you wish to use in the sparkline.

4. Click **OK**.

   The sparkline is inserted in the cell(s).

Change sparkline style

1. Select the sparkline(s).

2. Click the **Design** tab.

3. Click the **More** button in the Style Gallery and choose the formatting you wish to apply to the sparkline(s).

   The sparklines are updated with the new style formatting.

Add data points to sparklines

1. Select the sparkline(s).

2. Click the **Design** tab.

3. Click the check boxes for points you wish to show or highlight on the sparkline.

   The sparkline is updated to show the points you selected.

Tips

✓ One advantage of using sparklines is that, unlike charts, sparklines are included when the worksheet that contains them is printed.

Exercise

- **Exercise File:** Sparklines.xlsx
- **Exercise:** Insert a Line sparkline in F4 that refers to the data in A4:E4.

  Insert a Win/Loss sparkline in F8 that refers to data in A8:E8.

  Add High and Low Points to the sparkline in F4.

Table 5-4: Available Sparklines

	**Line:** Shows trends in the data over time.
	**Column:** Shows differences in quantity.
	**Win/Loss:** Shows gains or losses (i.e. positive and negative values).

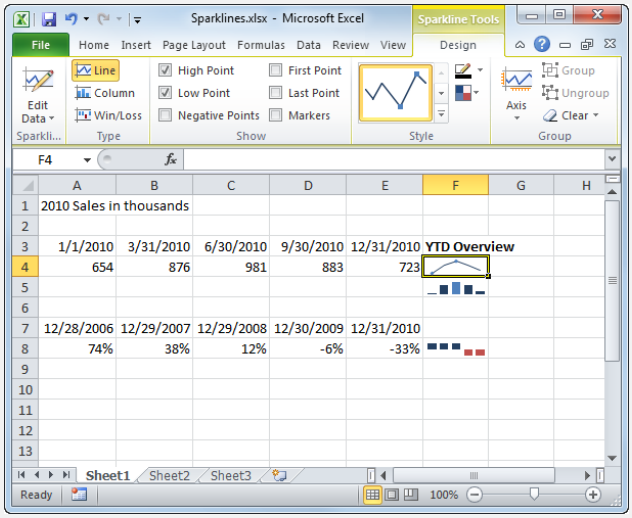


Figure 5-26: Sparklines in a spreadsheet.

Creating and Working with Charts Review

Quiz Questions

41. Which of these is an important thing to consider when selecting data for a chart?
    A. What is the main point?
    B. Keep it simple.
    C. What is the truth?
    D. All of these.

42. Which of these chart types would be best for illustrating values as a percentage of a whole?
    A. Area
    B. Pie
    C. Scatter
    D. Column

43. A line chart
    A. displays trends over time.
    B. compares values across categories.
    C. displays the contribution of each value to a total.
    D. compares pairs of values.

44. To create a chart, click the
    A. Home tab.
    B. Insert tab.
    C. Data tab.
    D. Formulas tab.

45. Which of these statements is false?
    A. Horizontal axis labels can be changed without affecting the source data.
    B. The order of data series can be changed without affecting the source data.
    C. Data series labels can be changed without affecting the source data.
    D. The chart source cell range can be changed in an existing chart.

46. To remove a chart label, select the label and press <Delete>. (True or False?)

47. Which of these options is NOT true?
    A. Gridlines can be displayed for both the horizontal and vertical axes.
    B. You can remove all gridlines from a chart by choosing None for the axis.
    C. Gridlines can only be displayed using default settings.
    D. Major and minor gridlines can be shown at the same time.

48. Which of these is a way to change the scale of a chart?

A. Change the display units of an axis in the chart.
B. Change the minimum or maximum value displayed in the chart.
C. Add number formatting to values in an axis.
D. All of the above.

49. You can double-click a chart element to change its formatting. (True or False?)

50. If you decide you no longer need a chart template that you've saved, you can delete it. (True or False?)

51. Chart type cannot be changed after a chart is created. (True or False?)

52. What is a sparkline?
A. A way to combine two different chart types in a chart.
B. A summary of all the charts in a workbook.
C. A printout of a chart.
D. A snapshot of data on a worksheet.

Quiz Answers

41. D. Consider all of these when selecting data: the main point, the truth, and simplicity.

42. B. Pie charts are best for showing values as a percentage of a whole.

43. A. A line chart displays trends over time.

44. B. To create a chart, click the Insert tab, then select a chart type and chart in the Charts group.

45. A. Horizontal axis labels are tied to the source data; they only change if the source data is changed.

46. False. To remove a chart label, click the label button in the Labels group and select None from the list.

47. C. Gridlines can be formatted to use whatever color, style, and width you prefer.

48. D. All of these are ways to change the scale of a chart.

49. True. You can double-click a chart element to change its formatting.

50. True. If you decide you no longer need a chart template that you've saved, you can delete it.

51. False. The chart type can be changed after it is created.

52. D. A sparkline is a snapshot of data on a worksheet.

6Managing Workbooks

Once you start filling up a workbook with data, you'll find that it can be difficult to organize and view it all at once.

Luckily, Excel gives you several options for viewing and working with data and windows. You can split windows, insert new worksheets, copy worksheets, work with multiple workbooks at once, hide data, protect and share workbooks.

In this chapter, we'll look at ways to make viewing and working with data easier.

Using Exercise Files

This chapter suggests exercises to practice the topic of each lesson. There are two ways you may follow along with the exercise files:

- Open the exercise file for a lesson, perform the lesson exercise, and close the exercise file.
- Open the exercise file for a lesson, perform the lesson exercise, and keep the file open to perform the remaining lesson exercises for the chapter.

The exercises are written so that you may "build upon them", meaning the exercises in a chapter can be performed in succession from the first lesson to the last.

Using Workbook Views

There are several ways to change how a workbook's contents are displayed on a screen using Workbook views. You can also zoom in or out to view more or less of a workbook at a time.

Change workbook views

1. Click the **View** tab on the Ribbon.
2. Click the button for the view you want to use in the Workbook Views group.

   The workbook's contents are shown in the selected view.

   Other Ways to Change Workbook View: Click the button for the view you want to use in the status bar of the workbook window.

   Excel offers several different workbook views.

   - **Normal view:** This is the default Excel view, and the one you'll usually want to use when creating and editing workbooks. Row and column headers are displayed.
   - **Page Layout view:** Use this view to fine-tune a worksheet before printing, especially if it contains charts. You can edit the worksheet like it's in Normal view, but you can also see the rulers, change page orientation, work with headers, footers and margins, and hide or display row or column headers.
   - **Page Break Preview view:** This view shows you where the page breaks will occur if you print the worksheet. This is helpful for making sure your data is laid out correctly to appear on the desired page(s).
   - **Full Screen view:** The worksheet stays in the view it was already in, but toolbars are hidden so that the worksheet fills the entire screen. To exit Full Screen view, click the **Restore Down** button on the Title bar.

Exercise

- **Exercise File:** Bookings6-1.xlsx
- **Exercise:** View the worksheet in Excel's different views. Zoom in to 200 percent, then zoom back to 100 percent.

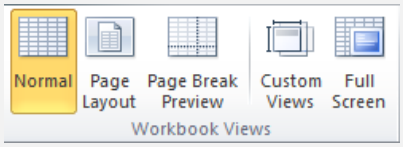
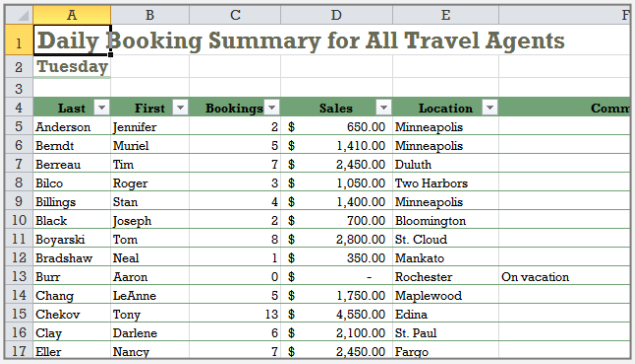
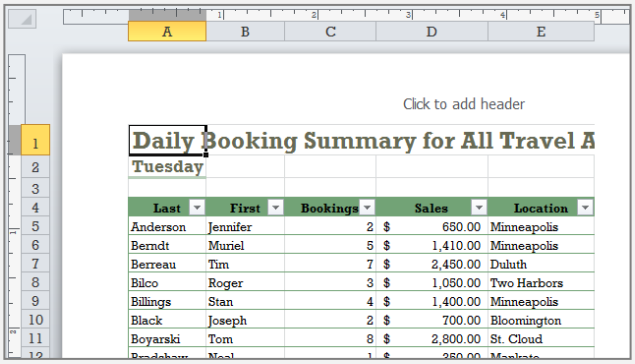


Figure 6-1: The Workbook Views group on the View tab.

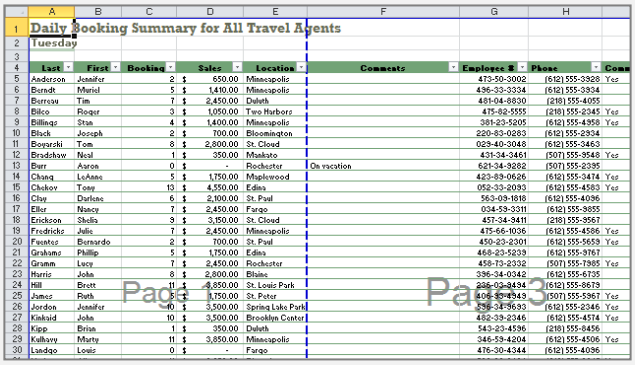


	A	B	C	D	E	F
1	Daily Booking Summary for All Travel Agents					
2	Tuesday					
3						
4	Last	First	Bookings	Sales	Location	Comm
5	Anderson	Jennifer	2	$ 650.00	Minneapolis	
6	Berndt	Muriel	5	$ 1,410.00	Minneapolis	
7	Berreau	Tim	7	$ 2,450.00	Duluth	
8	Bilco	Roger	3	$ 1,050.00	Two Harbors	
9	Billings	Stan	4	$ 1,400.00	Minneapolis	
10	Black	Joseph	2	$ 700.00	Bloomington	
11	Boyarski	Tom	8	$ 2,800.00	St. Cloud	
12	Bradshaw	Neal	1	$ 350.00	Mankato	
13	Burr	Aaron	0	$ -	Rochester	On vacation
14	Chang	LeAnne	5	$ 1,750.00	Maplewood	
15	Chekov	Tony	13	$ 4,550.00	Edina	
16	Clay	Darlene	6	$ 2,100.00	St. Paul	
17	Eller	Nancy	7	$ 2,450.00	Fargo	

Normal view is the default Excel view. This view maximizes the available screen space in the Excel window.



Page Layout view lets you fine-tune the worksheet before printing.



Page Break view lets you view where the page will break if you print the worksheet.

Zoom in or out

Sometimes it is helpful to make a worksheet appear larger on the computer's screen, especially if you have a small monitor or poor eyesight. It can also be helpful to zoom out so that you can see how the whole worksheet looks.

1. Click and drag the **Zoom** slider on the status bar to the percentage zoom setting you want.

   Other Ways to Zoom:
   Click the **View** tab on the Ribbon and click the **Zoom** button in the Zoom group. Or, click the **Zoom to Selection** button in the Zoom group to zoom in on the currently selected cell(s).

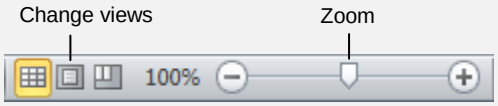


Figure 6-2: Select a view or adjust the Zoom slider in the status bar.

Create a custom view

Changing the print settings, zoom level, and workbook appearance every time you view or print a workbook can get old. By creating a custom view, you can save the view and print settings so you don't have to reapply them over and over.

1. Click the **View** tab on the Ribbon and click the **Custom Views** button in the Workbook Views group.

   The Custom Views dialog box appears.

2. Click the **Add** button and type a name for the view in the **Name** text box.

   There are two additional settings here:

   - **Print settings:** Saves print settings such as page breaks.
   - **Hidden rows, columns and filter settings:** Keeps columns and rows hidden and any applied filters filtered.

3. Select the settings you want to use in the view and click **OK**.

   Now your view settings are quickly accessible under the new custom view.

Tips

✓ To view a custom view, click the **View** tab on the Ribbon and click the **Custom Views** button in the Workbook Views group. Select the view you want to use and click **Show**.

Selecting and Switching Between Worksheets

By default, Excel workbooks contain three worksheets. You can make one worksheet active at a time or select multiple worksheets at once.

Switching between worksheets

You can switch between worksheets in a workbook by selecting a different sheet's tab.

1. Click the sheet tab for the worksheet you want to display.

   That worksheet becomes active, allowing you to view and edit it.

   Other Ways to Select a Worksheet: Right-click the **tab scrolling** buttons and select the worksheet from the contextual menu. Or, use the **tab scrolling** buttons to scroll through the sheet tabs and then select one.

Select multiple worksheets

Selecting multiple worksheets at once lets you enter or edit data on multiple worksheets, as well as format or print multiple worksheets at once.

- **To select adjacent worksheets:** Click the first sheet tab you want to select, press and hold the **<Shift>** key and click the last tab you want to select.

  Both tabs and all tabs in between are selected.

- **To select non-adjacent worksheets:** Click the first sheet tab you want to select, press and hold the **<Ctrl>** key and click the other tabs you want to select.

- **To select all worksheets:** Right-click a sheet tab and select **Select All Sheets** from the contextual menu.

Tips

✓ When multiple worksheets are selected, [Group] appears in the title bar at the top of the worksheet.

✓ To cancel a selection of multiple worksheets in a workbook, click an unselected sheet's tab. Or, right-click a sheet tab that is selected and select **Ungroup Sheets** from the contextual menu.

Exercise

- **Exercise File:** Bookings6-1.xlsx
- **Exercise:** View the Friday worksheet. Use right-click to view the Wednesday worksheet.

  Use the "Next Tab Scroll" button to view the Summary worksheet. Use the "First Tab Scroll" button to shift worksheet tabs and view the Tuesday worksheet.

  Select the Tuesday and Friday worksheets at the same time. Then deselect the worksheets.

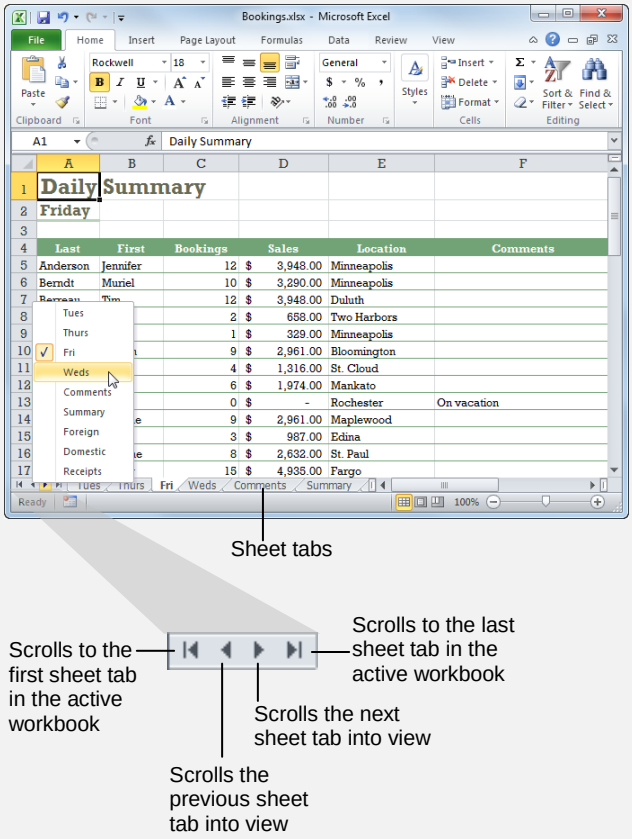


Figure 6-3: Sheet tabs and scrolling buttons.

Inserting and Deleting Worksheets

You can easily add worksheets to a workbook or delete unwanted ones.

Insert a worksheet

1. Click the **Insert Worksheet** tab.

   A new worksheet is added to the workbook.

   Tip: The Insert Worksheet tab is located next to the sheet tabs near the bottom of the workbook window.

   Other Ways to Insert a Worksheet:
   Press **<Shift>** + **<F11>**. Or, click the **Home** tab on the Ribbon and click the **Insert** list arrow in the Cells group. Select **Insert Sheet**. Or, right-click the tab of an existing worksheet, and select **Insert** from the contextual menu. Select **Worksheet** in the General tab of the Insert dialog box and click **OK**.

Delete a worksheet

1. Right-click the sheet tab you want to delete and select **Delete** from the contextual menu.

   A dialog box appears, asking you to confirm the deletion.

2. Click **Yes**.

   The worksheet is deleted.

   Other Ways to Delete a Worksheet:
   Select the worksheet you want to delete, click the **Home** tab on the Ribbon, click the **Delete** list arrow in the Cells group and select **Delete Sheet**.

Exercise

- **Exercise File:** Bookings6-2.xlsx
- **Exercise:** Insert a new worksheet.

  Delete the Comments, Foreign, Domestic, Receipts worksheets.

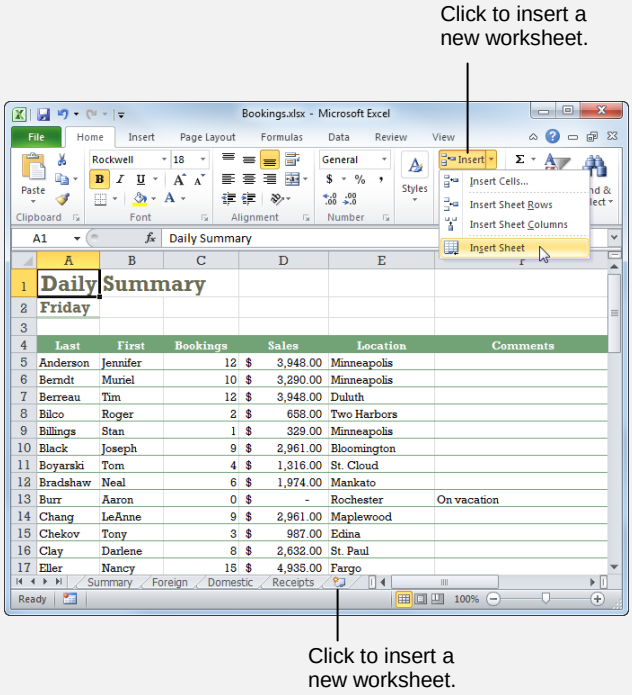


Figure 6-4: Inserting a worksheet.

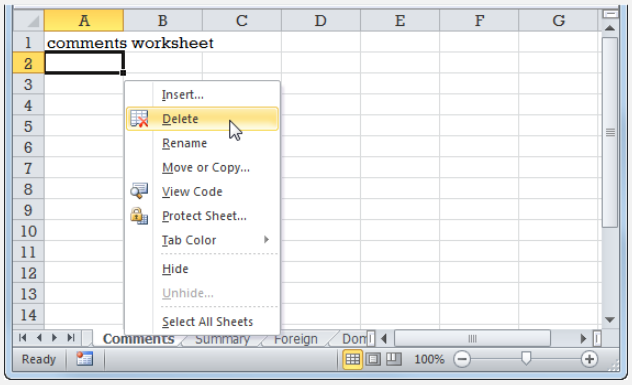


Figure 6-5: Deleting a worksheet from a workbook.

Renaming, Moving, and Copying Worksheets

You can manipulate your workbooks by renaming worksheets and moving them into different orders and even into different workbooks.

Rename a worksheet

By default, Excel worksheets are given the rather boring names Sheet1, Sheet2, Sheet3, and so on. You can give them more meaningful names.

1. Double-click the **sheet tab**.

   The sheet name is selected so that it can be renamed.

2. Type a new name for the worksheet.

3. Press **<Enter>**.

   The sheet is renamed.

   Other Ways to Rename a Worksheet: Right-click the sheet tab, select **Rename** from the contextual menu, and type a new name. Or, select the worksheet you want to rename, click the **Home** tab on the Ribbon, click the **Format** button in the Cells group and select **Rename Sheet**. Type a new name.

Move or copy a worksheet

You can easily rearrange worksheets using the Move or Copy dialog box or by using the mouse.

1. Select the sheet tab(s) for the worksheet(s) you want to move or copy.

2. Right-click one of the sheet tabs you want to move or copy and select **Move or Copy** from the contextual menu.

   The Move or Copy dialog box appears.

   Other Ways to Move or Copy a Sheet: Select the sheet(s) you want to move or copy. Click the **Home** tab on the Ribbon and click the **Format** button in the Cells group. Select **Move or Copy Sheet** from the list.

3. Select the sheet after which you want your moved or copied sheet(s) to appear in the Before Sheet list.

   The moved or copied sheet will be placed in front of the sheet that is selected.

Exercise

- **Exercise File:** Bookings6-3.xlsx
- **Exercise:** Rename Sheet1 to “Monday”.

  Move the worksheets so the Monday thru Friday worksheets are in sequential order.

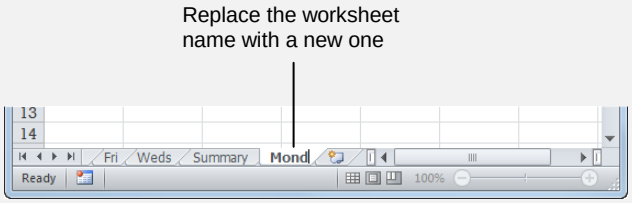


Figure 6-6: Renaming a worksheet

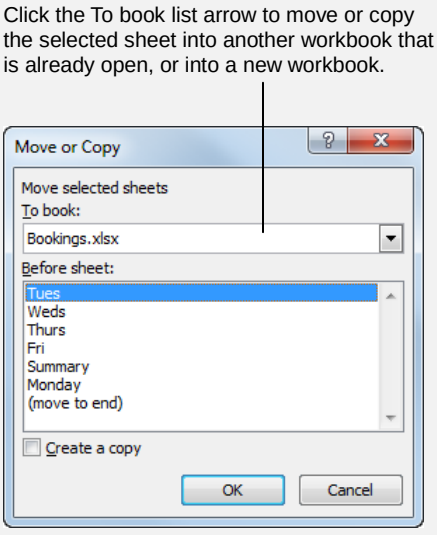


Figure 6-7: The Move or Copy dialog box.

4. (Optional) Click the **Create a copy** check box to copy the selected sheet.

   If this box is check marked, the worksheet(s) will be copied to the new location, instead of simply being moved.

5. Click **OK**.

   The worksheet(s) are moved or copied to the new location.

Move or copy a worksheet using click and drag

The easiest way to move or copy a worksheet within a workbook is with the mouse.

1. Select the sheet you want to move or copy.

2. Click and drag the sheet tab to move it to a new location in the workbook. Or, press and hold the **<Ctrl>** key while you click and drag the sheet tab to copy the sheet.

Tips

- ✓ To change the color of a sheet tab, right-click the tab, point to **Tab Color** and select a color from the palette.

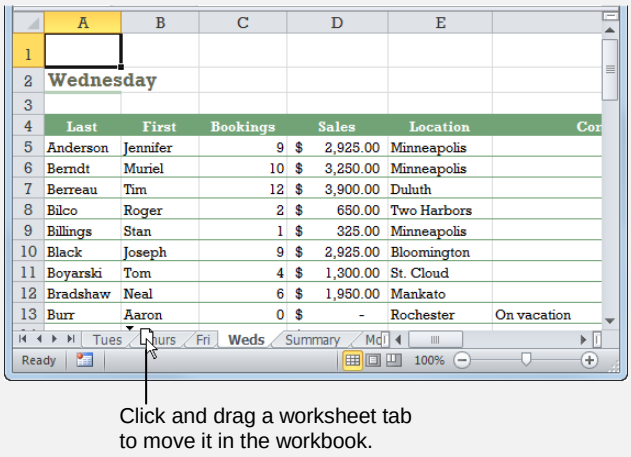


Figure 6-8: Click and drag to move a worksheet.

Splitting and Freezing a Window

Splitting or freezing a workbook window allows you to hold certain sections of a worksheet in place while scrolling to view other areas. It is especially useful when working with a large worksheet because you can lock column and row headings in place while scrolling through the data in the rest of the worksheet.

Split a worksheet window

To view multiple areas of the worksheet in the same window, you can *split* the window into two or four panes. When a worksheet window is split, panes are created in the window. These panes can be navigated independently, allowing you to make changes and view multiple areas of a worksheet at once.

1. Select the cell where you want to split the window.

   The worksheet will be split above and to the left of the active cell, creating four panes.

   To split into only two panes, select a cell in the top or bottom-most visible row, or the left-most visible column.

2. Click the **View** tab on the Ribbon and click the **Split** button in the Window group.

   The worksheet is split into sections that can be navigated individually without moving other sections.

   Other Ways to Split the Window:
   Click and drag the **vertical split box** or the **horizontal split box** to where you want the window to split.

Adjust split panes

You can adjust where the panes appear in the window after a split is created.

1. Click and drag the split line.

   The size of the window pane is changed according to where you clicked and dragged the pane.

Remove a worksheet window split

1. Click the **Split** button in the Window group.

   The window is no longer split.

   Other Ways to Remove a Window Split:
   Click and drag the split line to the edge of the window.

Exercise

- **Exercise File:** Bookings6-4.xlsx
- **Exercise:** View the Tuesday worksheet.

  Split the window at column C and scroll to the right in the right pane. Remove the split.

  Set and freeze panes at column B and row 4. Scroll down to row 60.

  Unfreeze the panes in the worksheet.

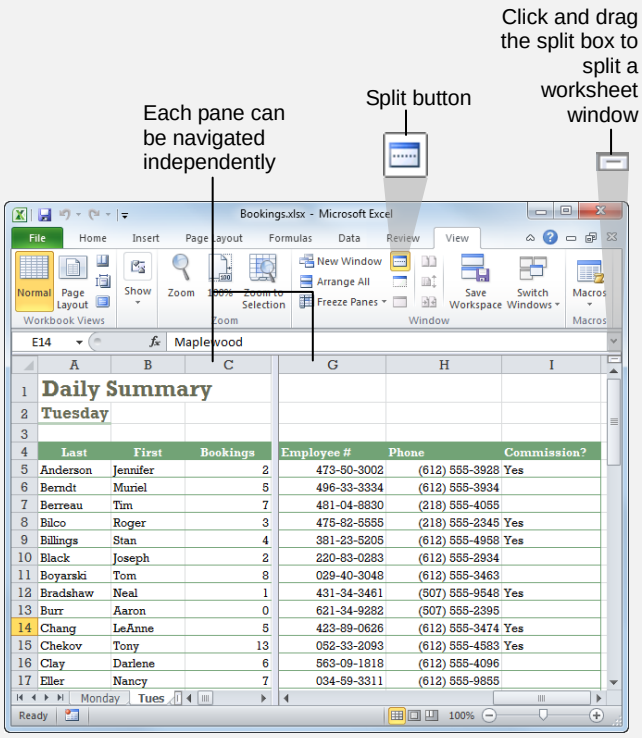


Figure 6-9: A split worksheet window.

Freeze window panes

When you freeze panes, the panes above and to the left of the active cell are immobilized. This is different from splitting, in which each section can be navigated. Also, while you can move split lines, you can't move frozen sections without unfreezing and freezing again.

1. Click the **View** tab on the Ribbon and click the **Freeze Panes** button in the Window group.

   Here you have three options:

   - **Freeze Panes:** Freezes the worksheet above and to the left of the cell that is currently active. Creates two or four panes depending on the location of the active cell.
   - **Freeze Top Row:** Keeps the top row visible and allows you to scroll through the rest of the worksheet. Creates two panes.
   - **Freeze First Column:** Keeps the first column visible and allows you to scroll through the rest of the worksheet. Creates two panes.

2. Select the option you want to use from the list.

   The panes are frozen. You can use the scroll bars to move around in the worksheet.

Remove a worksheet window split

Now let's unfreeze the panes.

1. Click the **Freeze Panes** button in the Window group and select **Unfreeze Panes**.

   All cells in the worksheet are unfrozen so you can scroll freely throughout the entire worksheet.

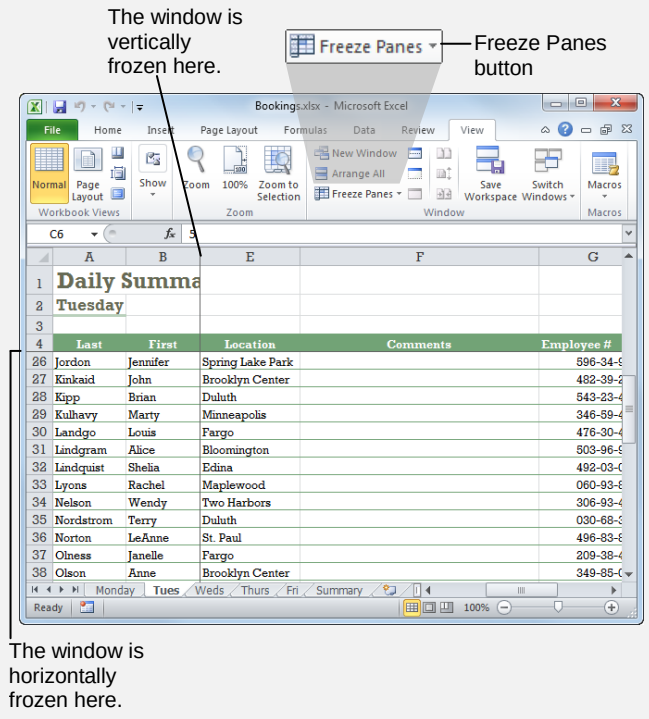


Figure 6-10: A worksheet with frozen panes: columns A-B, and rows 1-4. Information in the frozen panes remains on the screen as you scroll and move through a worksheet.

Creating 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.

Create a basic header or footer

1. Click the **Insert** tab on the Ribbon and click the **Header & Footer** button in the Text group.

   The workbook automatically switches to Page Layout View and the cursor appears in the header area.

   The header and footer areas are split into three sections—left, right, and center. Click any of the sections to enter text in that section.

   Tip: Enter your note here. To work with the footer instead of the header, click the **Click to add footer** text at the bottom of the worksheet or click the **Go To Footer** button in the Navigation group on the Design tab.

2. Enter header text, then click away from the header area.

   When you are finished working with the header and footer, you can return to Normal view.

   Other Ways to Create a Header or Footer: Click the **View** tab on the Ribbon and click the **Page Layout View** button in the Workbook Views group. Click in the header or footer area.

Use Auto Headers & Footers

Instead of entering your own header or footer text or fields, use built-in options that are already available.

1. Click the **Insert** tab on the Ribbon and click the **Header & Footer** button in the Text group.

   Now you can add an auto header or footer.

2. Click either the **Header** or **Footer** button in the Header & Footer group on the Design tab.

   Here you will see a list of many different types of page numbers, titles, dates, and file paths that can be added.

3. Select the auto header or footer you want to use.

   It is automatically inserted into the worksheet. Any manual header or footer information you have previously entered is replaced.

Comment [Dan1]: Creating Headers and Footers

Create a basic header or footer
1. Open the **Sales7-1.xlsx** file.

2. Click the **Insert** tab on the Ribbon and click the **Header & Footer** button in the Text group.

3. Click the **center section** of the header.

4. Type `Monthly Sales`.

Use Auto Headers & Footers
Explain these options to your students, even though they are not used in the exercise.

Built-in headers and footers are incredibly helpful and time-saving. Take a look at these helpful options with students.

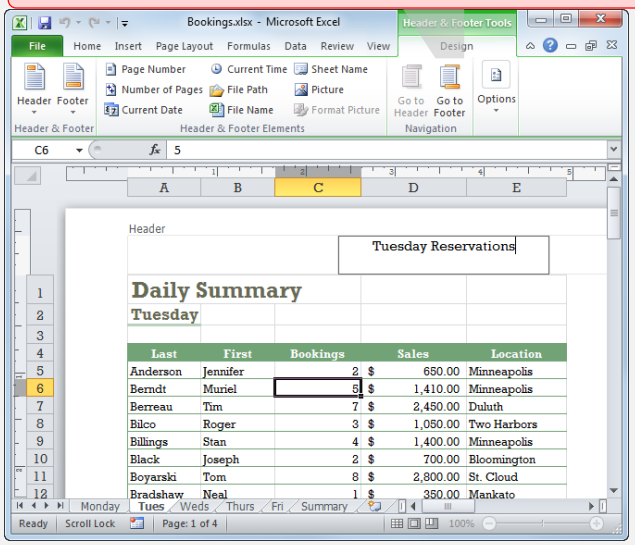


Figure 6-11: Adding header text.

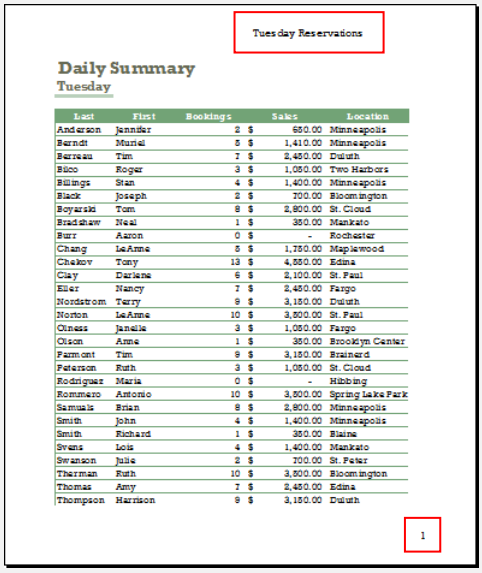


Figure 6-12: A spreadsheet with header and footer.

Insert Header & Footer Elements

You can also insert individual elements into the header or footer such as pictures or page numbers.

1. Click the **Insert** tab on the Ribbon and click the **Header & Footer** button in the Text group.

   The Header & Footer Elements group appears on the Design tab, displaying commands to add several different elements to your header or footer.

2. Click the button in the Header & Footer Elements group for the element you want to add.

Tips

- ✓ Headers and footers can be formatted using the commands in the Font group on the Home tab.
- ✓ You can also work with headers and footers by using the Page Setup dialog box. Click the **Page Layout** tab and click the **Dialog Box Launcher** in the **Page Setup** group. Click the **Header/Footer** tab. Here you can edit headers and footers and select to withhold the header or footer from the first page or to designate different odd and even pages.

Comment [Dan2]: Creating Headers and Footers cont'd

Insert Header & Footer Elements
5. Click the **right section** of the header.

6. Click the **Page Number** button in the Header & Footer Elements group.
The page number field is added to the worksheet.

Table 7-1: Header & Footer Elements Group great additions to workbooks. See if the combination of elements you need already exists in built-in options.

Table 6-1: Header & Footer Elements Group

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	Display's 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.

Hiding Rows, Columns, Worksheets, and Windows

You can hide rows, columns, worksheets and entire workbook windows from view. Data isn't deleted, but simply hidden from view until you unhide it.

Hide or unhide a row or column

You can easily hide whole rows or columns from view.

1. Select the row or column heading(s) for the row(s) or column(s) you want to hide.

2. Right-click the heading and select **Hide** from the contextual menu.

   The row(s) or column(s) are hidden.

   Other Ways to Hide a Row or Column: Select the row or column heading(s) for the row(s) or column(s) you want to hide. On the Home tab, click the **Format** button in the Cells group. Point to **Hide & Unhide** and select **Hide Rows** or **Hide Columns**.

   Now let's look at how to unhide rows and columns.

3. Select the row or column heading(s) on both sides of the hidden row(s) or column(s).

   For example, if columns C and D were hidden, you would select the B and E column headings.

4. Right-click the heading and select **Unhide** from the contextual menu.

   Other Ways to Unhide a Row or Column: Select the row or column heading(s) on both sides of the hidden row(s) or column(s). On the Home tab, click the **Format** button in the Cells group. Point to **Hide & Unhide** and select **Unhide Rows** or **Unhide Columns**.

Hide or unhide a worksheet

Sometimes you may want to hide an entire worksheet.

1. Right-click the sheet tab for the worksheet you want to hide.

2. Select **Hide** from the contextual menu.

   The sheet is hidden. It still exists in the workbook so any references to the sheet will still work.

   Now let's unhide the sheet.

Exercise

Comment [Dan3]: Hiding Rows, columns, Worksheets and Windows

Hide or unhide a row or column

1. Open the **Sales6-8.xlsx** file.

2. Click the **column E heading**.

3. Press and hold the **<Shift>** key.

4. Click the **column G heading**.
Let's hide columns E:G.

5. Right-click the heading and select **Hide** from the contextual menu.

The columns are hidden. Notice that the letters do not update to accommodate the hidden columns. This verifies that the columns still exist in the spreadsheet.

6. Click and drag to select column headings **D**:**H**.

7. Right-click the column headings and select **Unhide** from the contextual menu.
Columns E:G appear in the spreadsheet again.

Hide or unhide a worksheet

8. Right-click the **Qtr 3&4** sheet tab.

9. Select **Hide** from the contextual menu.

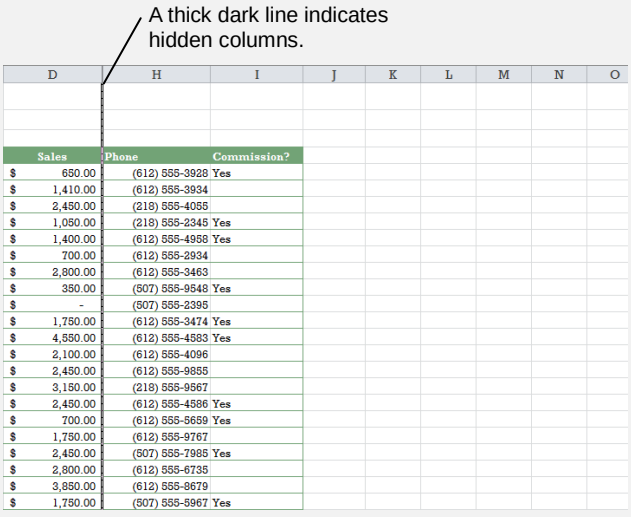
10. Right-click a sheet tab and select **Unhide** from the contextual menu.

11. Select **Qtr 3&4** and click **OK**.

Now delete the worksheet.

12. Right-click the **Qtr 3&4** sheet and select **Delete** from the contextual menu.

All columns are visible.



Columns E, F and G are hidden.

Figure 6-13: A worksheet before and after hiding columns.

3. Right-click any sheet tab and select **Unhide** from the contextual menu.

   The Unhide dialog box appears.

4. Select the sheet you want to unhide and click **OK**.

   The sheet is unhidden.

   Other Ways to Hide and Unhide a Worksheet: Select the worksheet you want to hide. On the Home tab, click the **Format** button in the Cells group. Point to **Hide & Unhide** and select **Hide Sheet**. To unhide it, click the **Format** button in the Cells group, point to **Hide & Unhide**, and select **Unhide Sheet**. Click **OK**.

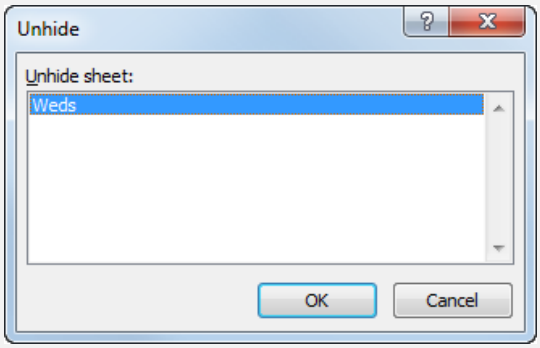


Figure 6-14: Selecting a hidden sheet to unhide.

Hide or unhide a workbook window

You can also hide the entire active workbook window.

1. Click the **View** tab on the Ribbon.

2. Click the **Hide Window** button in the Window group.

   The active window is hidden. The Excel program window remains open and active, but the workbook is hidden. It does not even appear in the Switch Windows button or on the Taskbar.

   Here's how to make the window reappear.

3. Click the **Unhide Window** button in the Window group.

   The window is unhidden.

   Tip: If there is more than one window hidden, the Unhide dialog box will appear. Select which window you want to unhide and click **OK**.

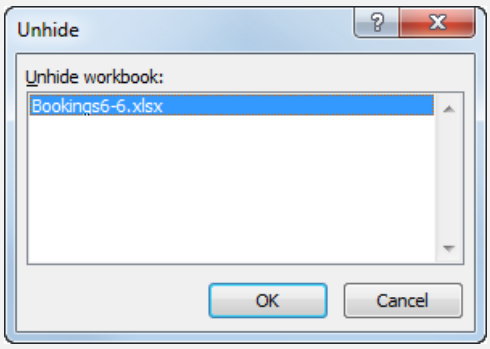


Figure 6-15: Selecting a hidden workbook to unhide.

Setting the Print Area

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

Set 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 cell range you want to print.

2. Click the **Page Layout** tab on the Ribbon and click the **Print Area** button in the Page Setup group.

3. Select **Set Print Area** from the list.

   Dashed lines appear around the new print area.

   Trap: When a print area is set, only the print area that is defined prints. You must clear the print area if you want to return to the default page setup.

Tips

- ✓ Once you set a print area, you can add additional print areas. Select the additional cells, click the **Print Area** button in the Page Setup group, and select **Add to Print Area**. The added area also has dashed lines around it.

Clear print area

Clear the print area and return to the default page setup.

1. Click the **Page Layout** tab on the Ribbon and click the **Print Area** button in the Page Setup group.

   A list of print area options appears.

2. Select **Clear Print Area** from the list.

   The print area is cleared.

View page breaks

Excel automatically breaks the page based on the margins and other page settings, but you can adjust these page breaks or add your own to divide a worksheet into separate pages for printing.

1. Click the **View** tab on the Ribbon and click the **Page Break Preview** button in the Workbook Views group.

   The worksheet appears in Page Break Preview view. Dashed lines indicate automatic page breaks, while solid lines represent page breaks that have been changed or added.

Exercise

- **Exercise File:** Bookings6-7.xlsx
- **Exercise:** View the Tuesday worksheet. Set the print area to A1:E61.

  Move the page break after row 60 up to row 40.

  Add a page break after row 18, then remove the break.

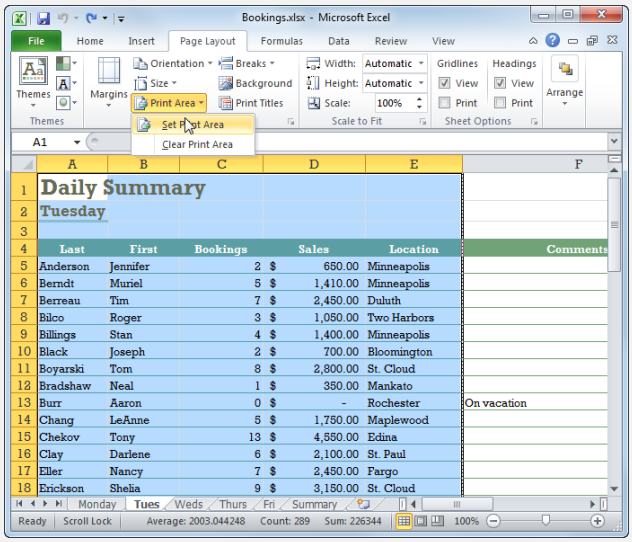


Figure 6-16: Setting a print area.

Other Ways to Open Page Break Preview View:
Click the **Page Break Preview** button on the status bar.

Move a page break

You can move existing page breaks in Page Break Preview view.

1. Position the mouse pointer over the page break line so the cursor changes ↔.

2. Click and drag the page break to a new location.

   The dashed line turns into a solid line, indicating the break has been changed.

Insert a page break

You can insert new vertical and horizontal page breaks in the workbook.

1. Right-click the cell below or to the right of where you want to insert the page break.

   A contextual menu appears.

   Tip: It can be a little confusing to figure out which cell to click to insert a certain type of page break. See the table to the right for more information on where to click.

2. Select **Insert Page Break** from the contextual menu.

   The break is inserted.

   Other Ways to Insert a Page Break:
   Click the **Page Layout** tab on the Ribbon and click the **Breaks** button in the Page Setup group. Select **Insert Page Break** from the list.

Remove a page break

1. Click and drag the **page break line** outside of the Page Break Preview area.

   The page break is removed.

   Other Ways to Remove a Page Break:
   Select the cell below or to the right of where you want to insert or remove a page break. Click the **Page Layout** tab on the Ribbon and click the **Breaks** button in the Page Setup group. Select **Remove Page Break**. Select **Reset All Page Breaks** to remove all page breaks.

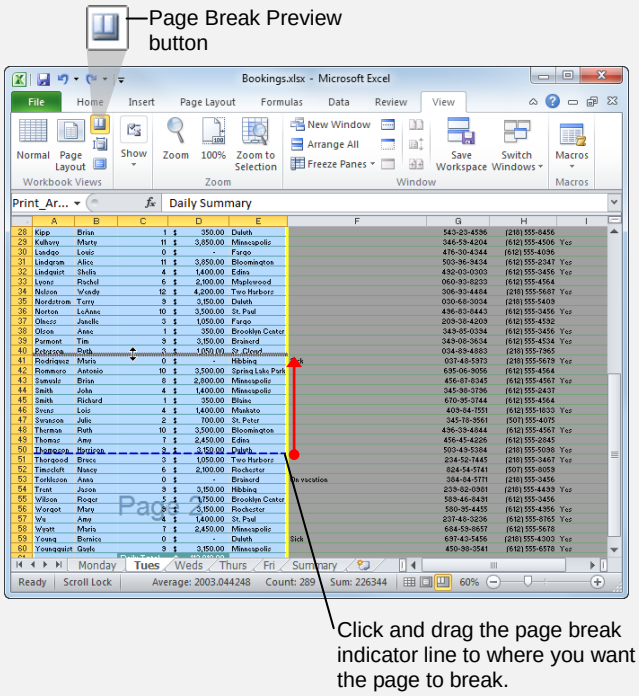


Figure 6-17: Moving a page break in Page Break Preview view.

Table 6-2: Inserting Page Breaks	
Horizontally	Select a cell in column A that is in the row below where you want the page break.
Vertically	Select a cell in Row 1 that is in the column to the right of where you want the page break.
Horizontally and Vertically	Select the cell below and to the right of where you want the page break.

Adjusting Page Margins and Orientation

Margins are the empty space between the worksheet data and the left, right, top, and bottom edges of the printed page. In this lesson, you'll learn how to adjust a page's margins.

You'll also learn how to change the page orientation. Everything you print uses one of two orientations: portrait or landscape. In portrait orientation, the paper is taller than it is wide—like a painting of a person's portrait. In landscape orientation, the paper is wider than it is tall—like a painting of a landscape.

Adjust margins

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

1. Click the **Page Layout** tab on the Ribbon and click the **Margins** button in the Page Setup group.

   A list of three margin options appears: Normal, Wide, or Narrow.

2. Select the margin size you want to use from the list.

   The margins adjust to the new setting.

   Tip: If you don't see a margin size you want to use, select **Custom Margins** to display the Margins tab of the Page Setup dialog box. Here you can set your own custom margins and even adjust the size of headers and footers.

Adjust orientation

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

1. Click the **Page Layout** tab on the Ribbon and click the **Orientation** button in the Page Setup group.

   A list of two options appears:

   - **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.

2. Select the page orientation you want to use.

   The orientation changes.

Exercise

- **Exercise File:** Bookings6-8.xlsx
- **Exercise:** View the Tuesday worksheet. In Page Layout view, apply Wide margins and Landscape orientation. Print preview the worksheet.

  Reapply Portrait orientation and preview the worksheet.

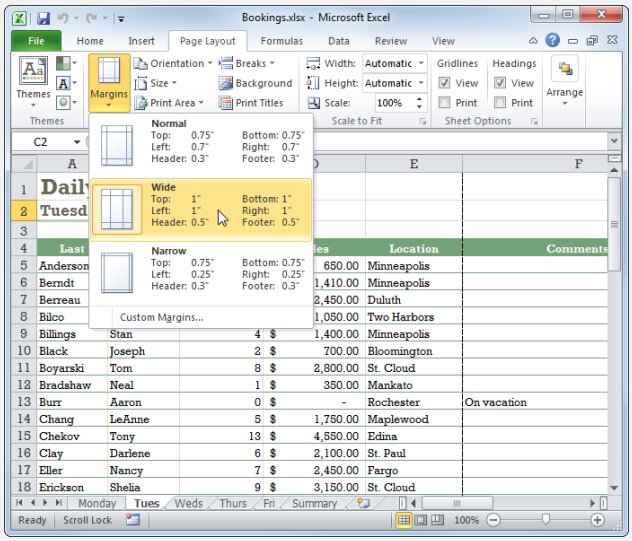


Figure 6-18: Adjusting margins.

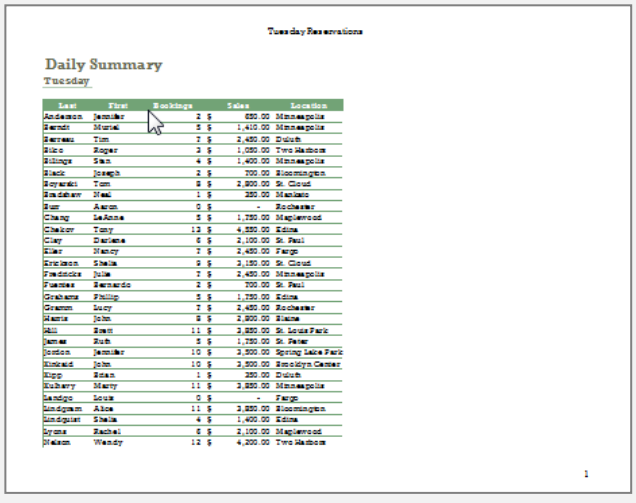


Figure 6-19: An example of a spreadsheet in landscape orientation view.

Adding Print Titles, Gridlines, and Row and Column Headings

You can specify rows and columns to repeat on each printed page. You can also select whether you want to view or 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 on the Ribbon and click the **Print Titles** button in the Page Setup group.

   The Page Setup dialog box appears, displaying the Sheet tab.

   In the Print titles area, there are two text boxes: "Rows to repeat at top" and "Columns to repeat at left." You can use the cell reference buttons next to the text boxes to select the ranges that contain the labels you want to repeat on every page.

2. Click the **Rows to repeat at top** or **Columns to repeat at left** cell reference button.

   The dialog box is minimized so you can see the spreadsheet and select the cells you want to repeat.

3. Select the rows or columns you want to appear on every printed page and click the **cell reference** button.

   The dialog box expands to its full size once again.

4. Click **OK**.

   Now when you print, the rows and/or columns you selected will appear on every page.

View or print gridlines and headings

You can also choose whether you want to view or print the worksheet cell gridlines or the column and row headings.

1. Click the **Page Layout** tab on the Ribbon.

   The Sheet Options group has commands for working with the gridlines and headings in a workbook.

   - **Gridlines:** The gridlines that appear in the spreadsheet to delineate each cell by default. Select the Print option to print the gridlines with the data.

Exercise

- **Exercise File:** Bookings6-9.xlsx
- **Exercise:** View the Tuesday worksheet.

  Use the Print Titles command to make row 4 repeat on every page.

  Set Sheet Options to display gridlines and headings when printing.

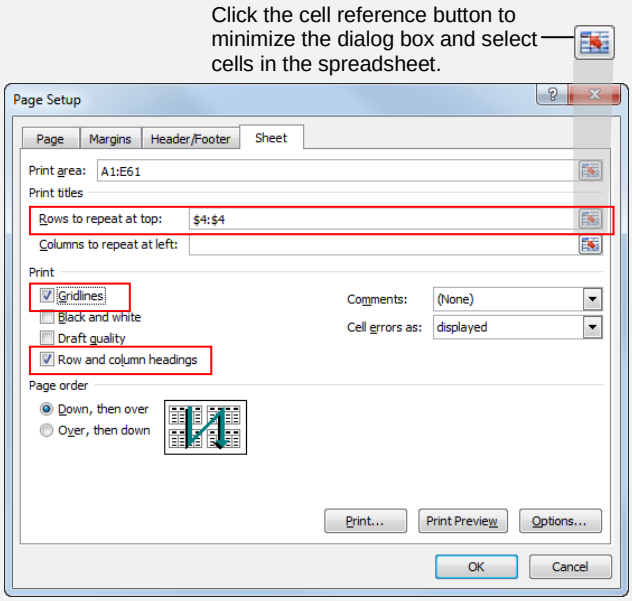


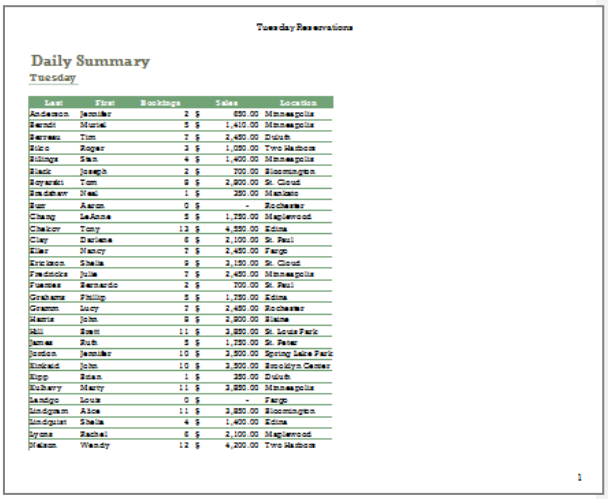
Figure 6-20: Adjusting print titles, gridlines and headings on the Sheet tab of the Page Setup dialog box.

- **Headings:** The column and row headings (A, B, C… and 1, 2, 3…) appear by default in the spreadsheet to help identify cells. Select the Print option so these headings are printed with the data.

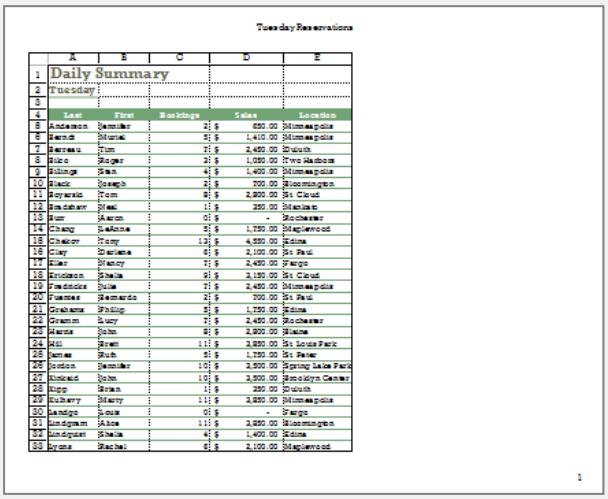
2. Select the options you want to use in the Sheet Options group.

If you selected the Print check box for Gridlines or Headings, you can preview how the worksheet will print in Print Preview or Page Layout view.

Other Ways to Print Gridlines or Headings: Click the **Page Layout** tab on the Ribbon and click the **Dialog Box Launcher** in the Sheet Options group. Select the option you want to use in the Print area. Here you can even select a different printed page order ("Down, then over" or "Over, then down").



A print preview of a worksheet without gridlines or headings displayed.



A print preview of a worksheet with gridlines and headings displayed.

Figure 6-21: Worksheets without and with gridlines and headings.

Adjusting Paper Size and Print 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 also adjust the scale of your printed worksheet so that the printed data stretches or shrinks to fit the number of pages you specify.

Adjust paper size

You can print Excel worksheets on many different sizes of paper.

1. Click the **Page Layout** tab on the Ribbon and click the **Size** button in the Page Setup group.

   A list of common page sizes appears.

2. Select the paper size you want to use from the list.

   The worksheet layout updates to the new paper size.

Scale to fit

You can tell Excel how many pages wide or tall you want the data to fit onto when printed.

1. Click the **Page Layout** tab on the Ribbon.

   The Scale to Fit group has three options you can choose from to adjust the worksheet's scale for printing:

   - **Width:** Select the maximum width—in number of pages—you want the printed data to occupy.
   - **Height:** Select the maximum height—in number of pages—you want the printed data to occupy.
   - **Scale:** Enter a percentage or use the arrow buttons to stretch or shrink the printed output to a percentage of its actual size.

2. Select the scale command you want to use in the Scale to Fit group and adjust the scale as necessary.

   The worksheet is scaled to fit the new settings.

   Other Ways to Scale to Fit:
   Click the **Dialog Box Launcher** in the Scale to Fit group to display the Page tab in the Page Setup dialog box. Select the options you want to use in the Scaling area.

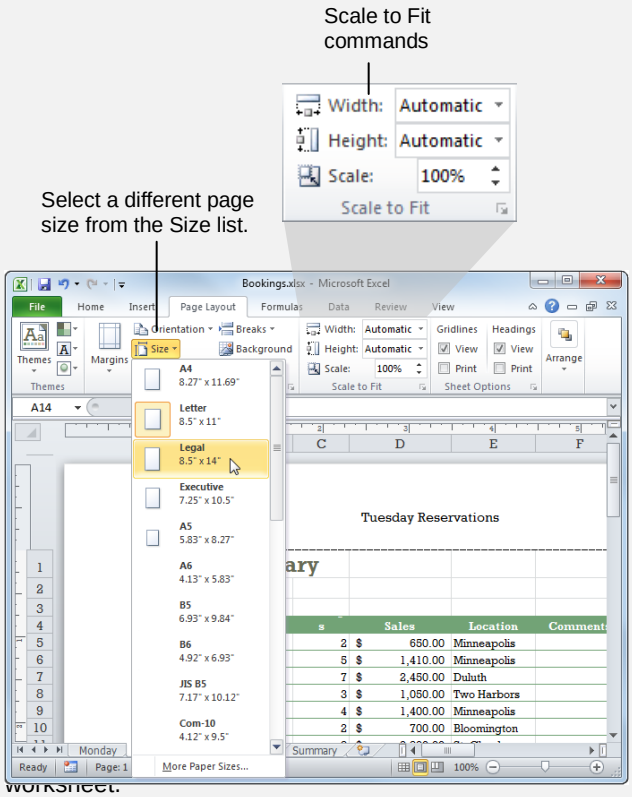
Exercise

- **Exercise File:** Bookings6-10.xlsx
- **Exercise:** View the Tuesday worksheet.

  In Page Layout view, adjust the paper size to Legal. Change the scale so that the worksheet fits onto 1 page wide by 1 page tall.

  Print preview the worksheet.

  Change the scale back to automatic width and height and return the paper size to Letter.



worksheet.

Printing a Selection, Multiple Worksheets, and Workbooks

Excel offers several ways to print, so you can print selected data, multiple worksheets, or an entire workbook.

Print selected data

Selecting data and then printing it lets you have complete control over what is printed. This is sometimes easier than setting a print area.

1. Select the data you wish to print.
2. Click the **File** tab and select **Print**.
3. Click the **Print Active Sheets** button and select **Print Selection** from the list.
4. Click the **Print** button.

Print multiple worksheets

You can print several worksheets at once.

1. Select multiple sheet tabs.

   Tip: To select adjacent tabs, press and hold the **<Shift>** key and select the first and last worksheet tabs you want to select. Or, to select non-adjacent tabs, press and hold the **<Ctrl>** key and click the desired tabs.

2. Click the **File** tab and select **Print**.
3. Click the **Print** button.

Print a single workbook

Printing a workbook prints all the worksheets in the workbook.

1. Open the workbook you wish to print.
2. Click the **File** tab and select **Print**.
3. Click the **Print Active Sheets** button and select **Print Entire Workbook** from the list.
4. Click the **Print** button.

Exercise

- **Exercise File:** Bookings6-11.xlsx
- **Exercise:** Print or print preview cells A4:E30.

  Print or print preview the Tuesday, Thursday, and Summary worksheets.

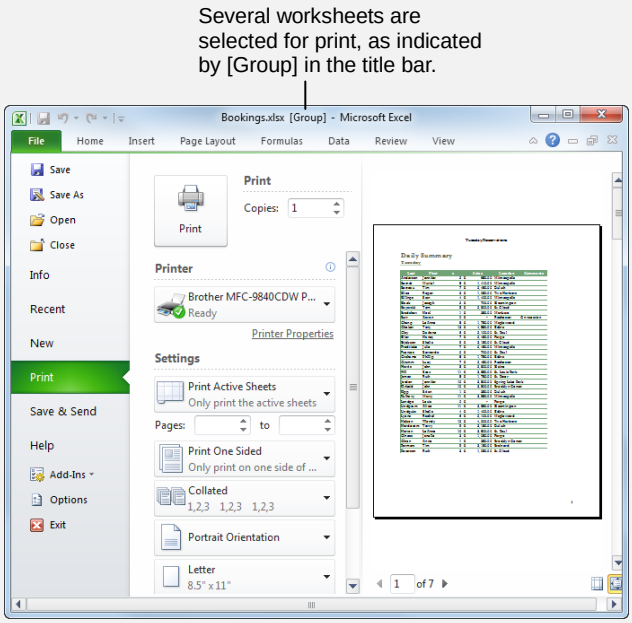


Figure 6-23: Backstage View with multiple pages selected for printing.

Working with Multiple Workbook Windows

This lesson explains how to view and work with more than one workbook at a time.

Switch between workbook windows

If you have more than one workbook window open, you can quickly switch between the windows.

1. Click the **Excel** button in the taskbar and select the window you want to view.

   Other Ways to Switch Between Workbooks: Click the **View** tab on the Ribbon and click the **Switch Windows** button in the Window group. Select the workbook you want to view from the list.

   The selected document window becomes the active document.

View multiple workbooks at once

1. Click the **View** tab on the Ribbon and click the **Arrange All** button in the Window group.

   The Arrange Windows dialog box appears, allowing you to arrange the open workbooks in Tiled, Horizontal, Vertical, or Cascade order.

2. Select the option you want to use.

   Other Ways to View Multiple Workbooks: Click the **View** tab on the Ribbon and click the **View Side By Side** button in the Window group. If the Compare Side by Side dialog box appears, select the workbook you want to display alongside the active workbook and click **OK**.

Tips

✓ Click the **Save Workspace** button in the Window group to save the layout of the open windows for future access.

Create another workbook window

You can view a workbook in more than one window at a time.

1. Click the **View** tab on the Ribbon and click the **New Window** button in the Window group.

   Another window with the workbook's contents appears in the Excel program window.

Exercise

- **Exercise File:** Bookings6-12.xlsx; Sales.xlsx
- **Exercise:** Switch between the two workbooks.

  Arrange the windows vertically.

  Open a new window of the Bookings workbook. Close the new window.

  Close the Sales workbook.

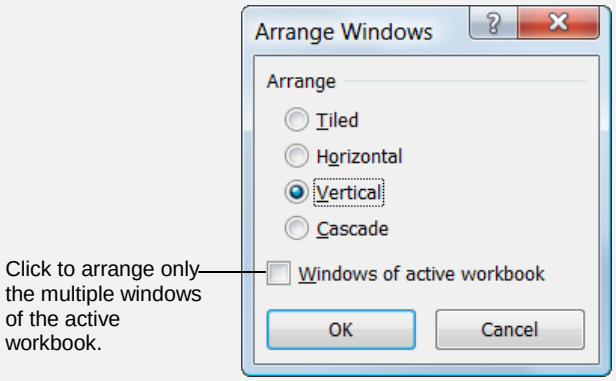


Figure 6-24: The Arrange Windows dialog box.

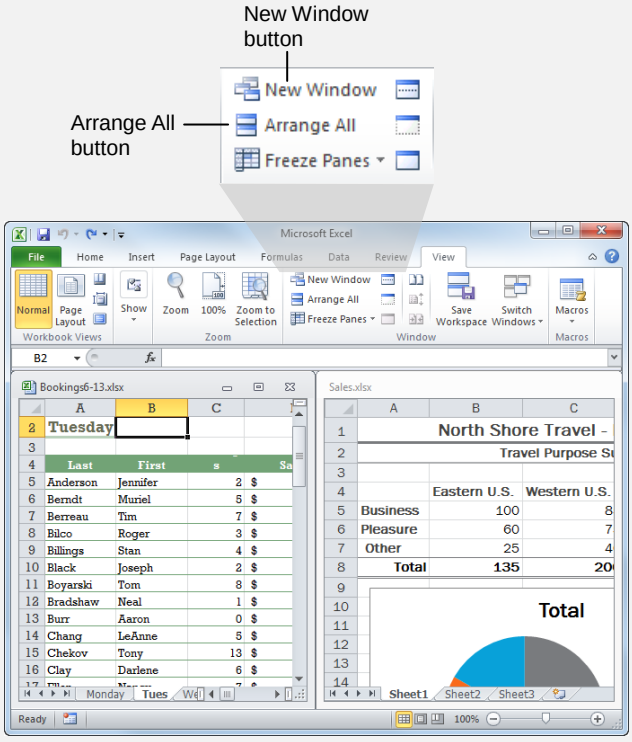


Figure 6-25: Two workbooks arranged vertically.

Tips

- ✓ Viewing the same workbook in multiple windows does not create a new file. When a change is made to the workbook in one window, the change is reflected in all the windows for the workbook.
- ✓ Each instance of a workbook window is marked in the title bar. For example, if a new window was opened for Workbook 1, the two windows would be named Workbook 1:1 and Workbook 1:2.

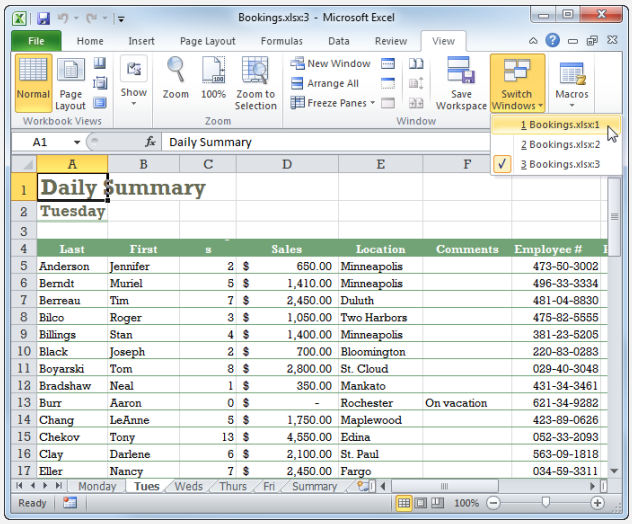


Figure 6-26: A workbook with multiple workbook windows open.

Creating a Template

If you find yourself recreating the same type of workbook over and over, you can save yourself some time by using a template. A *template* is a workbook that contains labels, formulas, formatting, and macros you use frequently. Once you have created a template you can use it to create new workbooks.

1. Create or open a workbook to use as a template.

2. Click the **File** tab on the Ribbon and select **Save As**.

   The Save As dialog box appears.

   There are three basic types of templates you can create:

   - **Excel Template:** This is the standard Excel 2007 template that works with XML.
   - **Excel Macro-Enabled Template:** This type of template is the standard template but is enabled to work with XML.
   - **Excel 97-2003 Template:** Use this to create workbooks that are compatible with earlier versions of Excel. These files are not XML compatible.

3. Click the **Save as type** list arrow and select the type of template you want to create.

   Once you change the file type to a template, the location automatically changes to the Templates folder.

4. Enter a name for the template in the File name text box.

5. Click the **Save** button.

   The template is saved. Now you can use the template to create new workbooks.

Exercise

- **Exercise File:** Bookings6-13.xlsx
- **Exercise:** Save the file as an Excel Template and name it "Bookings".

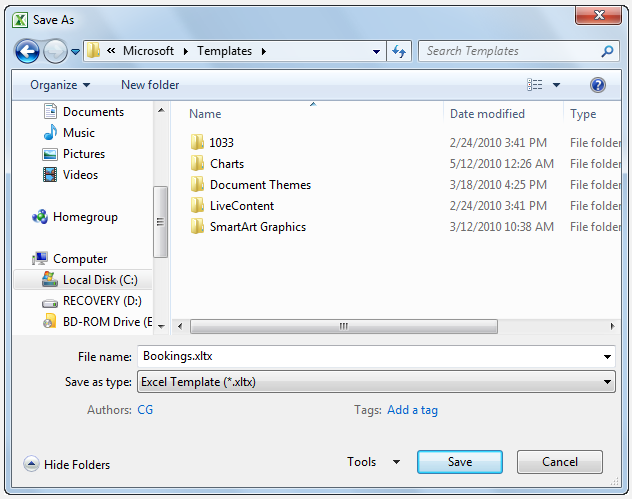


Figure 6-27: Saving a workbook as an Excel Template.

Managing Workbooks Review

Quiz Questions

53. Which of the following is NOT a view option in Excel?
    A. Normal view
    B. Edit view
    C. Page Layout view
    D. Page Break Preview view

54. You can use the Zoom slider to change the magnification level of a worksheet. (True or False?)

55. To select a worksheet, click the View tab on the Ribbon, click the Sheet button in the Worksheet Selection group, and select the sheet you want to make active. (True or False?)

56. You can add additional worksheets to a workbook. (True or False?)

57. You can move a worksheet within a workbook simply by dragging the sheet's tab to a new location. (True or False?)

58. Splitting and freezing a workbook window are exactly the same thing. (True or False?)

59. You can work with headers and footers easiest in Page Layout View. (True or False?)

60. When you hide a row, column, or worksheet, the hidden data is deleted. (True or False?)

61. In Page Break Preview view, you can move a page break by clicking and dragging it to a new location. (True or False?)

62. In Page Break Preview view, you can move a page break by clicking and dragging it to a new location. (True or False?)

63. Which of the following is NOT a preset margin size setting available in Excel?
    A. Large
    B. Normal
    C. Wide
    D. Narrow

64. The Sheet Options group on the Page Layout tab has commands that allow you to view or print which of the following:
    A. The Formula Bar
    B. Formulas
    C. Page numbers
    D. Gridlines

65. The default paper size in Excel is:
    A. Legal
    B. Letter
    C. Executive
    D. A4

66. Which of these is not a possible way to print?
    A. Print selected data
    B. Print multiple workbooks
    C. Print an entire workbook
    D. Print multiple worksheets from a workbook

Quiz Answers

53. B. Edit view is not an Excel view option.

54. True. The Zoom slider on the status bar lets you zoom in and out of a worksheet.

55. False. To select a worksheet, click that worksheet's tab at the bottom of the workbook window.

56. True. You can add and delete worksheets.

57. True. You can move a worksheet within a workbook simply by dragging the sheet's tab to the new location. Hold down the Ctrl key if you want to copy it.

58. False. They are similar, but splitting allows you to scroll through all window sections independently. Also, you can move split lines but not frozen sections.

59. True. Page Layout View makes it easy to work with headers and footers.

60. False. Hiding data doesn't delete it, it just hides it from view until it is unhidden.

61. True. In Page Break Preview view, you can move a page break by clicking and dragging it to a new location.

62. True. In Page Break Preview view, you can move a page break by clicking and dragging it to a new location.

63. A. Large is not a margin size option in Excel.

64. D. You can view or print gridlines and headings using the commands in the Sheet Options group.

65. B. Letter is the default paper size in Excel.

66. B. In Excel 2010, you can only print one workbook at a time.

7

7More Functions and Formulas

Formulas are the heart and soul of a spreadsheet. Without formulas, Excel would be nothing more than a grid for displaying numbers and text. As you will see in this chapter, formulas can do a lot more than just adding, subtracting, multiplying, and dividing. Excel has hundreds of different formulas you can use to create complex statistical, financial, and scientific calculations. The most expensive calculator in the world couldn't come close to matching all of Excel's functions.

In this chapter, you'll learn about more complex formula writing, how to insert and edit functions, how to define names, and how to trace formulas and diagnose errors.

Using Exercise Files

This chapter suggests exercises to practice the topic of each lesson. There are two ways you may follow along with the exercise files:

- Open the exercise file for a lesson, perform the lesson exercise, and close the exercise file.
- Open the exercise file for a lesson, perform the lesson exercise, and keep the file open to perform the remaining lesson exercises for the chapter.

The exercises are written so that you may "build upon them", meaning the exercises in a chapter can be performed in succession from the first lesson to the last.

Formulas with Multiple Operators

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.

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. The table below, *Order in Which Excel Performs operations in Formulas*, is a good reference for how to structure formulas with multiple operations.

Tips

✓ All formulas must begin with an equal sign (=).

Exercise

- **Exercise File:** None required.
- **Exercise:** Open a new blank workbook. In cell A1, enter =(20+5)/(10-5). In cell A2, enter =20+5/10-5.
  Notice that the parentheses cause the formulas to have different results.

  Close the workbook without saving.

	A
1	=(20+5)/(10-5)
2	=20+5/10-5

These formulas use the same operators and numbers…

	A
1	5
2	15.5

… but the result is different because the parenthesis change the order by which the formula is calculated.

Figure 7-1: Understanding how formulas with multiple operators are performed in Excel.

Table 7-1: Order in Which Excel Performs Operations in Formulas

Operations performed in this order

( )	Parentheses change the order of evaluation. For example: **=(20+5)/(10-5)** would add 20 and 5 (25), subtract 10 by 5 (5) and then divide the results to equal 5. But… **=20+5/10-5** would divide 5 by 10 (0.5), add the result to 20 (20.5) and then subtract 5 to equal 15.5.
:	Reference Operator
%	Percent
^	Exponentiation
*** and /**	Multiplication and division
+ and -	Addition and subtraction
= < > <= >=	Comparison

Inserting and Editing a Function

There are several hundred functions available in Excel. Some are simple, such as the SUM function. Others are much more complex and contain several different arguments. For example, the syntax for the DB function, which is used to depreciate an asset, is DB(cost,salvage,life,period,month).

Fortunately, the Insert Function feature is available to help you select, enter, and edit worksheet functions.

Insert a function using the Insert Function dialog box

1. Select the cell where you want to enter the formula and click the **Insert Function** button on the Formula Bar.

   The Insert Function dialog box appears. The table on the next page, *Function Categories*, describes the function categories available in Excel.

   Other Ways to Open the Insert Function Dialog Box:
   Click the **Formulas** tab on the Ribbon and click the **Insert Function** button in the Function Library group.

2. Click the **Or select a category** list arrow and select a function category.

   All the functions in the selected category appear in the "Select a function" list.

   Other Ways to Find a Function in the Insert Function Dialog Box:
   Type a description of the function in the "Search for a function" text box and click **Go**. The related functions appear in the "Select a function list."

3. Select the function you want to use in the "Select a function" list and click **OK**.

   The Function Arguments dialog box appears. Here you need to enter the arguments, which are the values or cell references needed to calculate the function.

   Tip: Instead of typing argument values into the dialog box, you can click a **Collapse Dialog** button, select a cell range in the worksheet, and then click the **Expand Dialog** button.

4. Enter the arguments in the text boxes and click **OK**.

   The function is inserted into the cell.

Exercise

- **Exercise File:** Sales7-1.xlsx
- **Exercise:** Use the Insert Function dialog box to insert the AVERAGE function in cell B13 and find the average of all the Net Inc. values (B11:G11).

  Use the Date & Time button in the Function Library group on the Ribbon to insert the TODAY function in cell A1.

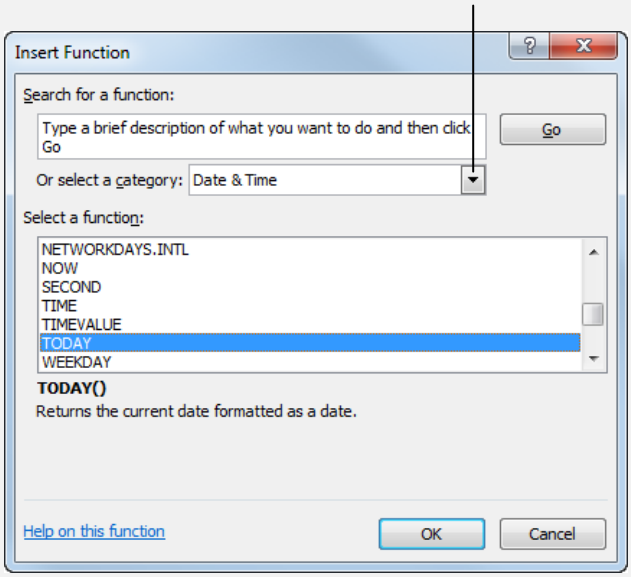


Figure 7-2: Selecting a function category in the Insert Function dialog box.

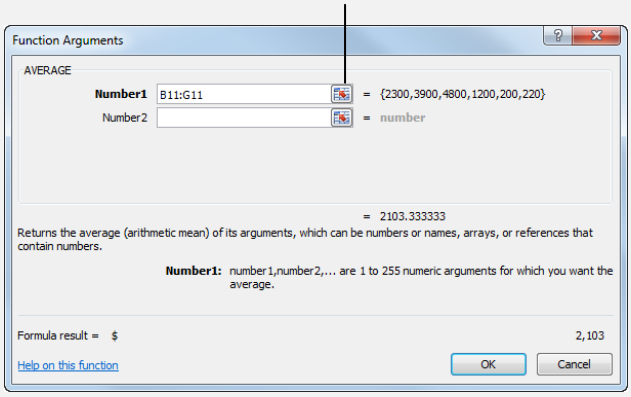


Figure 7-3: Function Arguments dialog box.

Insert a function using the Function Library

Another way you can access functions by category is in the Function Library group.

1. Select the cell where you want to enter the formula and click the **Formulas** tab on the Ribbon.

   In the Function Library group, you'll see the same categories of functions that are available in the Insert Function dialog box, plus the AutoSum button that automatically inserts the Sum function.

2. Click a function category button in the Function Library and select the function you want to use.

   The Function Arguments dialog box appears.

3. Enter the arguments in the text boxes and click **OK**.

   The function is inserted into the cell.

   Tip: If you click a function category button in the Function Library and then point to a function, a ScreenTip appears that describes the formula.

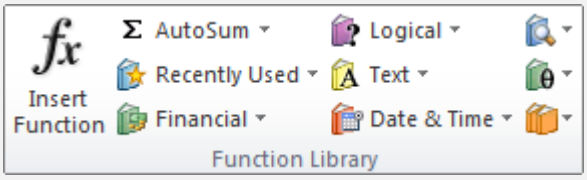


Figure 7-4: The Function Library group on the Formulas tab.

Edit a function

1. Select the cell with the function you want to edit.

   Choose from the following options:

   - Click the **Insert Function** button on the formula bar and edit the function arguments in the Function Arguments dialog box.
   - Click in the formula bar and directly edit the function in the formula bar.

Table 7-2: Function Categories

Most Recently Used	Lists the functions you've used most recently.
All	Lists every function available in Excel.
Financial	Lists financial functions to calculate interest, payments, loans, etc.
Date & Time	Lists functions to calculate date and times values.
Math & Trig	Lists math and trigonometry functions, such as SUM, COS, and TAN.
Statistical	Lists statistical functions, to calculate averages, standard deviations, etc.
Lookup & Reference	Lists functions that lookup or reference values.
Database	Lists functions that lookup or calculate values in a list or database.
Text	Lists functions that can be used with text or labels.
Logical	Lists IF…THEN conditional-type functions.
Information	Lists functions that return information about values and the worksheet itself.
Engineering	Lists functions used in engineering calculations.
Cube	Lists functions that extract data from OLAP cubes.

AutoCalculate and Manual Calculation

You have a few options for how Excel calculates worksheets. Besides using formulas, Excel can automatically perform certain calculations—all you have to do is select the cells. You can also tell Excel when you want to manually calculate formulas in a worksheet.

Use AutoCalculate

You don't always need to enter a formula to make a quick calculation. For example, if you have a column containing a few numbers you want to add together, you can simply select the cells and look to the status bar for the answer—Excel has calculated the sum for you there.

1. Select the cells you want to average, count or sum.

   Excel's AutoCalculate feature takes the cells you selected and displays the results to these common calculations in the status bar, as shown in the example to the right.

Change AutoCalculate options

You can also change and add calculations in the status bar.

1. Right-click the status bar.

   The Customize Status Bar list appears. Here you can add Numerical Count, Minimum or Maximum to the status bar. You can also remove Average, Count or Sum if you'd like. The table to the right, *AutoCalculate Options in the Status Bar,* displays more information about these options.

2. Select the calculations that you want to be displayed on the status bar.

   The calculations you selected appear on the status bar.

Manual formula calculation options

By default, Excel recalculates all the formulas in a workbook whenever you change a value that affects another value. However, you can change the calculation options so that formulas will only calculate when directed by you.

1. Click the **Formulas** tab on the Ribbon and click the **Calculation Options** button in the Calculation group.

   Three options appear in the list:

Exercise

- **Exercise File:** Sales7-2.xlsx
- **Exercise:** Select the cell range B9:G9 and look at the status bar to see the average monthly expenses.

  Select the Manual calculation option. Enter 12,000 in cell B3 and notice that no other values change. Click the Calculate Now button and watch the worksheet formulas calculate new values.

  Change back to Automatic calculation.

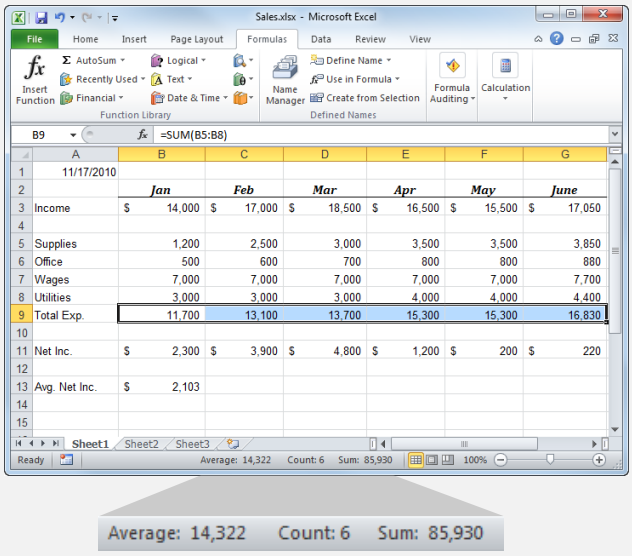


Figure 7-5: The AutoCalculate feature in the status bar.

Table 7-3: AutoCalculate Options in the Status Bar

By Default	**Average**	Average of selected cells.
	Count	Number of selected cells that contain data.
	Sum	Sum of selected cells.
Optional	**Numerical Count**	Number of selected cells that contain numbers.
	Minimum	Smallest value in the selection.
	Maximum	Largest value in the selection.

- **Automatic:** This is selected by default. Values are automatically recalculated whenever a change occurs in the workbook.
- **Automatic Except for Data Tables:** The workbook is automatically updated with any changes. Data tables are only updated manually.
- **Manual:** The workbook is only updated when directed by the user.

2. Select a calculation option.

   If you select an option other than Automatic, you will need to tell Excel when you want to recalculate.

   The Calculate Now button calculates the entire workbook when you click it, while the Calculate Sheet button only calculates the current worksheet.

3. Click the **Calculate Now** or **Calculate Sheet** button in the Calculation group.

   The workbook or worksheet recalculates.

   Other Ways to Calculate:
   Press **<F9>** to Calculate Now; press **<Shift>** + **<F9>** to Calculate Sheet.

Defining Names

Defining a name makes your formulas much easier to understand and maintain. 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).

You can define a name a cell range, formula, constant, or table.

Define a name for a cell range

You can define a name for a cell, cell range, or even multiple non-adjacent cells that you have selected.

1. Select the cells you want to name.

   If you want to select a range of non-adjacent cells, press and hold the <Ctrl> key while selecting cells.

2. Click the **Name Box** on the formula bar.

   The Name Box is at the left end of the formula bar and displays the name of the cell in the upper left corner of the currently selected range.

3. Type a name for the selection.

   You can enter up to 255 characters.

   Trap: You can’t use a cell reference, like B2, as a name, and you can’t use spaces in a name (use an underscore or period instead).

4. Press the **<Enter>** key.

   The defined name is confirmed.

   Other Ways to Define a Name for a Cell Range: You can use existing row and column labels as defined names. Select the cell range to name, including the row and/or column labels. Click the **Formulas** tab on the Ribbon and click the **Create from Selection** button. Select the name options you want to use and click **OK**. The resulting defined name refers to only the cells with values, not the cells with the row and column labels.

Define names with the New Name dialog box

For more options and flexibility when defining names you can use the New Name dialog box. Here you can define names for cell references, constants and formulas.

1. Click the **Formulas** tab on the Ribbon and click the **Define Name** button in the Defined Names group.

   The New Name dialog box appears.

Exercise

- **Exercise File:** Sales7-3.xlsx
- **Exercise:** Create defined names for each of these cell ranges—B5:B8, C5:C8, D5:D8—and name them JanExpenses, FebExpenses, and MarExpenses, respectively.

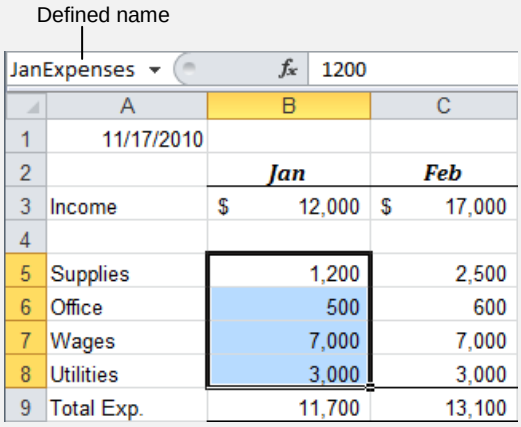


Figure 7-6: A defined name in the Name Box.

Other Ways to Display New Name Dialog Box: Click the **Formulas** tab on the Ribbon. Click the **Name Manager** button in the Defined Names group. Click the **New** button.

2. Enter a name in the Name text box.

   The name should be something that is easy to remember, and identifies what is being named.

3. Click the **Scope** list arrow and select the scope you want to use.

   The scope determines whether the name is recognized by the whole workbook or just individual worksheets within the workbook**.**

   Tip: Names in which the scope is a worksheet can be recognized in other sheets of the workbook. Just qualify the sheet name first, for example: Sheet1!Income_FY08.

4. (Optional) Enter a comment in the Comment box.

   The comment will be visible in the Name Manager dialog box.

5. Complete the "Refers to" box as necessary.

   The "Refers to" box displays the currently selected cell or cell range. You have a few options:

   - **Define a name for the current cell range:** Keep the current cell range selected. Do nothing.
   - **Select a different cell range:** In the "Refers to" box, select a different cell range: Click the **Collapse Dialog** button, select different cells on the worksheet and click the **Expand Dialog** button.
   - **Define a name for a constant:** In the "Refers to" box, enter an equal sign (=) followed by a constant value, such as 7.2.
   - **Define a name for a formula:** In the "Refers to" box, enter an equal sign (=) followed by a formula, such as FV(8,6,C4).

6. Click **OK**.

   The name is defined and the dialog box closes.

Tips

✓ You can use upper- and lowercase letters in defined names, but Excel doesn't distinguish between them.

✓ Besides creating defined names, you can also create "table names." Excel automatically creates a table name like "Table1" when a table is created, but you can use the Name Manager to change the name.

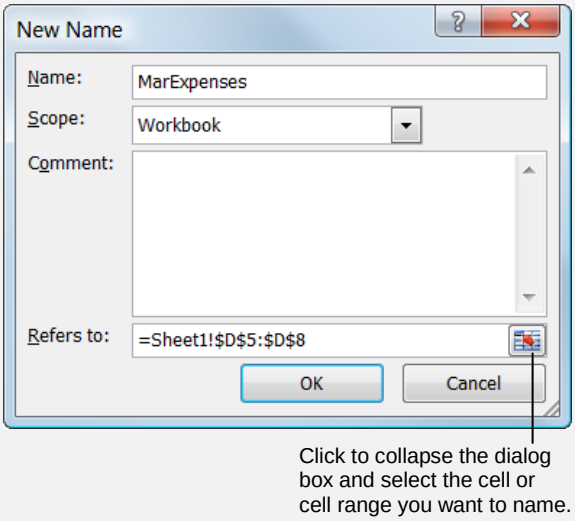


Figure 7-7: The New Name dialog box.

Using and Managing Defined Names

Once you create defined names, you can use them in formulas. You can also use the Name Manager dialog box to view, edit, delete, and create new defined names.

Use defined names

Once cells have been given names, they are easy to reference in other formulas.

1. Click the **Formulas** tab on the Ribbon, click the **Use in Formula** button in the Defined Names group, and select a name from the list.

   The defined name is inserted into the currently selected cell or the formula you are editing.

   Other Ways to Use a Name:
   Type a defined name in a formula.

View defined names

There are a few places you can view all of a workbook's defined names:

- **Name Manager dialog box:** Click the **Formulas** tab on the Ribbon and click the **Name Manager** button in the Defined Names group. Here you can see a list of the defined names and table names. The list includes the name, current value, current reference for the name, scope, and any comments related to the name. You can click and drag the right column border to change the width of a column.
- **Worksheet cells:** Find an area in the worksheet with two blank columns. Select a cell that will become the upper-left corner of the list. Click the **Formulas** tab on the Ribbon, click the **Use in Formula** button and select **Paste Names**. Click the **Paste List** button. The defined names and the related descriptions appear in the columns.
- **Name Box list:** Click the arrow next to the Name Box to view the defined names. If you select a name here, the cell range that is defined by that name is selected in the worksheet.

Edit defined names

You can use the Name Manager dialog box to edit defined names.

1. Click the **Formulas** tab on the Ribbon and click the **Name Manager** button in the Defined Names group.

   The Name Manager dialog box appears.

Exercise

- **Exercise File:** Sales7-4.xlsx
- **Exercise:** Edit the defined names in the Name Manager dialog box so they read Jan, Feb, and Mar instead of JanExpenses, FebExpenses, and MarExpenses.

  In cell B14, enter the formula =AVERAGE(Jan,Feb,Mar) to find the average expenses per month for the first quarter of the year.

  Delete the JanIncome defined name.

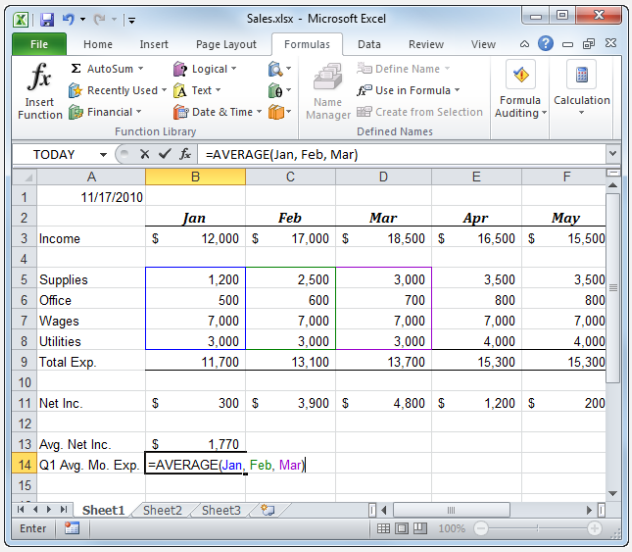


Figure 7-8: As you enter defined names in a formula, the cells they represent are highlighted.

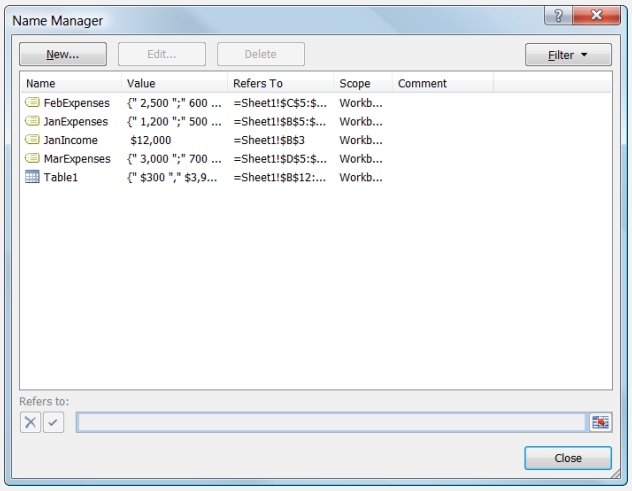


Figure 7-9: Defined names are denoted in the Name Manager dialog box by an icon that looks like a note tag. Table names appear with a table icon

2. Select a defined name and click the **Edit** button.

   The Edit Name dialog box appears. This dialog box is essentially the same as the New Name dialog box. Here you can change the name of the defined name or change what the name refers to.

3. Make changes to the defined name as desired, then click **OK**.

   You return to the Name Manager dialog box.

4. Click **Close**.

   Other Ways to Edit Defined Names:
   Select the defined name you want to edit in the Name Manager dialog box, then change the information in the "Refers to" box.

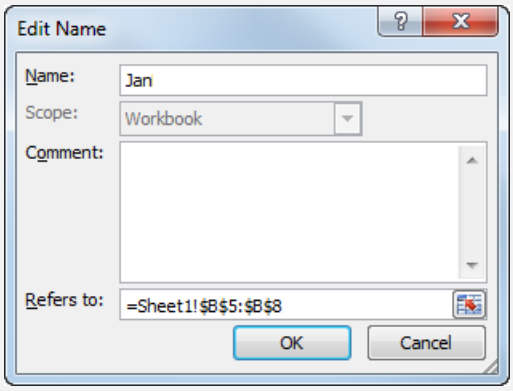


Figure 7-10: The Edit Name dialog box.

Delete defined names

If you want to remove a defined name, you can delete it in the Name Manager dialog box. You can also delete more than one defined name at once.

1. Click the **Formulas** tab on the Ribbon and click the **Name Manager** button in the Defined Names group.

   The Name Manager dialog box appears.

2. Select the defined name(s) you want to delete.

   Press and hold the <Shift> key to select multiple adjacent names or the <Ctrl> key to select multiple non-adjacent names for deletion.

3. Click the **Delete** button.

   A message appears, asking if you're sure you want to delete the defined name or names.

4. Click **OK**.

   The defined name or names are deleted.

Tips

- ✓ In the Name Manager dialog box, you can filter the list of defined names by scope; whether or not they have errors; or by type of name (defined or table). Click the **Filter** button and select the filter you want to use.
- ✓ You can also click the **New** button in the Name Manager dialog box to define a new name.

Displaying and Tracing Formulas

You can better understand the formulas in a workbook by displaying formulas, tracing precedents and dependents, and using the Watch Window.

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.

Also, by tracing precedents and dependents, you can display arrows that show you which cells affect a selected cell and which cells that cell affects. And the Watch Window allows you to constantly keep tabs on important formulas and their values.

Display formulas

1. Click the **Formulas** tab on the Ribbon and click the **Show Formulas** button in the Formula Auditing group.

   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.

   Now let's hide the formulas again.

2. Click the **Show Formulas** button in the Formula Auditing group again.

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

   Tip: If you print a worksheet with formulas displayed, the formulas print instead of values.

Trace formula precedents and dependents

Sometimes you may want to know what other cells are affected by or are affecting a certain cell. You can trace the influence of formulas by displaying arrows that show precedent and dependent cells.

1. Select a cell that contains a formula you want to trace.

2. Click the **Formulas** tab on the Ribbon.

   In the Formula Auditing group, there are a couple different buttons you can choose from:

Exercise

- **Exercise File:** Sales7-5.xlsx
- **Exercise:** Display, then hide, the formulas in the worksheet.

  Select cell B14 and trace precedents, then remove the arrows.

  Add cell B14 to the watch window. Then, change cell B5 to $1,000 to watch the value update in the watch window. Close the Watch Window.

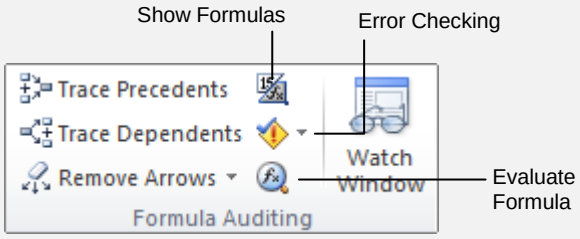


Figure 7-11: The Formula Auditing group on the Formulas tab.

	B	C	D
1			
2	*Jan*	*Feb*	*Mar*
3	12000	17000	18500
4			
5	1200	2500	3000
6	500	600	700
7	7000	7000	7000
8	3000	3000	3000
9	=SUM(B5:B8)	=SUM(C5:C8)	=SUM(D5:D8)
10			
11	=B3-B9	=C3-C9	=D3-D9
12			
13	=AVERAGE(B11:G11)		
14	=AVERAGE(Jan, Feb, Mar)		
15			

Figure 7-12: A worksheet with formulas displayed.

- **Trace Precedents:** Displays arrows that show what cells affect the currently selected cell.
- **Trace Dependents:** Displays arrows that point to cells that are affected by the currently selected cell.

3. Click the **Trace Precedents** or **Trace Dependents** button in the Formula Auditing group.

   Arrows appear, illustrating how the cells relate to the formula in the currently selected cell. Dots appear on the arrows to point out which specific cells are involved. If there are precedents or dependents on another worksheet, an icon appears letting you know that.

   Once you're done analyzing your formulas, you can remove the arrows.

4. Click the **Remove Arrows** button in the Formula Auditing group.

   All the tracing arrows disappear from the worksheet.

   Tip: If you want to remove only precedent arrows or only dependent arrows, click the **Remove Arrows** button list arrow and select an option.

Use the Watch Window

The Watch Window allows you to monitor the values of certain cells as changes are made to worksheets. You can add cells you want to watch from different worksheets and even different workbooks.

1. Click the **Formulas** tab on the Ribbon and click the **Watch Window** button in the Formula Auditing group.

   The Watch Window appears. Here you can add cells you want to track.

2. Click the **Add Watch** button.

   The Add Watch dialog box appears.

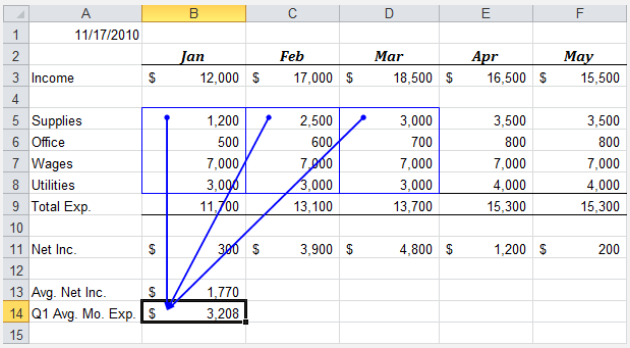
3. Select the cell or cell range you want to watch and click **Add**.

   The workbook and worksheet names, defined name, cell reference, current value, and formula for the selected cell(s) appear in the Watch Window.

   Tip: If you no longer want to track a certain cell, select it in the Watch Window and click the **Delete Watch** button.

4. Click the Watch Window's **Close** button.

   The Watch Window closes.



	A	B	C	D	E	F
1	11/17/2010					
2		*Jan*	*Feb*	*Mar*	*Apr*	*May*
3	Income	$ 12,000	$ 17,000	$ 18,500	$ 16,500	$ 15,500
4						
5	Supplies	1,200	2,500	3,000	3,500	3,500
6	Office	500	600	700	800	800
7	Wages	7,000	7,000	7,000	7,000	7,000
8	Utilities	3,000	3,000	3,000	4,000	4,000
9	Total Exp.	11,700	13,100	13,700	15,300	15,300
10						
11	Net Inc.	$ 300	$ 3,900	$ 4,800	$ 1,200	$ 200
12						
13	Avg. Net Inc.	$ 1,770				
14	Q1 Avg. Mo. Exp.	$ 3,208				
15						

Figure 7-13: Arrows tracing formula precedents for B14.

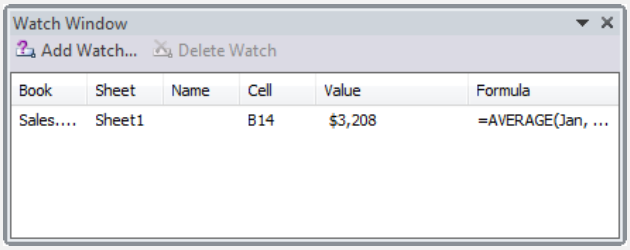


Figure 7-14: The Watch Window.

Understanding Formula Errors

Sometimes Excel comes across a formula that it cannot calculate. When this happens, it displays an error value. Error values occur because of incorrectly written formulas, referencing cells or data that don't exist, or breaking the fundamental laws of mathematics. Excel includes an Error Checking feature to help you deal with errors.

1. Click the **Formulas** tab on the Ribbon and click the **Error Checking** button in the Formula Auditing group.

The cell pointer moves to the first cell that contains an error and the Error Checking dialog box appears. Here you can see the formula arguments that are causing the error and Excel explains the error type. See the table below, *Excel Errors*, for further description of errors in Excel.

The Error Checking dialog box also has several buttons to help you with errors:

- **Help on this error:** Displays a Help topic that explains the type of error you're seeing.
- **Show Calculation Steps:** Displays the Evaluate Formula dialog box, which breaks down the formula arguments for you so that you can isolate the error. Click **Evaluate** to show the current value of the underlined argument or click **Step In** to examine the source of a particular argument.
- **Ignore Error:** Allows you to skip the current error and move to the next error in the worksheet.
- **Edit in Formula Bar:** Places the cursor in the formula bar, where you can directly edit the formula arguments and fix the error.

Tip: You can click the **Previous** or **Next** buttons to move between errors in the worksheet, and you can click the **Options** button to change the error checking rules.

Other Ways to display the Evaluate Formula Dialog Box:
Click the **Evaluate Formula** button in the Formula Auditing group.

2. Click the button you want to use in the Error Checking dialog box.

Now you can follow Excel's advice to fix the error.

Other Ways to Fix an Error:
Select the cell that contains an error and point to the **SmartTip** icon that appears next to the cell. A tip appears, telling you why you are getting this

Exercise

- **Exercise File:** Sales7-6.xlsx
- **Exercise:** Add "/0" onto the end of the formula in cell B13 so that the #DIV/0! error appears.

  Then add "+A8" onto the end of formula in cell B14 so that the #VALUE! error appears.

  Display the Error Checking dialog box, and use the Edit in Formula Bar button to delete "/0" from cell B13 and "+A8" from B14.

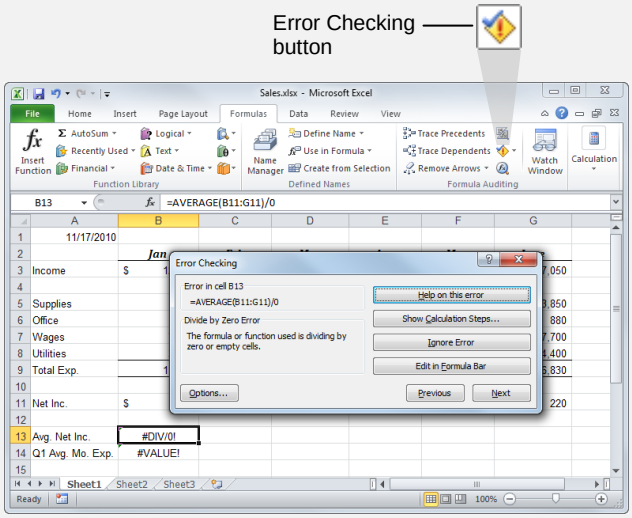


Figure 7-15: The Error Checking dialog box.

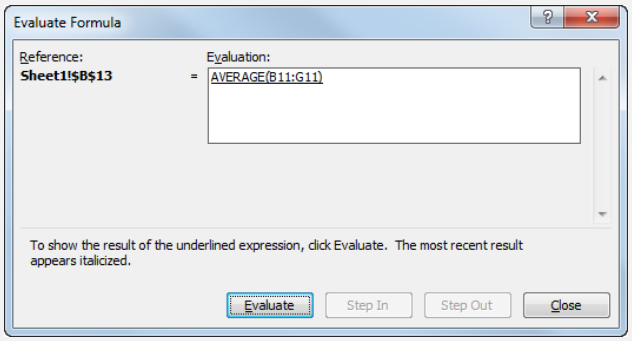


Figure 7-16: The Evaluate Formula dialog box.

type of error. Click the list arrow and select an error checking option.

Tips

- ✓ Another way you can analyze errors is by tracing them with arrows. Select a cell with an error, click the **Error Checking** list arrow in the Formula Auditing group, and select **Trace Error**. Arrows appear, pointing out the cells that are involved in the erroneous formula.
- ✓ If a formula contains its own cell location as a reference, it results in a circular reference, and the formula can't calculate correctly. To locate circular references in your worksheet, click the **Error Checking** list arrow in the Formula Auditing group, point to **Circular References**, and select a cell that contains a circular reference from the list.

Table 7-4: Excel Errors

#####	The numeric value is too wide to display within the cell. You can resize the column by dragging the boundary line between the column headings.
#VALUE!	You entered a mathematical formula that references a text entry instead of a numerical entry.
#DIV/0!	You tried to divide a number by zero. This error often occurs when you create a formula that refers to a blank cell as a divisor.
#NAME?	You entered text in a formula that Excel doesn't recognize. You may have misspelled the name or function, or typed a deleted name. You also may have entered text in a formula without enclosing the text in double quotation marks.
#N/A	This error occurs when a value is not available to a function or a formula. If certain cells on your worksheet contain data that is not yet available, enter #N/A in those cells. Formulas that refer to those cells will then return #N/A instead of attempting to calculate a value.
#REF!	The #REF! error value occurs when a cell reference is not valid. You probably deleted a cell range that is referenced in a formula.
#NUM!	The #NUM! error value occurs when you use an invalid argument in a worksheet function.
#NULL!	You specified an intersection of two ranges in a formula that do not intersect.

Using Logical Functions (IF)

This lesson introduces a very useful function, the IF function. The IF function is a conditional function or logical function because it will evaluate a condition you specify and return one value if the condition is true and another value if the condition is false. For example, you could use the IF function in an invoice to create a formula that would subtract a 5% discount from the invoice if the total was more than $500.00, otherwise it wouldn't subtract anything.

The IF function is one of the more difficult functions, but it's also very powerful.

1. Click the **Insert Function** button on the Formula bar.

The Insert Function dialog box appears.

2. Click the **Or select a category** list arrow and select **Logical**.

Functions that fall under this category are shown in the Select a function box.

3. Select **IF** in the Select a function box and click **OK**.

The Function Arguments dialog box appears.

Other Ways to Find a Function:
Type the function's name in the Search for a function box. Or, select the function from the Select a function box.

You're ready to start entering the IF formula. There are three parts in this formula:

- **Logical Test:** This is this first argument, and it evaluates a statement as true or false.
- **Value if True:** If the statement in the Logical Test is true, then this value is entered.
- **Value if False:** If the statement in the Logical Test is false, then this value is entered.

3. Enter the arguments for the IF function and click **OK**.

The function is run, and the results appear in the cell.

Tip: Remember, you can also create cell references by clicking the cell or cell range you want to reference. Click the Collapse Dialog button to collapse the function palette and select the cell range if the Function Arguments dialog box is in the way.

Other Ways to Use the IF Function in a Formula:
Write the formula using the syntax =IF(logical_test,value_if_true,value_if_false).

Exercise

- **Exercise File:** Functions.xlsx, IF worksheet
- **Exercise:** Determine the Federal Income Tax for these people and enter these arguments for the IF function in cell B17:
  Logical_test: B14>=500
  Value_if_true: B14*.15
  Value_if_false: B14*.1

  Copy the IF function from B17 to cells C17:H17.

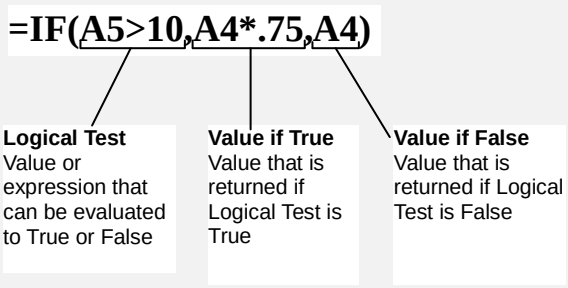


Figure 7-17: The syntax for the IF Function.

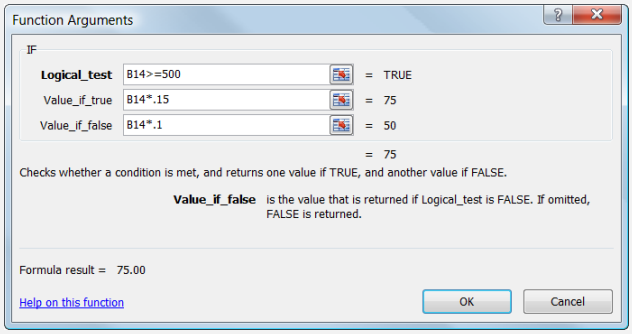


Figure 7-18: The Function Arguments dialog box.

Using Financial Functions (PMT)

The PMT function is a very valuable function if you work with real estate, investments, or are considering taking out a loan. The PMT function calculates the payment for a loan based on periodic payments and a constant interest rate. For example, say you want to take out a $10,000 car loan at 8% interest and will pay the loan off in four years. You can use the PMT function to calculate that the monthly payments for such a loan would be $244.13.

You can also use the PMT function to determine payments to annuities or investments. For example, if you want to save $50,000 in 20 years by saving the same amount each month, you can use PMT to determine how much you must save.

1. Click the **Insert Function** button on the Formula bar.

   The Insert Function dialog box appears.

2. Click the **Or select a category** list arrow and select **Financial**.

   Functions that fall under this category are shown in the Select a function box.

3. Select **PMT** in the Select a function box and click **OK**.

   The Function Arguments dialog box appears.

4. Enter the required arguments for the PMT function and click **OK**.

   The results of the function are displayed in the selected cell.

   Tip: Remember, you can also create cell references by clicking the cell or cell range you want to reference. Click the Collapse Dialog button to collapse the function palette and select the cell range if the Function Arguments dialog box is in the way.

   Other Ways to Use the PMT Function in a Formula:
   Write the formula using the syntax PMT(rate,nper,pv)

Exercise

- **Exercise File:** Functions.xlsx, PMT worksheet
- **Exercise:** In cell D4, create a PMT function that uses these arguments:
  Rate: C4/12
  Nper: B4*12
  Pv: A4

  The result is a negative number: Add a – (negative) symbol between the = and PMT in the Formula bar so the value is positive.

  Copy the PMT function to D5:D6.

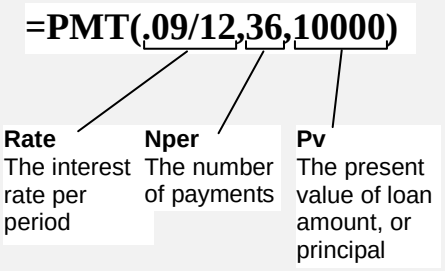


Figure 7-19: The syntax for the PMT Function.

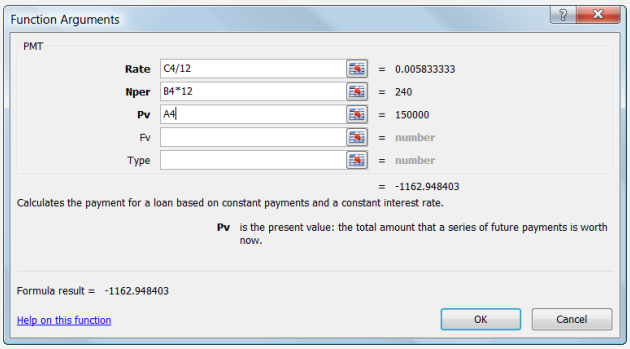


Figure 7-20: The Function Arguments dialog box.

	A	B	C	D
1	**Mortgage Payment Table**			
2				
3	**Loan Amount**	**Loan Length (in years)**	**Interest Rate**	**Monthly Payment**
4	$ 150,000	20	7.0%	$1,162.95
5	$ 150,000	20	7.5%	$1,208.39
6	$ 150,000	30	7.5%	$1,048.82

Figure 7-21: The results of the PMT function.

Using Database Functions (DSUM)

Excel's database functions perform calculations only for records that meet the criteria you specify. All the database functions use the same basic syntax: =Function(database, field, criteria). These arguments (parts) of a database function include:

- **Database:** Is the cell range that makes up the list or database.
- **Field:** Indicates which column is used in the function. You can refer to fields by their column labels as long as you enclose them with double quotation marks, such as "Name". You can also refer to fields as a number that represents the position of the column in the list: 1 for the first column in the list, 2 for the second, and so on. Make sure you refer to their position in the list, and not the column heading numbers!
- **Criteria:** Is a reference to the cell or cell range that specifies the criteria for the function.

This lesson explains how to use database functions by creating a formula with the simplest database function—the DSUM function.

1. Click the **Insert Function** button on the Formula bar.

The Insert Function dialog box appears.

2. Click the **Or select a category** list arrow and select **Database**.

Functions that fall under this category are shown in the Select a function box.

3. Select **DSUM** in the Select a function box and click **OK**.

The Function Arguments dialog box appears.

4. Enter the required arguments for the DSUM function and click **OK**.

Tip: It is important to understand how the field must be entered: either the name in double quotations, or by the number (for example, column A is 1, B is 2, and so on).

Other Ways to Use the DSUM Function in a Formula:
Write the formula using the syntax =DSUM(database, field, criteria).

Exercise

- **Exercise File:** Functions.xlsx, DSUM worksheet
- **Exercise:** Enter the DSUM function in C27 using these arguments:

  Database: A1:I23
  Field: "Annual Trips"
  Criteria: C25:C26

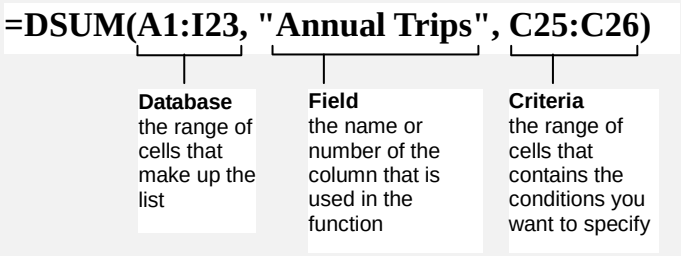


Figure 7-22: The syntax for the DSUM function.

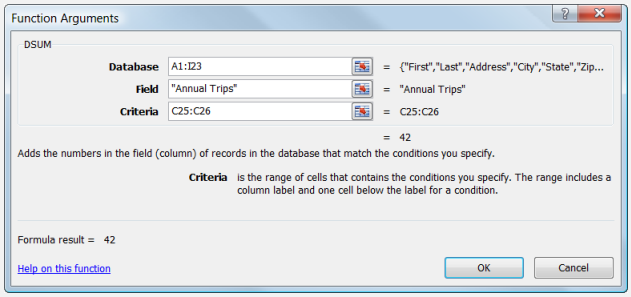
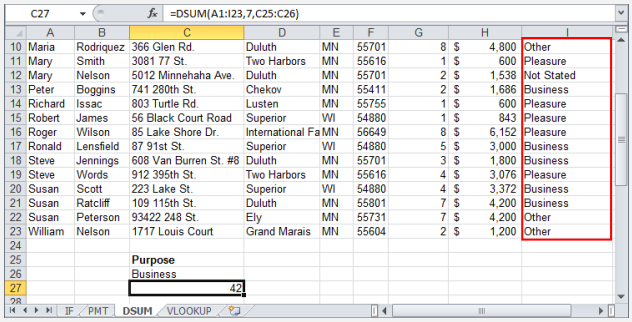


Figure 7-23: The Function Arguments for the DSUM function.



C27 displays the number of records in the Annual Trips column (column I) that match the criteria in C26.

Figure 7-24: An example of the DSUM function.

Using Lookup Functions (VLOOKUP)

The VLOOKUP function looks up information in a worksheet. The VLOOKUP searches vertically down the *left most* column of a cell range until it finds the value you specify. When it finds the specified value, it then looks across the row and returns the value in column you specify. The VLOOKUP function works a lot like looking up a number in a phonebook: first you look down the phonebook until you find the person's name, then you look across to retrieve the person's phone number.

Tips

✓ It's important to understand that VLOOKUP only looks down the column that is farthest left in the specified cell range. In then looks across the row.

1. Click the **Insert Function** button on the Formula bar.

   The Insert Function dialog box appears.

2. Click the **Or select a category** list arrow and select **Lookup and Reference**.

   Functions that fall under this category are shown in the Select a function box.

3. Select **VLOOKUP** in the Select a function box and click **OK**.

   The Function Arguments dialog box appears.

4. Enter the required arguments for the VLOOKUP function.

   Other Ways to Use the VLOOKUP Function in a Formula:
   Write the formula using the syntax =VLOOKUP (lookup_value,table_array, col_index_num)

Tips

✓ The HLOOKUP function is similar to the VLOOKUP function, except it searches horizontal from left to right across the *top* row of a cell range until it finds the value you specify. When it finds the specified value it then looks down the column to find the specified value. Because of the way data is typically structured, VLOOKUP is much more powerful than HLOOKUP.

Exercise

- **Exercise File:** Functions.xlsx, VLOOKUP worksheet
- **Exercise:** Start by adding a label for the results of the VLOOKUP function and criteria: Type **Sales by Client** in cell E25 and type **21** in cell E26.

  Enter the VLOOKUP function in E27 using these arguments:
  Lookup_value: E26
  Table_array: A1:J23
  Col_index_num: 9
  Range_lookoup: False

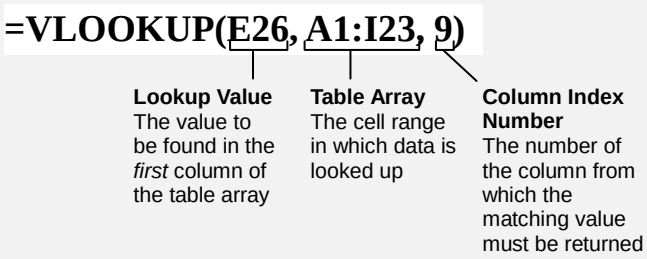


Figure 7-25: The syntax for the VLOOKUP function.

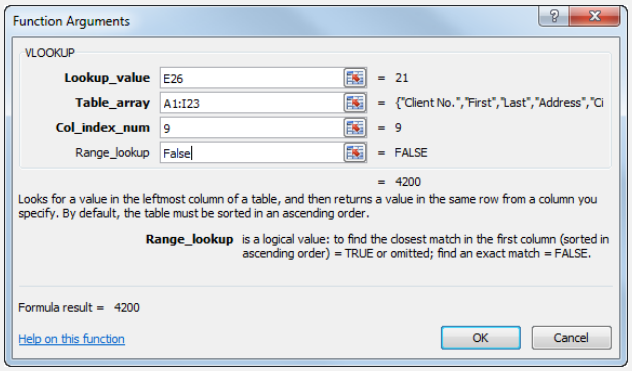


Figure 7-26: The Function Arguments for the VLOOKUP function.

User Defined and Compatibility Functions

Functions are one of the major changes in Excel 2010. Many functions have been renamed to better reflect their usage, or replaced with a function that is more accurate. The descriptions for the functions themselves are also clearer, so it easier to understand how a function is to be used.

User Defined functions

If add-ins that you install contain functions, these add-in or automation functions will be available in this category.

Compatibility functions

All the functions in this category have been replaced or renamed, but they are still available for backward compatibility. Consider using the new functions instead of these, because they may not be available in future versions of Excel.

Tables describing the rest of the function categories, along with more detailed examples of the functions in each category, appear in the following pages.

Exercise

- **Exercise File:** None required.
- **Exercise:** Understand the User Defined and Compatibility function categories in Excel 2010.

Financial Functions

Excel's financial functions are vital if you work with investments or real estate. Financial functions help you do things like determine loan payment amounts, calculate the future value of investments, and find rates of return. This table lists some of the Financial Functions available in Excel 2010.

Exercise

- **Exercise File:** None required.
- **Exercise:** Become familiar with Excel's Financial functions.

Table 7-5: Overview of Financial Functions

FV	=FV(rate, number of periods, payment, present value, type)	Calculates the future value of an investment based on periodic, constant payments and a constant interest rate. Example: You plan to deposit $2,000 a year for 35 into an IRA, and you expect a 10% average rate of return. =FV(10%,35,-2000) equals $542,048.74
IMPT	=IPMT(rate, period, number of periods, present value, future value, type)	Calculates the interest payment for over a specified period of time, with constant periodic payments and a constant interest rate. Example: The following formula calculates the interest due in the first month of a three-year $8000 loan at 10 percent annual interest: IPMT(0.1/12, 1, 36, 8000) equals -$66.67
IRR	=IRR(values, guess)	Calculates the internal rate of return of investment. The investments do not have to be equal, but they must occur at regular intervals. The internal rate of return is the interest rate received for an investment consisting of payments (negative values) and income (positive values) that occur at regular periods. Example: You want to start a business. It will cost $40,000 to start the business, and you expect to net the following income in the first three years: $10,000, $15,000, and $20,000. Enter the four values in the cells A1:A4 of the worksheet, making sure to enter the initial $40,000 investment as a negative value. IRR(A1:A4) equals 5%
NPV	=NPV(rate, value1, value2, ...)	Calculates the net present value of an investment by using a discount rate and a series of future payments (negative values) and income (positive values).
PMT	=PMT(rate, number of periods, present value, future value, type)	Calculates the payment for a loan based on constant payments and a constant interest rate. Example: The following formula calculates the monthly payment on a $20,000 loan with an annual interest rate of 9% that must be paid in 36-months. PMT(9%/12, 36, 20000) equals ($635.99)
PV	=PV(rate, number of periods, payment, future value, type)	Returns the present value of an investment. Example: An annuity that pays $600 every month for the next 20 years costs $50,000, and the money paid out will earn 7 %. You want to determine whether this would be a good investment. Using the PV function, you find that the present value of the annuity is: PV(0.07/12, 12*20, 600, , 0) equals ($77,389.50)
RATE	=RATE(total number of payments, payment, present value)	Determines the interest rate per period of an annuity. Example: You want to calculate the rate of a four-year (48 month) $8,000 loan with monthly payments of $200. Using the RATE function you find: RATE(48, -200, 8000) equals 0.77 percent This is the monthly rate, because the period is monthly. The annual rate is 0.77%*12, which equals 9.24 percent.

Date & Time Functions

You can use dates and time in your formulas just like any other value. For example, if cell A1 contained the entry 5/1/12 you could use the formula =A1+100 to calculate the date 100 days later, which is 8/9/12.

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 actually stores dates as chronological numbers called serial values. So when you think of dates as months, days, and, years, such as May 1, 2012, 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 data and time formats that you can easily understand. You can also create custom number formats to display the results of date formulas. For example, the custom format dddd would display only the day, Monday, instead of the entire date, 8/9/2012.

This table lists some of the Date & Time Functions available in Excel 2010.

Exercise

- **Exercise File:** None required.
- **Exercise:** Become familiar with Excel's Date & Time functions.

Table 7-6: Overview of Date & Time Functions

DATE	=DATE(year, month, day)	Enters a date in the cell. Example: DATE(12,5,1) equals May 1, 2012.
TODAY	=TODAY( )	A special version of the DATE function. While the DATE function can return the value of any date, the TODAY function always 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) equals 2:30 PM.
NOW	=NOW( )	A special version of the TIME function. While the TIME function can return the value of any time, the NOW function always returns the value of the current time.
WEEKDAY	=WEEKDAY (serial_number, return_type)	Returns a day of the week for a specific date. The serial_number argument is a date value (or reference to one). Example: WEEKDAY("2/14/12") equals Wednesday.
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("3/15/2012") equals 1998.
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("3/15/2012") 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("3/15/2012") equals 15.

Table 7-6: Overview of Date & Time Functions

HOUR	=HOUR (serial_number)	Returns hour value for a specific time. The serial_number argument is a time value (or reference to one). Uses a 24-hour time format. Example: HOUR("12:15:45”) equals 12.
MINUTE	=MINUTE (serial_number)	Returns the minute value for a specific time. The serial_number argument is a time value (or reference to one). Uses a 24-hour time format. Example: MINUTE("12:15:45”) equals 15.
SECOND	=SECOND (serial_number)	Returns a value of a second for a specific time. The serial_number argument is a time value (or reference to one). Uses a 24-hour time format. Example: SECOND("12:15:45”) equals 45.
HOUR	=HOUR(serial_number)	Returns the hour as a number from 0 (12:00 A.M.) to 23 (11:00 P.M.). Example: HOUR(“3:30 PM”) equals 15.
DAYS360	=DAYS360(start_date,end_date)	Returns the number of days between two dates based on a 360-day year (twelve 30-day months), which is used in some accounting calculations. Example: DAYS360("1/30/12", "2/1/12") equals 1.

Math & Trig Functions

You can find many of Excel's mathematical functions on a typical scientific calculator. If you still remember your algebra classes, many of these functions, such as SIN, COS, and LOG should be familiar to you.

This table lists some of the Math & Trig Functions available in Excel 2010.

Exercise

- **Exercise File:** None required.
- **Exercise:** Become familiar with Excel's Math & Trig functions.

Table 7-7: Overview of Math & Trig Functions

ABS	=ABS(number)	Determines the absolute value of a number. The absolute value of a number is the number without its sign.
ACOS	=ACOS(number)	Returns the arccosine of an angle. ACOS is the inverse of the COS function.
ACOSH	= ACOSH(number)	Returns the inverse hyperbolic cosine of a number.
AGGREGATE	=AGGREGATE(…)	Returns an aggregate in a list or database.
ASIN	=ASIN(number)	Returns the arcsine of an angle. ASIN is the inverse of the SIN function.
CEILING	=CEILING(number, significance)	Rounds a number up, to the nearest multiple of significance.
CEILING.PRECISE	=CEILING.PRECISE(number, significance)	Rounds a number up, to the nearest integer or to the nearest multiple of significance.
COMBIN	=COMBIN(number, number_chosen)	Calculates the number of possible combinations from a given number of items. Example: You want to form a two-person team from five candidates, and you want to know how many possible teams can be formed. COMBIN(5, 2) equals 10 teams.
COS	=COS(number)	Returns the cosine of an angle.
DEGREES	=DEGREES(angle)	Converts radians into degrees.
EVEN	=EVEN(number)	Rounds a number up to the nearest even or odd integer.
ODD	=ODD(number)	
EXP	=EXP(number)	Calculates the value of the constant e (approximately 2.71828182845904) raised to the power specified by its argument. Example: EXP(2) equals e2, or 7.389056
FACT	=FACT(number)	Calculates the factorial of a number. The factorial of a number is the product of all the positive integers from one up to the specified number. Example: FACT(5) equals 1*2*3*4*5 equals 120
FLOOR	=FLOOR(number, significance)	Rounds a number down to the nearest multiple of significance.
FLOOR.PRECISE	=FLOOR.PRECISE(number, significance)	Rounds a number down, to the nearest integer or to the nearest multiple of significance.
LN	=LN(number)	Calculates the natural (base e) logarithm of a positive number.
LOG	=LOG(number, base)	Calculates the logarithm of a positive number using a specified base.
LOG10	=LOG(number)	Calculates the base 10 logarithm of a number.

Table 7-7: Overview of Math & Trig Functions

MOD	=MOD(number, divisor)	Returns the remainder after number is divided by divisor. Example: MOD(3, 2) equals 1, the remainder of dividing 3 by 2.
PI	=PI( )	Returns the value of the constant pi (π), accurate to 14 decimal places.
PRODUCT	=PRODUCT(number1, number2…)	Multiplies all the numbers in a range of cells
RADIANS	=DEGREES(angle)	Converts degrees to radians.
RAND	=RAND()	Generates a random number between 0 and 1.
RANDBETWEEN	=RANDBETWEEN (bottom, top)	Generates a random number between the bottom and top arguments.
ROUND **ROUNDDOWN** **ROUNDUP**	=ROUND(number, num_digits)	Rounds a number to a specified number of digits. The ROUNDDOWN and ROUNDUP function take the same form as the ROUND function, and as their name implies, always round either up or down.
SIGN	=SIGN(number)	Determines the sign of a number. Results in 1 if the number is positive, zero (0) if the number is 0, and -1 if the number is negative.
SIN	=SIN(number)	Returns the sine of an angle.
SQRT	=SQRT(number)	Returns a positive square root of a number.
SUM	=SUM(number1, number2…)	Adds all the numbers in a range of cells.
SUMIF	=SUMIF(range,criteria, sum_range)	Adds the cells only if they meet the specified criteria. Example: You want to total the cell range B1:B5 only if the value in cellA1 is greater than 500. SUMIF(A1,">500",B1:B5)
TAN	=TAN(number)	Returns the tangent of an angle.

Statistical Functions

Excel offers a large number of functions to help you analyze statistical data.

This table lists some of the Statistical Functions available in Excel 2010.

Exercise

- **Exercise File:** None required.
- **Exercise:** Become familiar with some of Excel's Statistical functions.

Table 7-8: Overview of Statistical Functions

AVERAGE	=AVERAGE(number1, number2…)	Calculates the average, or arithmetic mean, of the numbers in the range or arguments.
COUNT	=COUNT(number1, number2…)	Counts the number of cells that contain numbers, including dates and formulas. Ignores all blank cells and cells that contain text or errors.
COUNTA	=COUNTA(number1, number2…)	Counts the number of cells in a range that are not empty.
COUNTIF	=COUNTIF(range,criteria)	Counts the number of cells within a range that meet the given condition.
MAX	=MAX(number1, number2…)	Returns the largest value in a range. Ignores logical values and text.
MEDIAN	=MEDIAN(number1, number2…)	Returns the median, or the number in the middle of the set of given numbers.
MIN	=MIN(number1, number2…)	Returns the smallest value in a set of numbers. Ignores logical values and text.
MODE.MULT	=MODE.MULT(number1, number2…)	Determines which value occurs most frequently in a set of numbers.
MODE.SNGL	=MODE.SNGL(number1, number2…)	Returns the most frequently occurring, or repetitive, value in an array or range of data.
STDEV	=STDEV(number1, number2…)	Estimates standard deviation based on a sample. The standard deviation is a measure of how widely values are dispersed from the average value.
STDEVA	=STDEVA(value1, value2…)	Estimates standard deviation based on a sample, including logical values and text. Text and the logical value FALSE have the value 0; the logical value TRUE has the value 1.
STDEVPA	=STDEVPA(value1, value2…)	Calculates standard deviation based on an entire population, including logical values and text. Text and the logical value FALSE have the value 0; the logical value TRUE has the value 1.
VAR.P	=VAR.P(number1, number2…)	Estimates variance based on the entire population (ignores logical values and text in the population).
VAR.S	=VAR.S(number1, number2…)	Estimates variance based on a sample (ignores logical values and text in the sample).
VARA	=VARA(value1, value2…)	Estimates variance based on a sample, including logical values and text. Text and the logical value FALSE have the value 0; the logical value TRUE has the value 1.
VARPA	=VARPA(value1, value2…)	Calculates variance based on the entire population, including logical values and text. Text and the logical value FALSE have the value 0; the logical value TRUE has the value 1.

Lookup & Reference Functions

You can use Excel's Lookup & Reference functions to locate values in rows or columns of data.

This table lists some of the Lookup & Reference Functions available in Excel 2010.

Exercise

- **Exercise File:** None required.
- **Exercise:** Become familiar with Excel's Lookup & Reference functions.

Table 7-9: Overview of Lookup & Reference Functions

COLUMN	=COLUMN(reference)	Returns the column number of a reference.
COLUMNS	=COLUMNS(array)	Returns the number of columns in an array or reference.
HLOOKUP	=HLOOKUP(lookup_value, table_array, row_index_num, range_lookup)	Looks for a value in the top row of a table or array of values and returns the value in the same column from a row you specify.
LOOKUP	=LOOKUP(…)	Looks up a value either from a one-row or one-column range or from an array. Provided for backward compatibility.
ROW	=ROW(reference)	Returns the row number of a reference.
ROWS	=ROWS(array)	Returns the number of rows in a reference or array.
TRANSPOSE	=TRANSPOSE(array)	Converts a vertical range of cells as a horizontal range, or vice versa.
VLOOKUP	=VLOOKUP(lookup_value,table_array,col_index_num, range_lookup)	Looks for a value in the leftmost column of a table, and then returns a value in the same row from a column you specify. By default, the table must be sorted in an ascending order.

Database Functions

Database functions return results based on filtered criteria. All the database functions use the same basic syntax =Function(database, field, criteria). The arguments include:

- **Database:** The cell range that makes up the list or database.
- **Field:** Indicates which column is used in the function. You can refer to fields by their column label enclosed with double quotation marks, such as "Name" or as a number that represents the position of the column in the list: 1 for the first column, 2 for the second, and so on—not the column heading numbers!
- **Criteria:** Is a reference to the cell or cell range that specifies the criteria for the function. For example, you might only want to total records from a certain region.

This table lists some of the Database Functions available in Excel 2010.

Exercise

- **Exercise File:** None required.
- **Exercise:** Become familiar with Excel's Database functions.

Table 7-10: Overview of Database Functions

DAVERAGE	=DAVERAGE(database, field, criteria)	Averages the values in a column in a list or database that match conditions you specify.
DCOUNT	=DCOUNT(database, field, criteria)	Counts the cells containing numbers in the field (column) of records in the database that match the conditions you specify.
DGET	=DGET(database, field, criteria)	Extracts from the database a single record that matches the conditions you specify.
DMAX	=DMAX(database, field, criteria)	Returns the largest number in the field (column) of records in the database that match the conditions you specify.
DMIN	=DMIN(database, field, criteria)	Returns the smallest number in the field (column) of records in the database that match the conditions you specify.
DSTDEV	=DSTDEV(database, field, criteria)	Estimates standard deviation based on a sample from selected database entries.
DSUM	=DSUM(database, field, criteria)	Adds the numbers in the field (column) of records in the database that match the conditions you specify.
DVAR	=DVAR(database, field, criteria)	Estimates variance based on a sample from selected database entries.

Text Functions

Excel offers a category of functions aimed at working with text. These functions allow you to remove, combine, and replace different pieces of text in a worksheet.

This table lists some of the Text Functions available in Excel 2010.

Exercise

- **Exercise File:** None required.
- **Exercise:** Become familiar with Excel's Text functions.

Table 7-11: Overview of Text Functions

CONCATENATE	CONCATENATE (text1,text2,...)	Joins several text strings into one text string.
EXACT	EXACT(text1,text2)	Checks whether two text strings are exactly the same, and returns TRUE or FALSE. EXACT is case-sensitive.
LEFT	LEFT(text,num_chars)	Returns the specified number of characters from the start of a text string.
LEN	LEN(text)	Returns the number of characters in a text string.
LOWER	LOWER(text)	Converts all letters in a text string to lowercase.
MID	MID(text,start_num,num_chars)	Returns the characters from the middle of a text string, given a starting position and length.
PROPER	PROPER(text)	Converts a text string to proper case; the first letter in each word in uppercase, and all other letters to lowercase.
REPLACE	REPLACE(old_text,start_num,num_chars,new_text)	Replaces part of a text string with a different text string.
RIGHT	RIGHT(text,num_chars)	Returns the specified number of characters from the end of a text string.
SUBSTITUTE	SUBSTITUTE(text,old_text,new_text,instance_num)	Replaces existing text with new text in a text string.
TRIM	TRIM(text)	Removes all spaces from a text string except for single spaces between words.
UPPER	UPPER(text)	Converts a text string to all uppercase letters.

Logical Functions

Excel has a number of logical functions to choose from. These functions allow you to evaluate logical arguments and conditions. The most famous logical function is probably the IF function.

This table lists some of the Logical Functions available in Excel 2010.

Exercise

- **Exercise File:** None required.
- **Exercise:** Become familiar with Excel's Logical functions.

Table 7-12: Overview of Logical Functions

AND	AND(logical1,logical2, ...)	Checks whether all arguments are TRUE, and returns TRUE if all arguments are TRUE.
FALSE	FALSE()	Returns the logical value FALSE.
IF	IF(logical_test,value_if_true,value_if_false)	Checks whether a condition is met, and returns one value if TRUE, and another value if FALSE.
IFERROR	IFERROR(value,value_if_error)	Returns value_if_error if expression is an error and the value of the expression itself otherwise.
NOT	NOT(logical)	Changes FALSE to TRUE, or TRUE to FALSE.
OR	OR(logical1,logical2,...)	Checks whether any of the arguments are TRUE, and returns TRUE or FALSE. Returns FALSE only if all arguments are FALSE.
TRUE	TRUE()	Returns the logical value TRUE.

Information Functions

Excel has a number of information functions to choose from. These functions allow you to evaluate logical arguments and conditions.

This table lists some of the Information Functions available in Excel 2010.

Exercise

- **Exercise File:** None required.
- **Exercise:** Become familiar with Excel's Information functions.

Table 7-13: Overview of Information Functions

AND	AND(logical1,logical2, ...)	Checks whether all arguments are TRUE, and returns TRUE if all arguments are TRUE.
FALSE	FALSE()	Returns the logical value FALSE.
IF	IF(logical_test,value_if_true,value_if_false)	Checks whether a condition is met, and returns one value if TRUE, and another value if FALSE.
IFERROR	IFERROR(value,value_if_error)	Returns value_if_error if expression is an error and the value of the expression itself otherwise.
NOT	NOT(logical)	Changes FALSE to TRUE, or TRUE to FALSE.
OR	OR(logical1,logical2,...)	Checks whether any of the arguments are TRUE, and returns TRUE or FALSE. Returns FALSE only if all arguments are FALSE.
TRUE	TRUE()	Returns the logical value TRUE.

Engineering and Cube Functions

These last functions are also possibly the functions that will be used the least. .

This table lists some of the Engineering Functions available in Excel 2010.

Exercise

- **Exercise File:** None required.
- **Exercise:** Become familiar with some of Excel's Engineering and Cube functions.

Table 7-14: Overview of Engineering Functions

BESSELI	BESSELI(x,n)	Returns the modified Bessel function In(x).
BIN2DEC	BIN2DEC(number)	Converts a binary number to decimal.
COMPLEX	COMPLEX(real_num,i_num,suffix)	Converts real and imaginary coefficients into a complex number.
CONVERT	CONVERT(number,from_unit,to_unit)	Converts a number from one measurement system to another.
DELTA	DELTA(number1,number2)	Tests whether two numbers are equal.

This table lists some of the Cube Functions available in Excel 2010.

Table 7-15: Overview of Cube Functions

CUBEKPIMEMBER	CUBEKPIMEMBER(connection, kpi_name, kpi_property, [caption])	Returns a key performance indicator (KPI) property and displays the KPI name in the cell. A KPI is a quantifiable measurement, such as monthly gross profit or quarterly employee turnover, that is used to monitor an organization's performance.
CUBEMEMBER	CUBEMEMBER(connection, member_expression, [caption])	Returns the logical value FALSE Returns a member or tuple from the cube. Use to validate that the member or tuple exists in the cube.
CUBEMEMBERPROPERTY	CUBEMEMBERPROPERTY(connection, member_expression, property)	Returns the value of a member property from the cube. Use to validate that a member name exists within the cube and to return the specified property for this member.
CUBERANKEDMEMBER	CUBERANKEDMEMBER(connection, set_expression, rank, [caption])	Returns the nth, or ranked, member in a set. Use to return one or more elements in a set, such as the top sales performer or the top 10 students.
CUBESET	CUBESET(connection, set_expression, [caption], [sort_order], [sort_by])	Defines a calculated set of members or tuples by sending a set expression to the cube on the server, which creates the set, and then returns that set to Microsoft Excel.
CUBESETCOUNT	CUBESETCOUNT(count)	Returns the number of items in a set.
CUBEVALUE	CUBEVALUE(connection, [member_expression1], [member_expression2], …)	Returns an aggregated value from the cube.

More Functions and Formulas Review

Quiz Questions

67. To change the order of evaluation, enclose the part of the formula to be calculated first in parentheses. (True or False?)

68. Which of the following is NOT a category of functions in Excel?
    A. Scientific
    B. Financial
    C. Logical
    D. Math & Trig

69. By default, Excel recalculates the formulas in a workbook whenever you change a value that affects another value. (True or False?)

70. You can define a name for multiple non-adjacent cells. (True or False?)

71. Which of the following is NOT a button found in the Defined Names group?
    A. Name Manager
    B. Evaluate Formula
    C. Define Name
    D. Use in Formula

72. Click the _____ button to display arrows that show what cells affect the currently selected cell.
    A. Show Formulas
    B. Watch Window
    C. Define Name
    D. Trace Precedents

73. The Error Checking dialog box does not include which one of the following buttons?
    A. Help on this error
    B. Show Calculation Steps
    C. Edit in Formula Bar
    D. Show Formulas

74. What are the three arguments or parts of an IF formula?
    A. IF, THEN, ELSE
    B. The conditional statement, the value if the test is false, and the value if the test is true.
    C. The logical test, the value if the test is true, and the value if the test is false.
    D. The conditional statement, the expression, and the value.

75. Which is NOT a required part of a PMT function?
    A. The interest rate.

B. The amount of the loan, or principal.
C. The number of payments.
D. If the interest rate is Fixed or Variable.

76. The DSUM function calculates the totals of specific records based on your criteria. (True or False?)

77. Which of the following functions looks up values vertically down a column and then horizontally across a row?
A. HLOOKUP
B. DSUM
C. DLOOKUP
D. VLOOKUP

Quiz Answers

67. True. To change the order of evaluation, enclose the part of the formula to be calculated first in parentheses.

68. A. Scientific is not a category of functions in Excel.

69. True. By default, Excel recalculates the formulas in a workbook whenever you change a value that affects another value.

70. True. You can define a name for multiple non-adjacent cells.

71. B. The Evaluate Formula button is not found in the Defined Names group.

72. D. Click the Trace Precedents button to display arrows that show what cells affect the currently selected cell.

73. D. The Error Checking dialog box does not have a Show Formulas button.

74. C. The three parts of an IF formula are the logical test, the value if the test is true, and the value if the test is false.

75. D. A fixed or variable interest rate option is not part of the PMT function.

76. True. The DSUM calculates the totals of specific records based on your criteria.

77. The VLOOKUP functions can look up values vertically down a column and then horizontally across a row.

8

8Working with Data Ranges

If you organize data into a range of rows and columns, you can then easily sort the data into a desired order, or filter the data to display specific information, such as records from a specific zip code.

In this chapter, you will learn how to sort and filter data in data ranges in several different ways.

Using Exercise Files

This chapter suggests exercises to practice the topic of each lesson. There are two ways you may follow along with the exercise files:

- Open the exercise file for a lesson, perform the lesson exercise, and close the exercise file.
- Open the exercise file for a lesson, perform the lesson exercise, and keep the file open to perform the remaining lesson exercises for the chapter.

The exercises are written so that you may "build upon them", meaning the exercises in a chapter can be performed in succession from the first lesson to the last.

Sorting by One Column

In Excel you can take 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 (or field), but you can also sort by row (or record).

Before you sort your data, make sure it's organized into two components:

- **Fields (columns):** Records are broken up into fields which store specific pieces of information, such as first and last name.
- **Records (rows):** Each record contains information about a unique thing or person, just like a listing in a phone book.

Once you have your data organized in columns and rows, you can sort by values in a certain column.

> **Trap:** If your data has column headings, don't select them when sorting, or they'll be sorted along with your data—unless you first click the **Sort & Filter** button in the Editing group on the Home tab, select **Custom Sort**, and check the **My data has headers** box.

1. Select the range of data or select a cell in the column you want to sort by.

   > **Trap:** If you select a column of data with more data next to it, the Sort Warning dialog box appears, asking if you want to expand your selection. Normally you will want to do this; otherwise, the column of data you've selected will be sorted independently of the surrounding data.

2. Click the **Home** tab on the Ribbon and click the **Sort & Filter** button in the Editing group.

   A list of sorting options appears, which change according to the type of data you are sorting:

   - **Text options:** Sort A to Z or Sort Z to A.
   - **Number options:** Sort Smallest to Largest or Sort Largest to Smallest.
   - **Date options:** Sort Oldest to Newest or Sort Newest to Oldest.

Exercise

- **Exercise File:** SalesReps8-1.xlsx
- **Exercise:** Sort the data in the Last column from A to Z. (Don't include the column header—Last—along with the data.)

Before sorting…

	A	B	C	D	E
1	**Last**	**First**	**Region**	**Position**	**Sales**
2	Winters	Denise	North	Associate	22,000
3	Brown	Clem	South	Manager	20,000
4	Dahl	Ron	North	Senior Manager	18,000
5	Sweet	Tamara	South	Associate	24,000

After sorting from A to Z by the Last column…

	A	B	C	D	E
1	**Last**	**First**	**Region**	**Position**	**Sales**
2	Brown	Clem	South	Manager	20,000
3	Dahl	Ron	North	Senior Manager	18,000
4	Sweet	Tamara	South	Associate	24,000
5	Winters	Denise	North	Associate	22,000

Figure 8-1: Before and after sorting data.

3. Select a sort option.

The column is sorted based on the values in the left-most column in the selected range. All the fields within each record move together. For example, if you sort a list of first and last names by last name, the first names still correspond to the last names after sorting.

Other Ways to Sort:
Select the entire range or select a cell in the column you want to sort by. Click the **Data** tab on the Ribbon and click one of the sort buttons in the Sort & Filter group. Or, right-click a cell in a column that contains data, point to **Sort**, and select a sort option from the list.

Tips

- ✓ To sort by rows instead of columns, click the **Sort & Filter** button in the Editing group on the Home tab, select **Custom Sort**, click **Options** in the Sort dialog box and select **Sort left to right**.

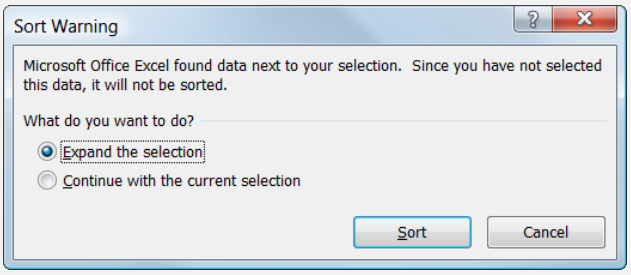


Figure 8-2: Always expand the selection if you are sorting data in a list. If you don't, the data will be mismatched with other records or fields.

Sorting by Colors or Icons

If you want to sort by cell colors, font colors, or by icons, you need to use a custom sort.

1. Select the range of data or a cell within the range.

   The data should contain cell or font color formatting or icons created with conditional formatting.

2. Click the **Home** tab on the Ribbon and click the **Sort & Filter** button in the Editing group.

3. Select **Custom Sort**.

   The Sort dialog box appears. First you need to select which column to sort by.

   Tip: If the range you are sorting includes headers, select the **My data has headers** option so that the headers aren't sorted with the rest of the data.

4. Click the **Sort by** list arrow and select the column you want to sort by.

   Next specify the type of sort. You can choose from Values (which allows you to sort on text, numbers or dates like you already learned about), Cell Color, Font Color, and Cell Icon.

5. Click the **Sort On** list arrow and select the type of sort you want to use.

   Based on the type you select, the Order area will update to display different options. If you are sorting by colors or icons, you'll need to select the order that you want the colors or icons to be sorted.

   Tip: You need to define the sort order for cell colors, font colors, or icons. Excel does not have a default order like it does for values.

6. Click the first list arrow in the Order column and select a cell or font color, or icon.

   Now you need to tell Excel where you want to put the color or icon you selected. You can select On Top or On Bottom to move it to the top of bottom of the column sort; if you are sorting by rows, select from On Left or On Right.

7. Click the second list arrow in the Order column and select the option you want to use.

   Now the data will be sorted with the color or icon you selected placed on top or bottom as you specified. You can specify additional colors or icons by adding additional levels to the sort.

Exercise

- **Exercise File:** SalesReps8-2.xlsx
- **Exercise:** Sort the data by the Sales column so that the red cell icon is on top.
  Add a second sort level to sort by the Sales column, Cell Icon, and this time with the yellow icon on top. Now the sales reps should be sorted from red icons on top, green icons on the bottom.
  Finally, clear conditional formatting from the sheet: click the Conditional Formatting button in the Styles group on the Home tab. Point to Clear Rules and select Clear Rules from Entire Sheet.

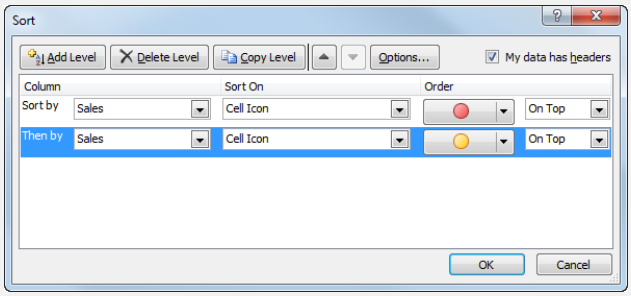


Figure 8-3: Sorting by cell icon in the Sort dialog box.

8. (Optional) Click **Add Level** button in the Sort dialog box.

   A sort level is added.

   Tip: Click the **Delete Level** button to delete the selected sort level you no longer want to use.

9. (Optional) Repeat the steps to define the new sort level. Click **OK** when you're done.

   For example, if you sort by a different color in the second sort level and order it On Top, it will move up just below the color selected to be On Top in the first level of the sort.

Sorting 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 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. Select a range of cells with at least two columns of data or select a cell within the range.

2. Click the **Home** tab on the Ribbon and click the **Sort & Filter** button in the Editing group.

3. Select **Custom Sort**.

   The Sort dialog box appears.

4. Click the **Sort by** list arrow and select the first column you want to sort by.

5. Click the **Sort On** list arrow and select the type of sort you want to use.

   Most of the time you'll sort by values, which includes text, numbers, and dates.

6. Click the **Order** list arrow(s) and select the option(s) you want to use.

   To sort by multiple columns, you need to use more sort levels.

7. (Optional) Click **Add Level**.

   Excel will sort the data by each level in order.

8. (Optional) Repeat the sorting steps for the next level, selecting the next column you want to sort by, and add more levels.

   Excel will sort the data by each level in order.

   Tip: Click the **Delete Level** button to delete a sort level you no longer want to use.

9. Click **OK**.

   The data range is sorted accordingly.

Exercise

- **Exercise File:** SalesReps8-3.xlsx
- **Exercise:** Sort by multiple columns to see who has the highest sales by region: Sort first by the Region column and sort on Values from A to Z, then sort by the Sales column and sort on Values from Largest to Smallest.

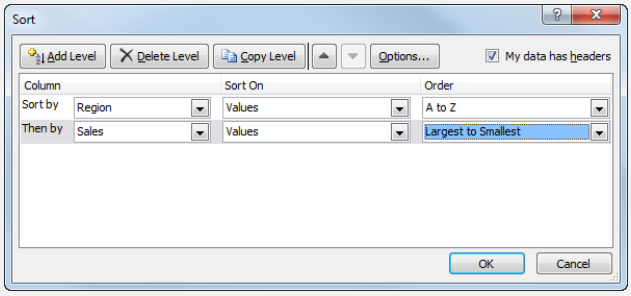


Figure 8-4: Sorting by multiple columns in the Sort dialog box.

	A	B	C	D	E
1	**Last**	**First**	**Region**	**Position**	**Sales**
2	Winters	Denise	North	Associate	22,000
3	Dahl	Ron	North	Senior Manager	18,000
4	Sweet	Tamara	South	Associate	24,000
5	Brown	Clem	South	Manager	20,000

Figure 8-5: The results of the custom sort.

Sorting by a Custom List

A custom list allows you to sort by criteria that you define or by one of Excel's predefined custom lists (which include, for example, Sun, Mon, Tue… or Jan, Feb, Mar…).

Create a custom list

First let's look at how to create your own custom list.

1. Enter the values you want to sort by, in the correct order from top to bottom, in a column of cells.

   For example, you could enter Small, Medium, and Large in successive cells.

2. Select the values you just entered.

   Now you need to create the list.

3. Click the **File** tab on the Ribbon and select **Options** from the list.

   The Excel Options dialog box appears.

4. Click the **Advanced** tab, scroll down and click the **Edit Custom Lists** button.

   The Custom Lists dialog box appears. Here you can see the custom lists that are already stored in Excel.

5. Make sure the cells you want to use as a list are selected in the Import list from cells. Click the **Import** button.

   Your new custom list appears in the dialog box.

6. Click **OK**.

   The Custom Lists dialog box closes.

7. Click **OK**.

   The Excel Options dialog box closes and the custom list is created.

Tips

✓ You can only create a custom list based on a value, not on cell color, font color, or an icon.

Exercise

- **Exercise File:** SalesReps8-4.xlsx
- **Exercise:** This exercise sorts the sales reps by position from most senior to least senior.
  In cells A10:A12, enter Senior Manager, Manager, and Associate. Create a custom list using those values.
  Next, sort the data by the Position field using the custom list you just created (if Sort levels appear in the dialog box from previous sorts, you can just modify the first one for this new sort).
  Then delete the values from cells A10:A12.

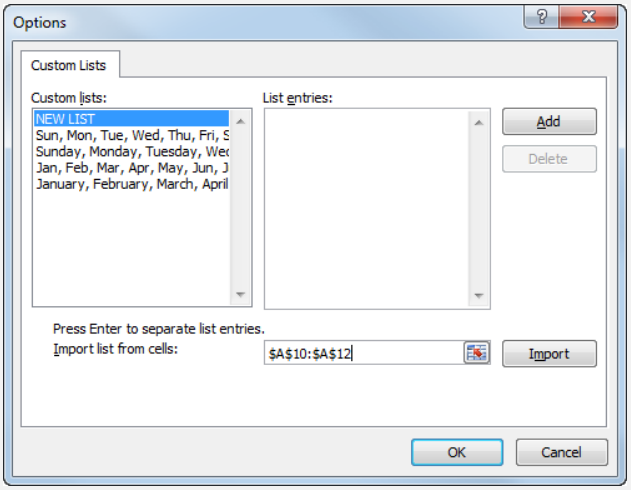


Figure 8-6: Adding a custom list in the Custom Lists dialog box.

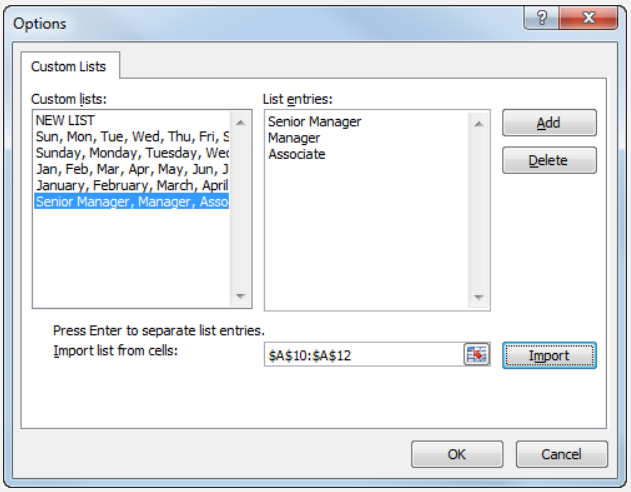


Figure 8-7: The Custom Lists dialog box after the custom list is added.

Sort by a custom list

Once you've created a list, or if you just want to use one of Excel's predefined custom lists, you're ready to sort.

1. Select the range of data you want to sort or select a cell within the range.
2. Click the **Home** tab on the Ribbon, click the **Sort & Filter** button in the Editing group, and select **Custom Sort**.

   The Sort dialog box appears.
3. Click the **Sort by** list arrow and select a column to sort by (the column with data that matches the custom list).
4. Click the **Order** list arrow and select **Custom List**.

   The Custom Lists dialog box appears.
5. Select the custom list you want to use and click **OK**.
6. Click **OK**.

   The data is sorted according to the custom list.

Tips

- ✓ To sort by rows instead of columns, click **Options** in the Sort dialog box and select **Sort left to right**.

	A	B	C	D	E
1	**Last**	**First**	**Region**	**Position**	**Sales**
2	Dahl	Ron	North	Senior Manager	18,000
3	Brown	Clem	South	Manager	20,000
4	Winters	Denise	North	Associate	22,000
5	Sweet	Tamara	South	Associate	24,000

Figure 8-8: Results sorted by custom list.

Filtering Data

When you filter data, Excel displays only the records that meet the criteria you specify—other records are hidden. You can also filter by multiple columns; each time you filter by an additional column, the data is further reduced.

Filter text, numbers and dates

You can filter by values such as text, numbers, or dates.

1. Select the range of data you want to filter or select a cell within the range.

2. Click the **Home** tab on the Ribbon, click the **Sort & Filter** button in the Editing group, and click **Filter**.

   Filter buttons that look like arrows appear in the first cell of each field header.

   Other Ways to Filter:
   Click the **Data** tab on the Ribbon and click the **Filter** button in the Sort & Filter group.

3. Click the filter button for the column you want to filter.

   A list of filter options appears at the bottom of the list. There is an option for every entry in the field.

4. Checkmark the check boxes of values that you want to display. Remove the checkmarks from check boxes of values that you want to hide.

   The data is filtered so that records that do not meet the criteria are hidden.

   Other Ways to Select Filter Criteria:
   Click the **Search** box in the filter list and type the criteria by which you want to filter. The list displays criteria that match your search.

   You can keep filtering by additional columns.

5. (Optional) Click another column's filter button and apply more filter criteria.

6. Click **OK**.

   The data is further reduced.

Remove filtering

You can remove a filter to once again display all the data.

1. Click the **Home** tab on the Ribbon, click the **Sort & Filter** button in the Editing group, and select **Filter**.

   The filter buttons disappear and filtering is removed.

Exercise

- **Exercise File:** SalesReps8-5.xlsx
- **Exercise:** Filter the data by region so that only North sales reps appear. Then filter those records additionally so only Associates appear (only Denise Winters should remain). Remove the filters so all the data once again appears and the filter buttons disappear.

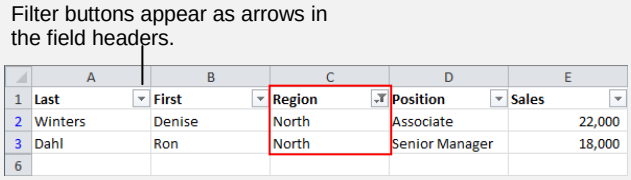


Figure 8-9: Data filtered to display only North region sales reps.

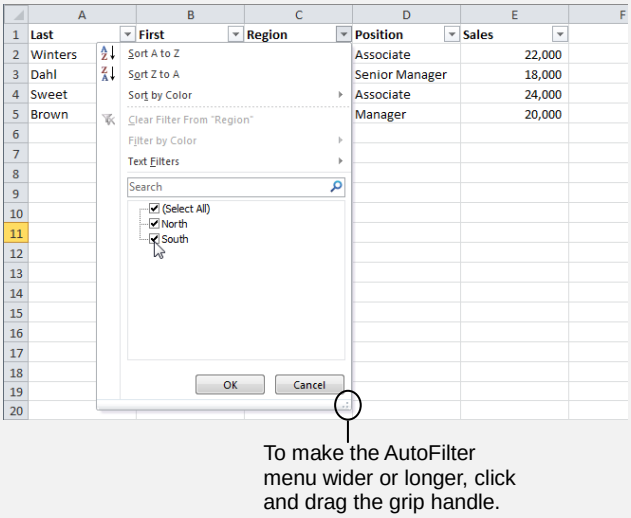


Figure 8-10: Setting criteria for a field. Items that are checked are shown. Items that are not checked are filtered out.

Creating a Custom AutoFilter

Excel offers some predefined filter criteria that you can access using a Custom AutoFilter. This lesson explains how to filter data using Custom AutoFilter.

1. Select a range of cells to filter plus the column header row (or a blank row, if there isn't a header).

2. Click the **Home** tab on the Ribbon, click the **Sort & Filter** button in the Editing group, and click **Filter**.

   Filter buttons appear in the first cell of each column in the range.

3. Click the filter button in the column you want to filter.

   A list of options appears. Depending on whether the selected cells contain text, numbers, or dates, the options will differ.

4. Point to the option that appears in the list: **Text Filters**, **Number Filters**, or **Date Filters**.

   A list of comparison operators, such as Equals, appears, as well as the Custom Filter option.

5. Select **Custom Filter**.

   The Custom AutoFilter dialog box appears.

   Tip: If you're working with numbers or dates and you select a comparison operator such as Above Average (instead of selecting Custom Filter), the Custom AutoFilter dialog box won't appear—the data will simply be filtered.

6. Click the first list arrow and select a comparison operator.

7. Click the second list arrow in the first row and select a value from the list or enter your own value in the text box.

8. (Optional) Select **And** or **Or** and select a second criteria to filter the column by.

   Tip: You can use wildcards when entering values in the Custom AutoFilter dialog box. Use a ? to represent any single character or a * to represent a series of characters.

9. Click **OK**.

   The Custom AutoFilter dialog box closes and the data is filtered.

Exercise

- **Exercise File:** SalesReps8-6.xlsx
- **Exercise:** Use a custom filter to display only the sales reps that are not Associates. (Hint: For the Position column, select "Does not equal" as the operator and "Associate" as the value.)
  Clear the filter.

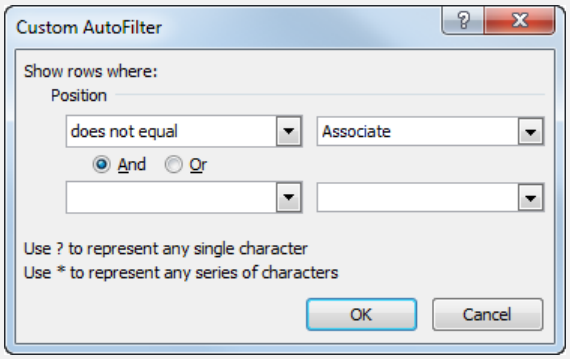


Figure 8-11: The Custom AutoFilter dialog box.

Using an Advanced Filter

Advanced filtering is the most powerful and flexible way to filter your Excel data. It's also the most difficult method, and requires more work to set up and use. With an Advanced Filter, you can:

- Filter using criteria located outside of the data range.
- Use wildcards in the filter criteria.
- Extract and copy filtered results to another range on the worksheet.

To create an Advanced Filter you must start by defining a criteria range. A criteria range is a cell range located outside of your data range that contains the filter criteria.

1. Copy the desired column labels from the data range and paste them in the first row of the criteria range.

For example, if you wanted to filter for sales reps with sales greater than $20,000 and who are also managers, you would copy the Sales and Position column labels to the criteria range.

Tip: The criteria range can be any area of open cells on your worksheet and you only need to copy the labels for the columns that contain criteria you'll be filtering on.

2. In the rows below the criteria labels, type the criteria you want to filter for.

In the above example, you would type >20000 under the Sales label and Manager under the Position label.

Tip: You can enter values or text you want to filter for, and you can incorporate operators such as < or > to specify the records you want to filter for. You can also use wildcards—for example, enter *r to filter out text that doesn't end with the letter "r".

3. Click the **Data** tab on the Ribbon and click the **Advanced** button in the Sort & Filter group.

The Advanced Filter dialog box appears. Here you need to specify the range of data you want to filter, as well as the criteria you want to filter by.

4. Make sure the **Filter the list, in-place** option is selected in the Action area.

That way, the filtered results will be displayed right in the original data range.

Tip: To copy filtered results to another location on the worksheet, first prepare an extract range with labels for the fields you want to display. The

Exercise

- **Exercise File:** SalesReps8-7.xlsx
- **Exercise:** Use the Advanced Filter to filter for Sales >18,000, and a Position that ends with r (Hint: use *r). Clear the filter.
  Do the same Advanced Filter again, but this time extract the results to a different range. Extract only the Last and First columns to a different range (you should end up with Clem Brown being displayed in the extract range).

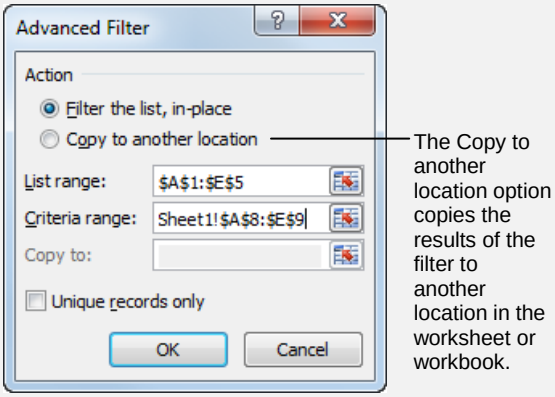
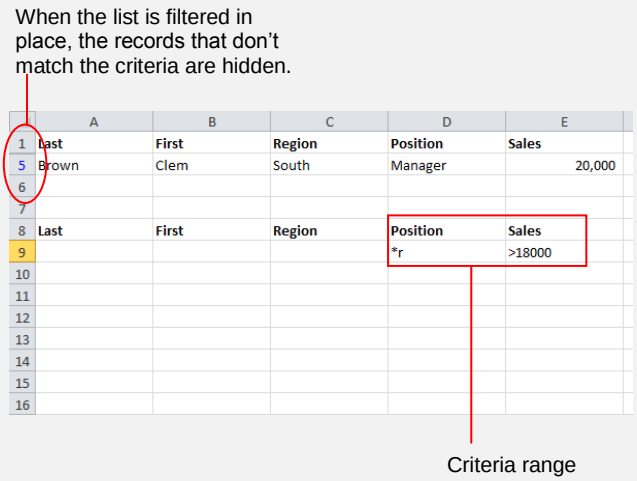


Figure 8-12: The Advanced Filter dialog box.



	A	B	C	D	E
1	Last	First	Region	Position	Sales
5	Brown	Clem	South	Manager	20,000
6					
7					
8	Last	First	Region	Position	Sales
9				*r	>18000
10					
11					
12					
13					
14					
15					
16					

Figure 8-13: Data filtered in place using the Advanced Filter.

extracted fields needn't be the same fields that are used in your criteria range. For example, you can set the filter to only show records from USA, and then extract only the names of records that match those criteria. Select **Copy to another location** in the Action area of the Advanced Filter dialog box. In the "Copy to" box, click the **Collapse Dialog** button, select the range for the extracted results—including labels and blank rows to hold the results—and press <**Enter**>.

5. Click the **List range collapse dialog** button and select the data range you want to filter. Press the **<Enter>** key.

6. Click the **Criteria range collapse dialog** button and select the criteria range, including the column labels. Press the **<Enter>** key.

7. Click **OK**.

   The data is filtered based on the criteria in the criteria range, and the results are displayed in the data range.

   Tip: To remove the advanced filtering, click the **Clear** button in the Sort & Filter group on the Data tab.

   The table below, *Comparison Operators and Wildcards*, provides a description of operators and wildcards you can use for entering filter criteria.

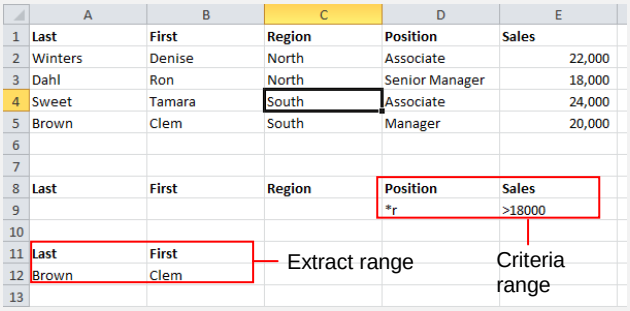


Figure 8-14: Filter results copied to another location (extracted) using the Advanced Filter.

Table 8-1: Comparison Operators and Wildcards

=	Equal to
< >	Not equal to
>	Greater than
<	Less than
> =	Greater than or equal to
< =	Less than or equal to
*	Wildcard--any number of characters in the same position as the asterisk **Example:** "*east" finds "Northeast" and "Southeast"
?	Any single character in the same position as the question mark **Example:** sm?th finds "smith" and "smyth"

8Working with Data Ranges Review

Quiz Questions

78. Before you sort data, make sure it's organized into...
    A. a chart.
    B. alphabetical order.
    C. a pivot table.
    D. columns and rows.

79. You can sort Excel data by any of the following, except by...
    A. font color.
    B. cell icon.
    C. number formatting.
    D. cell color.

80. To sort by multiple columns, use the _____.
    A. Sort dialog box
    B. Column Specifier button
    C. Sort Columns window
    D. drag and drop feature

81. You can create your own custom list for sorting or use a predefined custom list. (True or False?)

82. Which one of the following is a way to turn on the filtering buttons?
    A. Click the Insert tab and click the Filter button in the Filter group.
    B. Click the Filter tab and click the Filter button in the Filter group.
    C. Click the Home tab on the Ribbon, click the Sort & Filter button in the Editing group, and click Filter.
    D. Type the formula =Filter(Data) in the first cell of the column you want to filter.

83. You can use wildcards when entering values in the Custom AutoFilter dialog box. (True or False?)

84. With an Advanced Filter, you can do all of the following, except...
    A. Extract and copy filtered results to another range on the worksheet.
    B. Use wildcards in the filter criteria.
    C. Filter using criteria located outside of the data range.
    D. You can do all of these things.

Quiz Answers

78. D. Before you sort data, make sure it's organized into columns and rows.

79. C. You can sort data by cell icon, cell or font color, but not by number formatting.

80. A. Use the Sort dialog box to sort data by multiple columns.

81. True. You can either create your own custom list or use a predefined custom list.

82. C. To display the filtering buttons, click the Home tab on the Ribbon, click the Sort & Filter button in the Editing group, and click Filter.

83. True. You can use wildcards when entering values in the Custom AutoFilter dialog box.

84. D. You can do all these things with an Advanced Filter.

9

9Working with Tables

Tables—called lists in previous versions of Excel—make it easier to work with ranges of Excel data. By turning an Excel range into a table, you can work with the table data independently from the rest of the worksheet. You can quickly sort and filter the table columns, add total rows, and apply table formatting to an Excel table.

Some examples of things you might track in a table include telephone numbers, clients, and employee rosters. Once you create a table in Excel, you can easily find, organize, and analyze its information with Excel's rich set of table-management features.

Using Exercise Files

This chapter suggests exercises to practice the topic of each lesson. There are two ways you may follow along with the exercise files:

- Open the exercise file for a lesson, perform the lesson exercise, and close the exercise file.
- Open the exercise file for a lesson, perform the lesson exercise, and keep the file open to perform the remaining lesson exercises for the chapter.

The exercises are written so that you may "build upon them," meaning the exercises in a chapter can be performed in succession from the first lesson to the last.

Creating 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 button arrows 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.

Tables, like normal data ranges of data, consist of two parts:

- **Records (rows):** Each record contains information about a unique thing or person, just like a listing in a phone book.
- **Fields (columns):** Records are broken up into fields which store specific pieces of information, such as first and last name.

Tips

✓ Before you turn a range of data into a table, remove blank rows and columns, and make sure that you don't have different types of data within one column.

If desired, make sure you have entered column headers. For example, if you want to make a table that lists your company's sales reps, you could enter headers such as Last Name, First Name, Territory, etc. Unique records, such as the names and territories of each of your sales reps, should be entered as rows.

Create a table from a cell range

If you already have an organized range of data, you can turn it into a table.

1. Select a cell range that you want to make into a table.

   Normally you will want the cell range to include a header row, with labels identifying each of the columns.

   Other Ways to Create a Table:
   You can simultaneously create and format a table. Select the cells you want to include in the table and click **Format as Table** in the Styles group on the Home tab. Select a table style. Click **OK**.

2. Click the **Insert** tab on the Ribbon and click the **Table** button in the Tables group.

   The Create a Table dialog box appears. Here you can edit the range that will become a table, and you can specify whether or not your table has a header row (if it doesn't, Excel adds a header row above the table data).

Exercise

- **Exercise File:** Table9-1.xlsx
- **Exercise:** Turn the data range A1:H19, including the column labels, into a table.

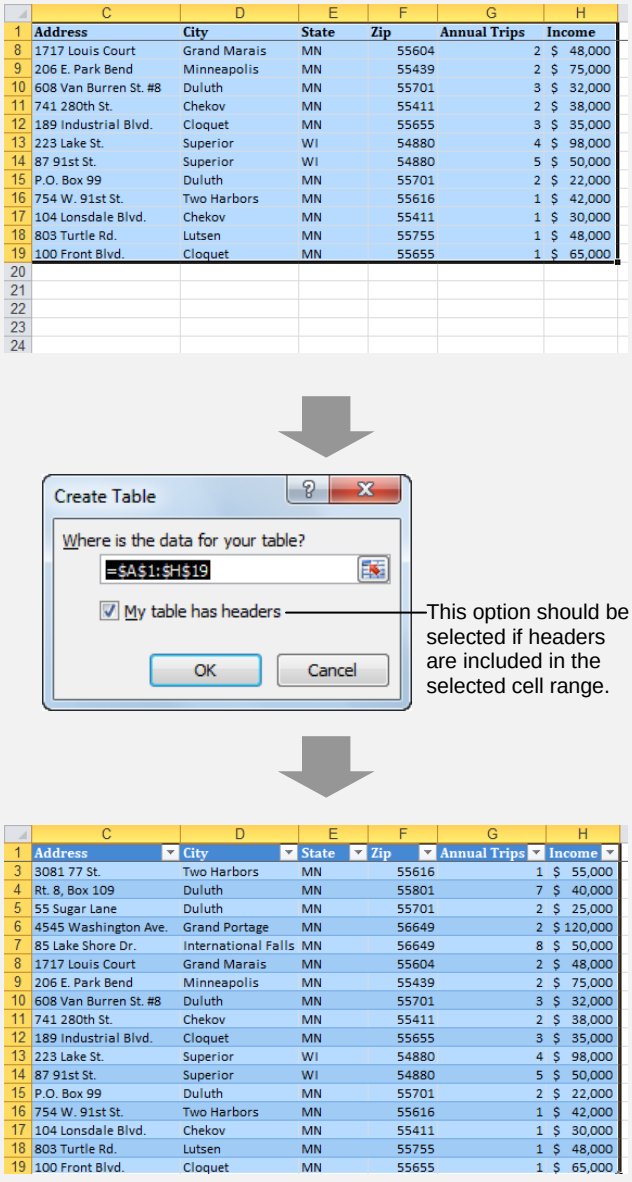


Figure 9-1: Creating a table from a cell range.

3. Set the options in the Create a Table dialog box and 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 contextual tab appears.

Create a blank table

If you haven't already entered the data you want to include in a table, you can create the table first.

1. Select a range of cells that is approximately the size you want your table to be.

   You can always change the size later.

2. Click the **Insert** tab on the Ribbon and click the **Table** button in the Tables group.

   The Create Table dialog box appears.

3. Click **OK**.

   The table appears, including placeholder column headers that you can edit, and a resize handle that appears in the lower-right corner of the table.

   The table below, *Tips for Organizing Tables*, provides ideas for setting up your table data.

Table 9-1: Tips for Organizing Tables

Avoid putting blank rows and columns in the table.	So that Microsoft Excel can more easily detect and select the table.
Create column labels in the first row of the table.	Excel uses the labels to create reports and to find and organize data.
Design the table so that all rows have similar items in the same column.	This makes the table more meaningful and organized.
Try to break up information as much as possible.	This gives you more power to sort, filter and manipulate the table.
Each column should contain the same type of information.	This will make the table easier to read and understand.
Don't use duplicate field names.	Duplicate field names can cause problems when entering and sorting information.

Adding and Removing Data

You can easily add or remove table data.

Add table rows and columns

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

   You will be able to add a new table row above the row you selected, or add a new column to the left of the column you selected (unless you selected the last column, in which case you can also add a column to the right).

   Tip: Select only the columns or rows within the table for more inserting options. For example, clicking a column header does not allow you to choose if you want to insert new columns to the right or left.

2. Click the **Home** tab on the Ribbon and click the **Insert** button list arrow.

   The options available here change, depending on the cell(s) that are selected in the table or sheet.

3. Select the insertion option you want to use.

   A row or column is inserted into the table.

   Other Ways to Insert a Table Row Or Column: Right-click the row or column where you want to add a row or column, point to **Insert** in the contextual menu, and select **Insert Table Rows Above** or **Insert Table Columns to the Left** or **Right**. Or, to add a new row to the bottom of the table, place the cell pointer in the last cell of the table and press **<Tab>**.

Tips

- ✓ When you enter a formula in a blank column of a table, the formula is automatically extended to all the rest of the column—without using the AutoFill feature. If you add rows to the column, the formula appears in those rows as well.

Remove table rows and columns

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

1. Select the table row(s) or columns(s) you want to delete.

   Remember that doing this removes the data from the worksheet completely.

Exercise

- **Exercise File:** Table9-2.xlsx
- **Exercise:** Add this data to the bottom of the table:

First	Last	Address	City	State	Zip	Annual Trips	Income
Elsa	Martinez	413 Oak St	Faribault	MN	55021	4	$40,000
Bob	Arthur	326 Elm Ave	Toma	WI	54660	5	$88,000

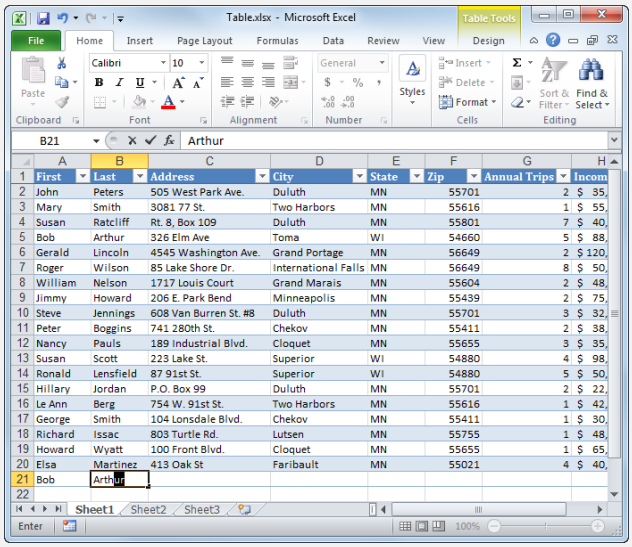


Figure 9-2: Adding data to a table. If data appears previously in a column, Excel will offer an AutoComplete option as you enter data.

2. Click the **Home** tab on the Ribbon and click the **Delete** button list arrow in the Cells group.

3. Select **Delete Table Columns** or **Delete Table Rows**.

   The selected row(s) or column(s) are deleted.

   Other Ways to Delete a Table Row or Column: Right-click the row or column you want to delete, point to **Delete** in the contextual menu, and select **Table Columns** or **Table Rows**.

Resize a table

Expand the size of a table to include more data, or reduce the size to remove data.

1. Select a cell in the table.

2. Under Table Tools on the Ribbon, click the **Design** tab.

3. Click the **Resize Table** button in the Properties group.

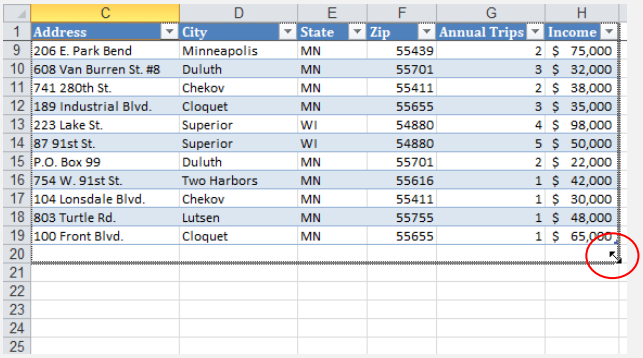
   The Resize Table dialog box appears.

4. Select the range you want to include in the table.

5. Click **OK**.

   The table is resized. If cells are added to the table, they are empty so you can enter data in the cells.

   Other Ways to Resize a Table: Click and drag the sizing handle in the lower-right corner of the table to include more or fewer cells. Or, enter data in a cell below or to the right of the table; the table automatically expands.



	C	D	E	F	G	H
1	Address	City	State	Zip	Annual Trips	Income
9	206 E. Park Bend	Minneapolis	MN	55439	2	$ 75,000
10	608 Van Burren St. #8	Duluth	MN	55701	3	$ 32,000
11	741 280th St.	Chekov	MN	55411	2	$ 38,000
12	189 Industrial Blvd.	Cloquet	MN	55655	3	$ 35,000
13	223 Lake St.	Superior	WI	54880	4	$ 98,000
14	87 91st St.	Superior	WI	54880	5	$ 50,000
15	P.O. Box 99	Duluth	MN	55701	2	$ 22,000
16	754 W. 91st St.	Two Harbors	MN	55616	1	$ 42,000
17	104 Lonsdale Blvd.	Chekov	MN	55411	1	$ 30,000
18	803 Turtle Rd.	Lutsen	MN	55755	1	$ 48,000
19	100 Front Blvd.	Cloquet	MN	55655	1	$ 65,000
20						
21						
22						
23						
24						
25						

Figure 9-3: Resizing a table using the sizing handle.

Working with the Total Row

With the Total Row feature, Excel will automatically add a total row to the bottom of a table and sum the last column of the table. The total row can also perform other types of calculations.

Add a Total row

1. Select a cell in the table.

   Table Tools appear on the Ribbon.

2. Click the **Design** contextual tab under Table Tools on the Ribbon.

   Now you have access to commands that can help you change the design of your table.

3. Click the **Total Row** option in the Table Style Options group so that it is selected.

   A Total row appears at the bottom of your table and the last column is summed.

   Tip: If the last column doesn't contain numbers, Excel displays a count of the number of items in the column.

Calculate Total row values

Once you've added a total row, you can decide what type of calculation you want to perform for the total of each table column.

1. In the Total row, select the cell at the bottom of the column that contains values you want to calculate.

2. Click the cell's list arrow and select the calculation you want to perform.

   The table below, *Total Row Calculation Options*, describes the different types of calculations that Excel can perform in the Total row.

Structured references

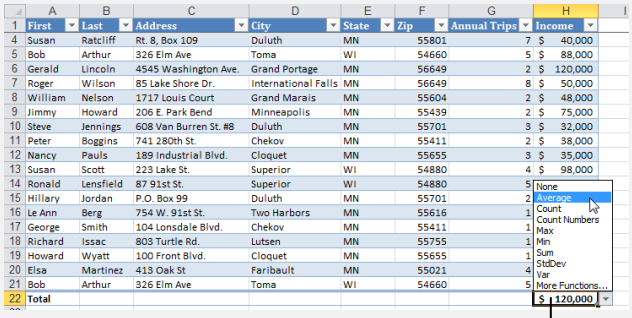
Structured references allow you to work easily with cell references and formulas in a table. For example, instead of using a cell range reference such as C2:C6 in a formula, you can refer to the cell range as SaleAmt (the table column name) instead.

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.

Exercise

- **Exercise File:** Table9-3.xlsx
- **Exercise:** Add a Total row to the table.

  Calculate the Average of the Income column.



	A	B	C	D	E	F	G	H
1	First	Last	Address	City	State	Zip	Annual Trips	Income
4	Susan	Ratcliff	Rt. 8, Box 109	Duluth	MN	55801	7	$ 40,000
5	Bob	Arthur	326 Elm Ave	Toma	WI	54660	5	$ 88,000
6	Gerald	Lincoln	4545 Washington Ave.	Grand Portage	MN	56649	2	$ 120,000
7	Roger	Wilson	85 Lake Shore Dr.	International Falls	MN	56649	8	$ 50,000
8	William	Nelson	1717 Louis Court	Grand Marais	MN	55604	2	$ 48,000
9	Jimmy	Howard	206 E. Park Bend	Minneapolis	MN	55439	2	$ 75,000
10	Steve	Jennings	608 Van Burren St. #8	Duluth	MN	55701	3	$ 32,000
11	Peter	Boggins	741 280th St.	Chekov	MN	55411	2	$ 38,000
12	Nancy	Pauls	189 Industrial Blvd.	Cloquet	MN	55655	3	$ 35,000
13	Susan	Scott	223 Lake St.	Superior	WI	54880	4	$ 98,000
14	Ronald	Lensfield	87 91st St.	Superior	WI	54880	5	
15	Hillary	Jordan	P.O. Box 99	Duluth	MN	55701	2	
16	Le Ann	Berg	754 W. 91st St.	Two Harbors	MN	55616	1	
17	George	Smith	104 Lonsdale Blvd.	Chekov	MN	55411	1	
18	Richard	Issac	803 Turtle Rd.	Lutsen	MN	55755	1	
19	Howard	Wyatt	100 Front Blvd.	Cloquet	MN	55655	1	
20	Elsa	Martinez	413 Oak St	Faribault	MN	55021	4	
21	Bob	Arthur	326 Elm Ave	Toma	WI	54660	5	
22	Total							$ 120,000

Click the list arrow for a cell in the Total row to view common functions you can do with the table column's values.

Figure 9-4: The table with the Total row added to the bottom of the table.

Tip: When entering references in a formula in a table, if you click on the cells to select them (instead of typing in their cell addresses) Excel will enter structured references for you.

Table 9-2: Total Row Calculation Options

None	No function is inserted.
Average	Calculates the average, or arithmetic mean, of the numbers in the column.
Count	Counts the number of all nonblank cells, regardless of what they contain.
Count Numbers	Counts the number of cells that contain numbers, including dates and formulas. Ignores all blank cells and cells that contain text or errors.
Max	Returns the largest value in a column.
Min	Returns the smallest value in a column.
Sum	Adds all of the numbers in a column.
StdDev	Estimates standard deviation based on a sample. The standard deviation is a measure of how widely values are dispersed from the average value.
Var	Estimates variance based on a sample.
More Functions…	Opens the Insert Function dialog box, where you can choose a different function to perform on the column's values.

Sorting a Table

Excel is very good at sorting information. Excel can sort records alphabetically, numerically, or chronologically (by date). Additionally, Excel can sort information in ascending (A to Z) or descending (Z to A) order. You can sort an entire list or any portion of a list by selecting it.

1. Click the **filter button** for the column you want to sort.

   A list appears, displaying several options for sorting the table data. The options at the top are for sorting.

   Other Ways to Sort:
   Click the **Home** tab and click the **Sort & Filter** button in the Editing group. Select a sorting option from the list.

2. Select the sort option you want to use.

3. Click **OK**.

Tips

- ✓ If you add or edit data in a table that is filtered or sorted, you need to click the **Reapply** button in the Sort & Filter group on the Data tab to include the new or edited data.

Custom Sorting

When you need to sort by more than one field, you have to use a Custom Sort.

The Custom Sort can sort records by more than one field, such as if you want to sort alphabetically by first and last name, or by state and city.

1. Click a field's **filter button** and select **Sort by** → **Custom Sort** from the list.

   The Custom Sort dialog box appears.

   Other Ways to Use Custom Sort:
   Click the **Home** tab and click the **Sort & Filter** button in the Editing group. Select **Custom Sort** from the list.

2. Click the **Sort by** list arrow and select the field by which you want to sort.

   This is the first field you want to sort by.

3. Click the **Sort on** list arrow and choose what you want to sort by in the field.

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

Exercise

- **Exercise File:** Table9-4.xlsx
- **Exercise:** Sort by Last name in Ascending order (A-Z).

  Apply a custom sort to sort first by Last name, and then First name.

	A	B	C
1	First	Last	Address
4	Susan	Ratcliff	Rt. 8, Box 109
5	Bob	Arthur	326 Elm Ave
6	Gerald	Lincoln	4545 Washington Ave.
7	Roger	Wilson	85 Lake Shore Dr.
8	William	Nelson	1717 Louis Court
9	Jimmy	Howard	206 E. Park Bend
10	Steve	Jennings	608 Van Burren St. #8
11	Peter	Boggins	741 280th St.
12	Nancy	Pauls	189 Industrial Blvd.
13	Susan	Scott	223 Lake St.

	A	B	C
1	First	Last	Address
2	Bob	Arthur	326 Elm Ave
3	Bob	Arthur	326 Elm Ave
4	Le Ann	Berg	754 W. 91st St.
5	Peter	Boggins	741 280th St.
6	Jimmy	Howard	206 E. Park Bend
7	Richard	Issac	803 Turtle Rd.
8	Steve	Jennings	608 Van Burren St. #8
9	Hillary	Jordan	P.O. Box 99
10	Ronald	Lensfield	87 91st St.
11	Gerald	Lincoln	4545 Washington Ave.

Figure 9-5: The list before and after being sorted in ascending order by the Last field.

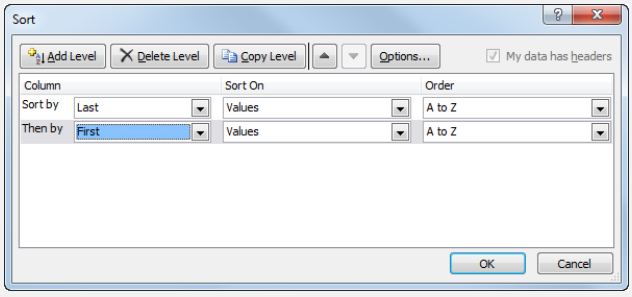


Figure 9-6: An example of sorting a table by multiple fields.

4. Click the **Order** list arrow and select the order by which you want to sort the data.

5. Click **OK**.

6. (Optional) To sort by multiple fields, click the **Add Level** button and set the sort specifications for the next field.

7. Click **OK**.

   The data in the table is sorted by the sort specifications.

	A	B	C
1	First	Last	Address
2	Bob	Arthur	326 Elm Ave
3	Bob	Arthur	326 Elm Ave
4	Le Ann	Berg	754 W. 91st St.
5	Peter	Boggins	741 280th St.
6	Jimmy	Howard	206 E. Park Bend
7	Richard	Issac	803 Turtle Rd.
8	Steve	Jennings	608 Van Burren St. #8
9	Hillary	Jordan	P.O. Box 99
10	Ronald	Lensfield	87 91st St.
11	Gerald	Lincoln	4545 Washington Ave.
12	Elsa	Martinez	413 Oak St
13	William	Nelson	1717 Louis Court

Figure 9-7: The table sorted by last name, then first name.

Filtering a Table

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.

1. Click the **filter button** for the column you want to filter.

   A list appears, displaying several options for sorting or filtering the table data. The check boxes are all the data entries for the selected field.

2. Click the check box(es) of the filter criteria you want to use.

   Other Ways to Select Filter Criteria:
   Click the **Search** box in the filter list and type the criteria by which you want to filter. The list displays criteria that match your search.

3. Click **OK**.

Clear a filter

When you're finished with a filter, you can clear it so all the table data appears again.

1. Click the **filter button** for the filter you want to clear.

2. Select **Clear Filter From** from the list.

   The filter is cleared and the table data is displayed without the filter.

Custom AutoFilter

When you need to filter using more complicated criteria, you have to use a Custom AutoFilter. Custom AutoFilters are more difficult to set up and create than ordinary AutoFilters, but they're much more flexible and powerful.

1. Click a field name list arrow and select **Custom** from the list.

2. Select **Text Filters** or **Number Filters** from the list.

   A list of ways to filter the text appears.

3. Select a filter option from the list.

   The Custom Filter dialog box appears.

4. Complete the dialog box as necessary and click **OK**.

   Excel now filters the table by the custom filter.

Exercise

- **Exercise File:** Table9-5.xlsx
- **Exercise:** Filter the table to show only records that take 2 annual trips and are from Duluth. Clear the filters.

  Apply a custom filter to show the top 10 records from the Incomes fields. Clear the filters.

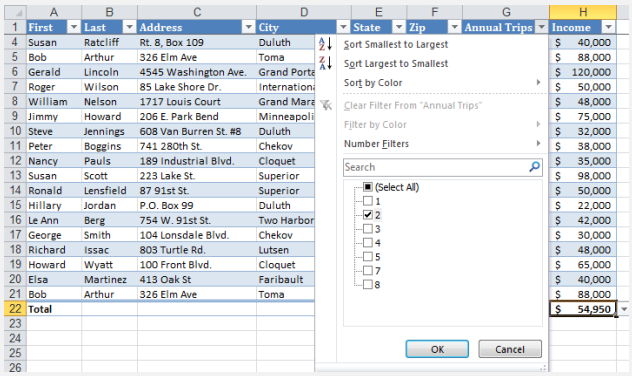


Figure 9-8: To filter, click a column filter button and click the check box(es) for the criteria by which you want to filter the table.

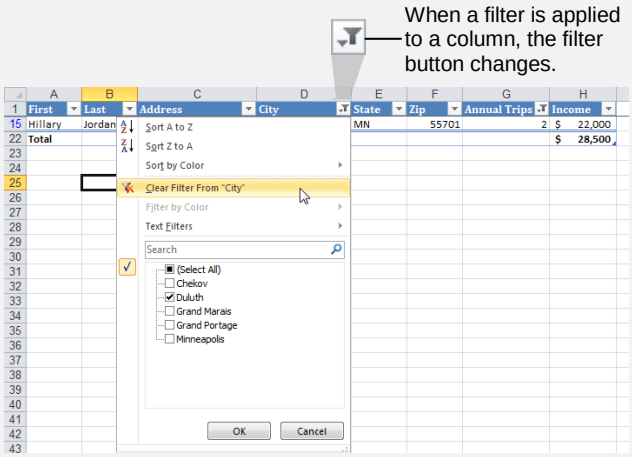


Figure 9-9: Removing a filter.

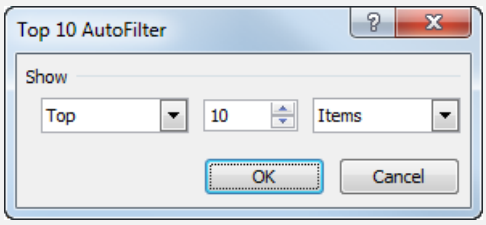


Figure 9-10: The Top 10 Custom Sort dialog box.

Removing Duplicate Rows of Data

If there are duplicate rows of identical data in your table, Excel can find and remove the duplicate rows for you.

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

1. Select a cell in the table.

   > **Tip:** You can remove duplicates from cell ranges outside of a table as well, but in that case you need to select the entire cell range you want to examine.

2. Click the **Data** tab on the Ribbon and click the **Remove Duplicates** button in the Data Tools group.

   The Remove Duplicates dialog box appears.

   > **Other Ways to Display the Remove Duplicates Dialog Box:**
   > Select a cell in the table. Under Table Tools on the Ribbon, click the **Design** tab. Click the **Remove Duplicates** button in the Tools group.

3. Select the columns you want to check for duplicates.

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

4. Click **OK**.

   Duplicate values are deleted and a message appears, telling you how many duplicate values that were found and removed.

5. Click **OK**.

Exercise

- **Exercise File:** Table9-6.xlsx
- **Exercise:** Remove duplicate rows of data (select all columns).

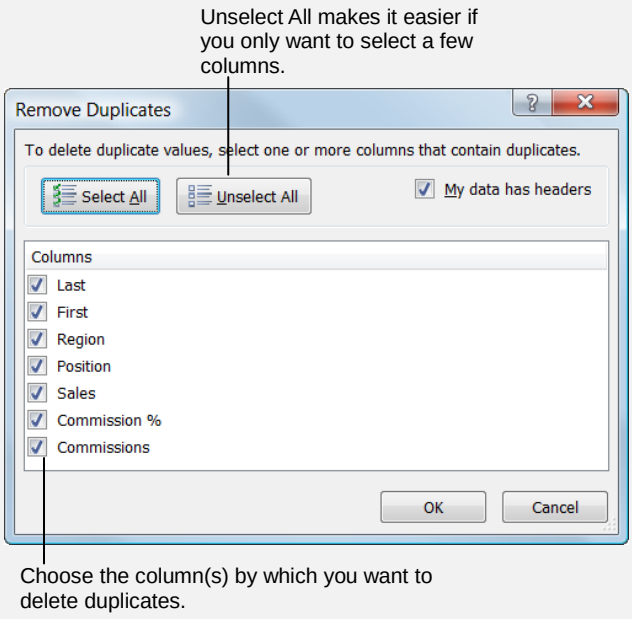


Figure 9-11: The Remove Duplicates dialog box.

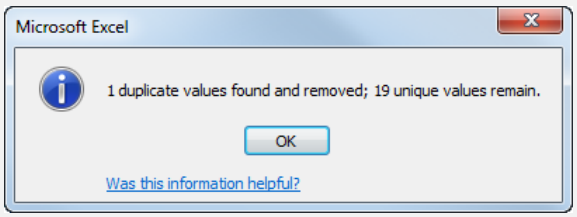


Figure 9-12: The results of the remove duplicates command.

Formatting the Table

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

Apply a style while creating a table

You can apply a style while also creating a table.

1. Select a cell range that you want to format as a table.
2. Click the **Home** tab on the Ribbon and click the **Format as Table** button in the Styles group.

   The table format 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.
3. Select a table style.

   The Format As Table dialog box appears.
4. Click **OK**.

   A table is created and formatted with the selected style. Table Tools appear on the Ribbon, and the Design contextual tab appears.

Apply a table style to an existing table

1. Select a cell in the table.
2. Under Table Tools on the Ribbon, click the **Design** tab.
3. Select the style you want to use in the Table Styles group.

   Tip: To display the entire Table Styles gallery, click the **More** button in the Table Styles group.

Remove a table style

You can easily remove a table style from a table.

1. Select the table that is formatted with the table style.

   The Design tab appears.
2. Under Table Tools on the Ribbon, click the **Design** tab.
3. Click the **None** style or select **Clear** in the Table Styles group.

   The table format is removed.

Exercise

- **Exercise File:** Table9-7.xlsx
- **Exercise:** Apply Table Style Light 17 to the table.

  Select the First Column and Last Column options in the Table Style Options group.

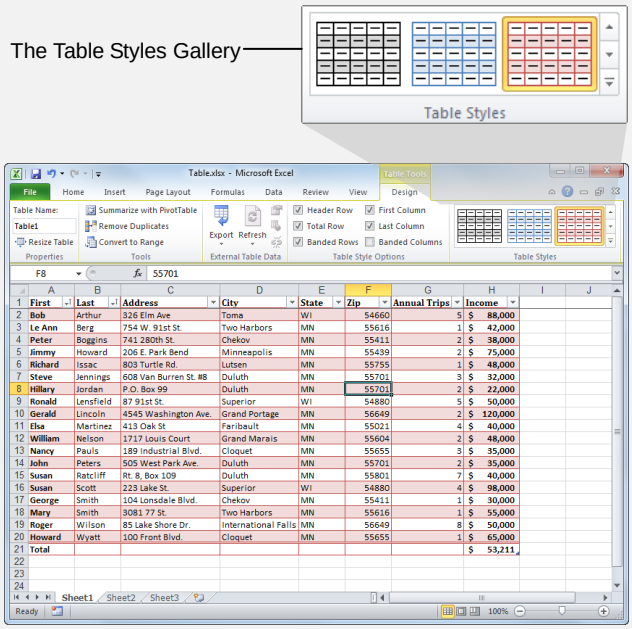


Figure 9-13: The table with a new table style, and with First Column and Last Column style options applied.

Format the table style

After applying a table style, you can format individual table style elements.

1. Select a cell in the table.
2. Under Table Tools on the Ribbon, 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 reading.

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

Using 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 into a cell and can provide the user with instructions on entering information in a cell.

Set validation criteria

To use data validation, you first need to specify the validation criteria you want to use.

1. Select the cells you want to validate.

   You will usually want to select a column of data, although you can select a single cell as well.

2. Click the **Data** tab on the Ribbon and click the **Data Validation** button in the Data Tools group.

   The Data Validation dialog box appears, displaying the Settings tab.

3. Click the **Allow** list arrow and select the criteria option you want to use.

   The table below and to the right, *Validation Criteria Options*, describes your choices.

   Depending on your criteria selection, you will next need to select a Data option, and/or select additional options in the dialog box. You may also need to enter values.

4. Complete the remaining fields on the Settings tab and click **OK**.

   The data validation is set for the selected cell(s). Now 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.

Tips

- ✓ By default, when you enter invalid data in a validated cell, a warning message appears and entry of the invalid data is not allowed. However, you can modify the message that appears, and even allow invalid data to be entered into a validated cell. To do this, click the **Error Alert** tab in the Data Validation dialog box and select the desired options.
- ✓ 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.

Exercise

- **Exercise File:** Table9-8.xlsx
- **Exercise:** Extend the table to include column I, and add a "Purpose" label to the column.

  Set data validation in column I so that the data entry can be selected from a list of these options: Senior Manager, Manager, Associate. Enter "Associate" using the list in I2.

  Set data validation in column E that sets the text length of the entries equal to 2. Create an input message for column E cells that displays: "Enter the state code."

  To test it, enter "Minnesota" in cell E2 and press <Enter>. Click Retry and enter "MN".

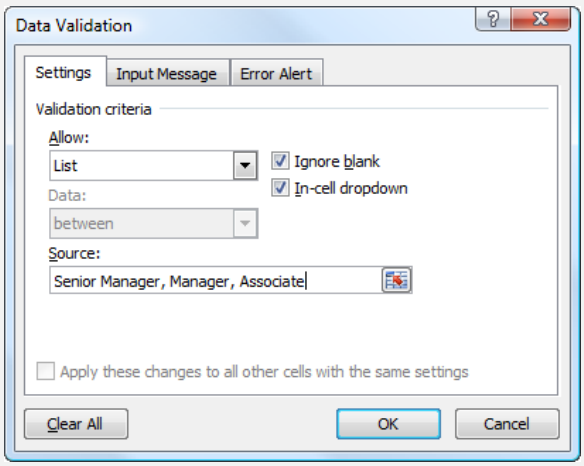


Figure 9-14: Creating a list in the Data Validation dialog box.

Table 9-3: Validation Criteria Options

Any value	No validation criteria applied. Any value can be entered.
Whole number	Allows a whole number between minimum and maximum limits you set.
Decimal	Allows a decimal or a percent entered as a decimal between limits you set.
List	Allows a value from a list of choices you input or select from a range. A list arrow then appears in the cell, allowing the user to make a choice from the list.
Date	Allows a date within prescribed limits.
Time	Allows a time within prescribed limits.
Text length	Allows text containing a certain number of characters that you prescribe.
Custom	Allows you to enter a formula to calculate what is allowed in the cell.

✓ To remove validation criteria, select the cells that contain the validation you want to remove, and click the **Data Validation** button in the Data Tools group on the Data tab. Click **Clear All**, then click **OK**.

Create an input message

You can set up Excel to display a message whenever a cell or range of cells is selected. These messages are useful for providing data entry instructions.

1. Select the cells where you want an input message to appear.

   The input message will appear when the cell or cells are selected.

2. Click the **Data** tab on the Ribbon and click the **Data Validation** button in the Data Tools group.

   The Data Validation dialog box appears.

3. Click the **Input Message** tab.

   Tip: Make sure the "Show input message when cell is selected" box is selected—it should be selected by default.

4. Click in the **Title** box and type a title for the message.

   The title will be displayed along with the message when you select the cell(s).

5. Click in the **Input message** box and type a data input message.

   For example, you could enter instructions such as "Enter State name as a two-letter abbreviation".

6. Click **OK**.

   Now when you select the cell(s), you will see the title and message displayed.

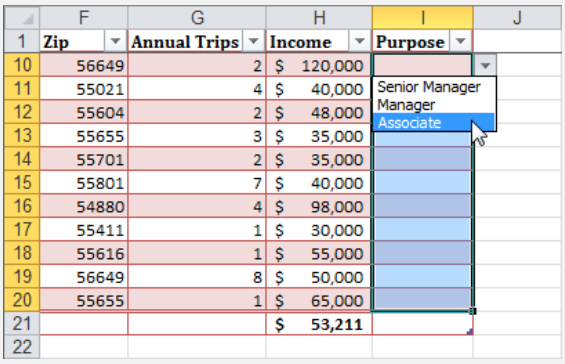


Figure 9-15: Selecting data from a data validation list.

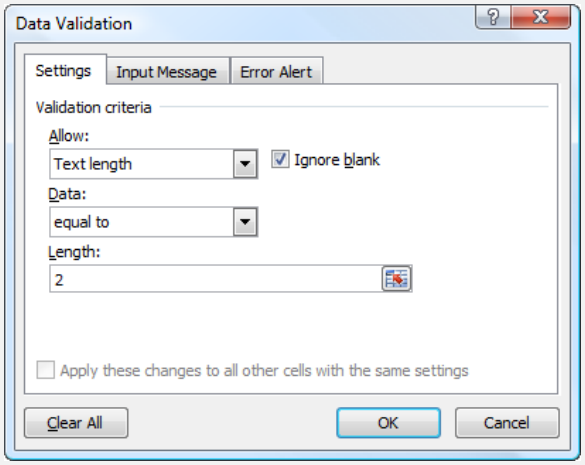


Figure 9-16: Defining text length in the Data Validation dialog box.

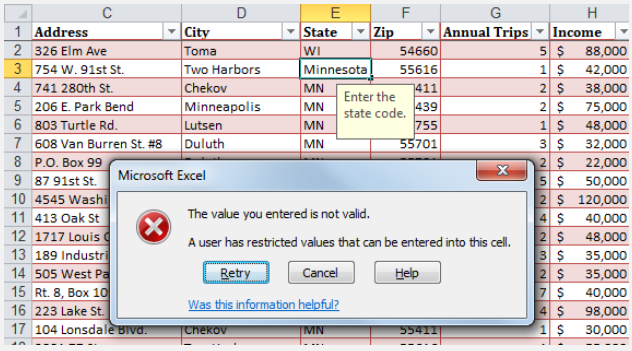


Figure 9-17: An error message appears when you try to enter data that does not match a data validation rule.

Summarizing a Table with a PivotTable

You can analyze table data by using it in a PivotTable.

1. Select a cell in the table.

   The Table Tools appear on the Ribbon.

2. Under Table Tools on the Ribbon, click the **Design** contextual tab and click the **Summarize with PivotTable** button in the Tools group.

   The Create PivotTable dialog box appears.

3. Click **OK**.

   A new sheet is added to the workbook to accommodate the PivotTable report. Here you can create a PivotTable to analyze the data in your table, according to your specifications.

Tips

✓ Other lessons describe how to work with PivotTables in more detail. This is the simplest way to view a summary of the table in a PivotTable.

Exercise

- **Exercise File:** Table9-9.xlsx
- **Exercise:** Summarize the table with a PivotTable on a new worksheet. Experiment with the PivotTable tools, then delete the worksheet containing the PivotTable.

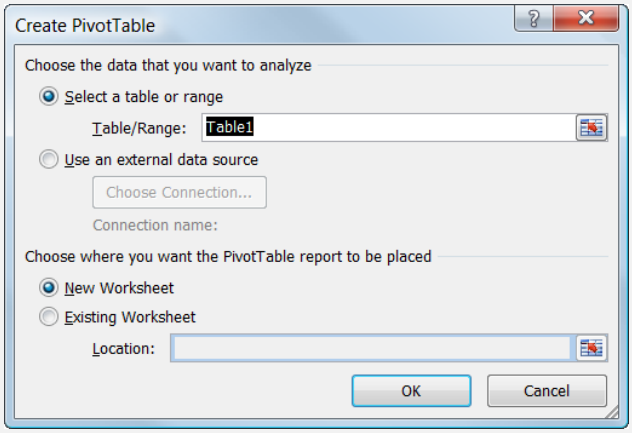


Figure 9-18: The Create PivotTable dialog box.

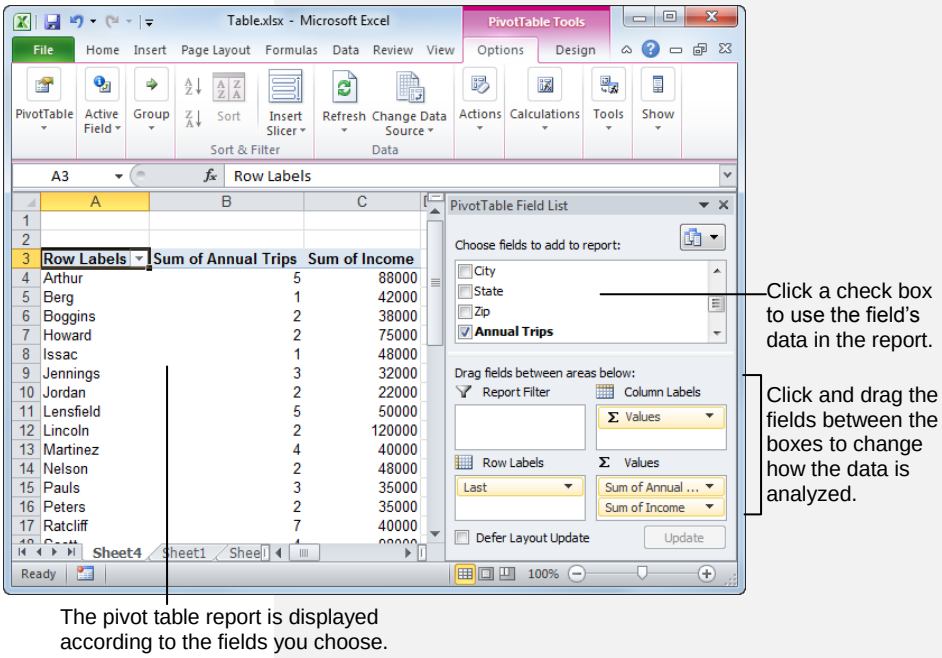


Figure 9-19: Summarizing table data with a PivotTable.

Converting to a Range

If you no longer want a table, you can turn it back into a normal range.

1. Select a cell in the table.

   Under Table Tools on the Ribbon, the Design contextual tab appears.

2. Under Table Tools on the Ribbon, click the **Design** contextual tab and click the **Convert to Range** button in the Tools group.

3. Click **Yes**.

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

   Other Ways to Convert a Table to a Range: Select the table, right-click the table and select **Table** → **Convert to Range** from the contextual menu.

Exercise

- **Exercise File:** Table9-10.xlsx
- **Exercise:** Convert the table back to a normal range of cells. Undo that action.

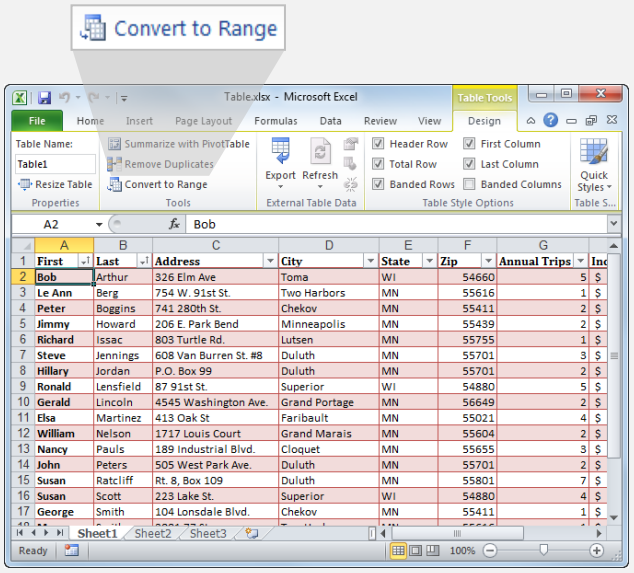


Figure 9-20: The Convert to Range button.

Working with Tables Review

Quiz Questions

85. You can create a blank table or a table that uses an existing data range. (True or False?)

86. Which of the following is NOT a way to resize a table?
    A. Click the Resize Table button in the Properties group.
    B. Use the Resize Table Wizard.
    C. Enter data in a cell below or to the right of the table.
    D. Click and drag the table's sizing handle.

87. By default, when you add a total row to a table, the last column is summed. (True or False?)

88. Custom sorting allows you to sort data by multiple columns. (True or False?)

89. Which of these is NOT a custom autofilter in Excel?
    A. Top 10
    B. Equals
    C. Contains
    D. Color

90. Removing duplicates from a table moves the duplicate data to another worksheet. (True or False?)

91. Once you apply a table style to a table, you can't change it to a different one. (True or False?)

92. Which of the following is NOT a formatting option in the Table Style Options group?
    A. Header Row
    B. Checkered Rows
    C. Banded Columns
    D. First Column

93. Which of the following statements is NOT true?
    A. You can provide users with information and feedback using Data Validation.
    B. To use Data Validation, click the Data Validation button in the Data Tools group on the Data tab.
    C. You must protect the worksheet to use the data validation feature.
    D. Data validation lets you restrict which type of information is entered in a cell.

94. You can summarize and analyze table data using a _____.
    A. PivotTable
    B. PivotSheet
    C. PivotGrid
    D. DataSheet

95. When you convert a table to a range, the table formatting remains applied to the cells. (True or False?)

Quiz Answers

85. True. You can create a blank table or a table that uses an existing data range.

86. B. There isn't a Resize Table Wizard in Excel.

87. True. When you add a total row to a table, the last column is summed by default.

88. True. Custom Sorting allows you to sort by multiple levels, so you can sort by multiple columns.

89. D. Color is not a filter option in Excel. It is, however, a way you can sort.

90. False. Removing duplicates from a table deletes the data completely.

91. False. You can always change table styles.

92. B. Checkered Rows is not an option in the Table Style Options group.

93. C. You don't need to protect the worksheet to use the data validation feature.

94. A.You can summarize and analyze table data using a PivotTable.

95. True. When you convert a table to a range, the table formatting remains applied to the cells.

10

10Working with PivotTables

There are many ways to analyze worksheet data, including sorting and filtering records. This chapter explains how to use a PivotTable to analyze data ranges.

A PivotTable is usually the best way to summarize and analyze data ranges or tables. PivotTables are good for grouping or expanding levels of data, switching columns and rows ("pivoting" data), and filtering and sorting. They lend themselves particularly well to summarizing long lists of data that need to be summed.

This chapter explains how to create PivotTables, modify their structure, and create PivotCharts that graphically illustrate PivotTables.

Using Exercise Files

This chapter suggests exercises to practice the topic of each lesson. There are two ways you may follow along with the exercise files:

- Open the exercise file for a lesson, perform the lesson exercise, and close the exercise file.
- Open the exercise file for a lesson, perform the lesson exercise, and keep the file open to perform the remaining lesson exercises for the chapter.

The exercises are written so that you may "build upon them", meaning the exercises in a chapter can be performed in succession from the first lesson to the last.

Creating a PivotTable

To create a PivotTable, you need to decide which fields you want to include, how you want your PivotTable organized, and what types of calculations your PivotTable should perform.

Don't worry if PivotTables are confusing at first, they will make a lot more sense once you've actually created one.

1. Select a cell in a data range.

Other Ways to Create a PivotTable: Select a cell in a table, click the **Design** tab on the Ribbon, and click the **Summarize with Pivot** button in the Tools group.

2. Click the **Insert** tab on the Ribbon and click the **PivotTable** button in the Tables group.

The Create PivotTable dialog box appears and a moving dashed line appears around the data range that Excel will use for the PivotTable.

Tip: The data range doesn't have to be in the current workbook. Select the **Use an external data source** option to select data outside the workbook.

3. If necessary, select the data range you want to analyze, including column labels.

Next you need to decide if you want to display the PivotTable in a new worksheet or one that already exists in your workbook.

4. Select where you want the PivotTable report to be placed.

You can choose a new or existing worksheet.

Tip: If you select Existing Worksheet, click the **Collapse Dialog** button and select the worksheet and upper-left cell of the range where you want to put the PivotTable.

5. Click **OK**.

The Excel window changes to display the structure for a new PivotTable, along with the PivotTable Field List task pane. No data has been pulled into the PivotTable yet—you'll need to use the task pane to tell Excel how you want to lay out the PivotTable.

Tips

✓ You can change how the PivotTable Field List task pane looks. Click the button arrow near the top right corner of the task pane and select a layout option.

Exercise

- **Exercise File:** TripSales10-1.xlsx
- **Exercise:** Create a PivotTable on a new worksheet using the data from the Promotion Sales worksheet.

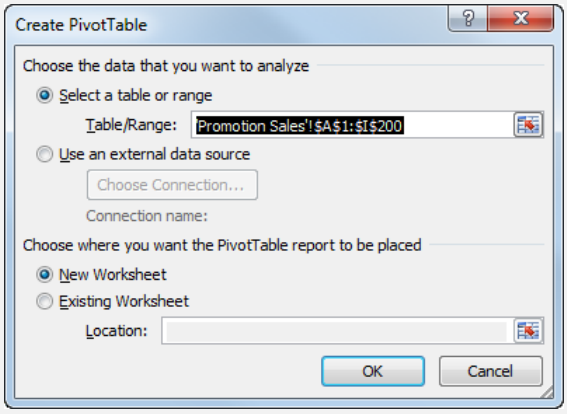


Figure 10-1: The Create PivotTable dialog box.

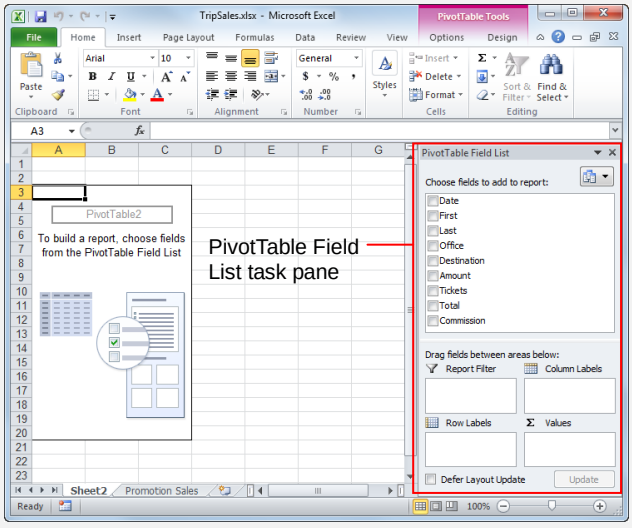


Figure 10-2: Creating a new PivotTable.

Specifying PivotTable Data

Once you've created your PivotTable, you have to specify the data you want to analyze. You'll simply select the fields you want to display in the PivotTable Field List, then adjust the layout by dragging them between the desired report areas at the bottom of the task pane. You're not going to understand how to do this unless you try it—so let's get started!

Add fields

1. Click the check boxes next to the fields you want to use as data in the PivotTable.

By default, nonnumeric fields are added to the Row Labels area, numeric fields are added to the Values area, and OLAP date and time hierarchies are added to the Column Labels area. However, the fields can be rearranged to other areas.

Other Ways to Add Fields:
Right-click a field name and select the layout area to which you want to add the field. Or, click and drag a field name into a layout section.

Rearrange fields

1. Click and drag fields between the areas in the task pane to reposition the PivotTable layout.

The data and layout of the PivotTable change accordingly.

Tips

- ✓ Drag a field between the Row Labels and Column Labels boxes to change the orientation of the PivotTable.
- ✓ You can change PivotTable labels by typing a new label.

Exercise

- **Exercise File:** TripSales10-2.xlsx
- **Exercise:** Add the Office, Destination, and Tickets fields to the PivotTable.

  Move the Office field to the Column Labels area.

  Switch the positions of the Office and Destination fields.

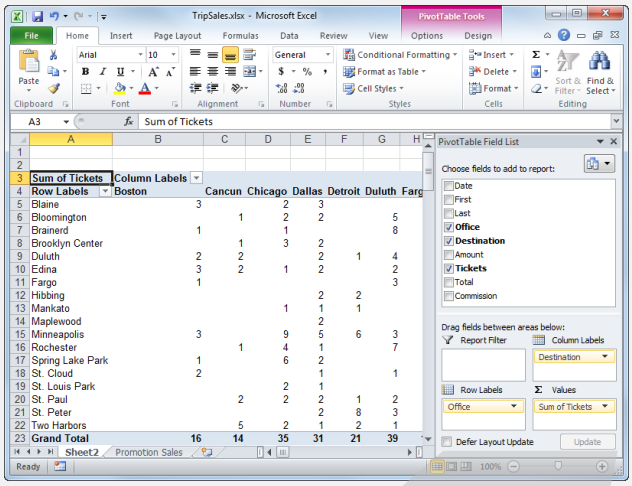


Figure 10-3: A PivotTable with data.

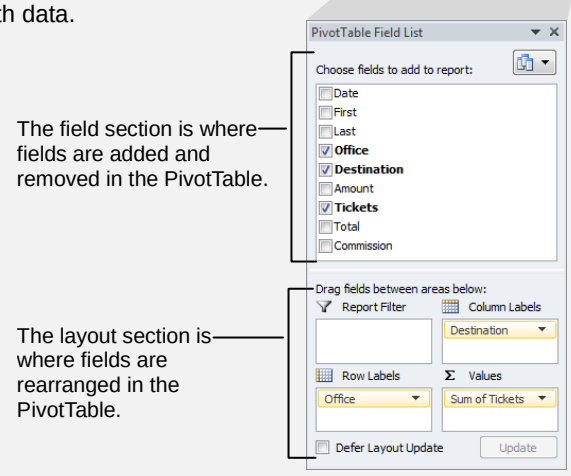
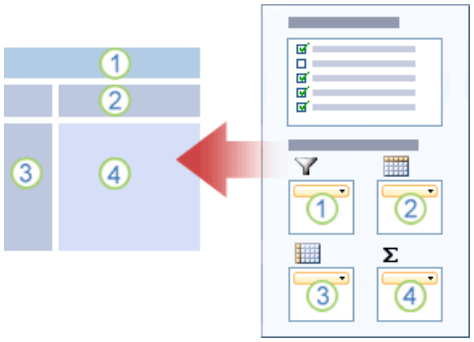


Figure 10-4: This diagram illustrates how areas in the PivotTable Field List correspond to areas in the PivotTable report.



1	The report filter area. Move a field to this area, then select the criteria by which you want to filter the PivotTable.
2	The Column Label area.
3	The Row Label area.
4	The Results area. The results include data that from the fields in the column and row areas. Results are also filtered from the report filter area.

Changing a PivotTable's Calculation

Besides adjusting the layout of your PivotTable data, you can also change how a PivotTable summarizes values. For example, you might want a PivotTable to display averages instead of totals.

1. Make sure the cell pointer is located in the PivotTable.

   To change the calculation in a PivotTable, you need to change the value field settings.

2. Under PivotTable Tools on the Ribbon, click the **Options** tab and click the **Field Settings** button in the Active Field group.

   The Value Field Settings dialog box appears, displaying the "Summarize by" tab. Here you can select calculation options including Sum, Count, Average, or Max, among others.

3. Select the type of calculation you want to use to summarize the value data from the list.

4. Click **OK**.

   The summarized value data in the PivotTable changes to using the new calculation.

Exercise

- **Exercise File:** TripSales10-3.xlsx
- **Exercise:** Change the calculation of the Tickets field from Sum to Max.

  Change it back to Sum.

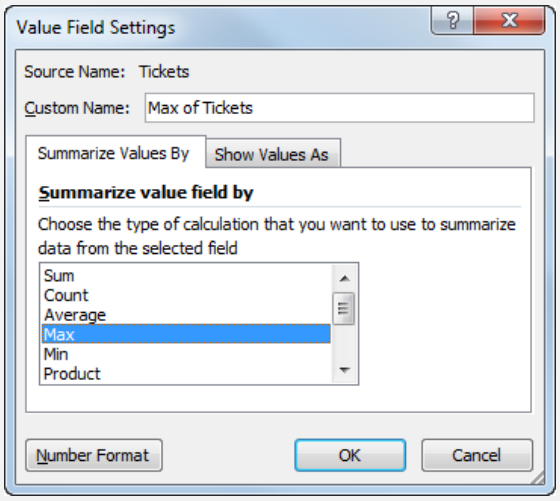


Figure 10-5: The Value Field Settings dialog box.

Filtering and Sorting a PivotTable

Much like you can with basic data ranges and tables in Excel, you can filter and sort data in a PivotTable.

Filter a PivotTable

1. Select a cell in the PivotTable.

   The Options and Design tabs appear under PivotTable Tools on the Ribbon.

2. Click the filter button for a row or column label.

   A list sorting and filtering options appears. The bottom area of the list displays criteria by which you can filter.

   Other Ways to Select Filter Criteria:
   Click the **Search** box in the filter list and type the criteria by which you want to filter. The list displays criteria that match your search.

3. At the bottom of the list, click the check boxes next to the fields you want to filter out to uncheck them.

   Fields with checkmarks next to them will remain, while those without checkmarks will be filtered out.

4. Click **OK**.

   The PivotTable is updated.

   Other Ways to Filter a PivotTable:
   Drag a field into the Report Filter area of the PivotTable Field List task pane. Click the field's filter button above the PivotTable and select what you want to filter by. Or, click a filter button, point to **Label Filters** or **Values Filters**, and select a filtering option.

Sort a PivotTable

1. Select a cell in the PivotTable.

   The Options and Design tabs appear under PivotTable Tools on the Ribbon.

2. Click a filter button.

   Here you'll see sort options at the top of the list, along with the filter options toward the bottom.

3. Select a sort option.

   Other Ways to Sort:
   Click the **Options** tab on the Ribbon. Click the button you want to use in the Sort group.

Exercise

- **Exercise File:** TripSales10-4.xlsx
- **Exercise:** Use the Row Labels filter button to display only records from Blaine. Clear the filter.

  Try another way to filter: Add the Commission field to the Report Filter area of the PivotTable Field List and filter the PivotTable so only commissioned sales appear. Clear the filter.

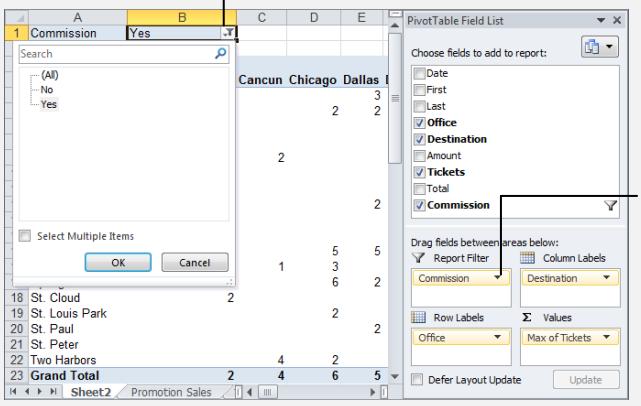
  Sort the PivotTable by Office (Row Labels) from Z to A, then sort again from A to Z.

The filter button changes to make you aware that a filter has been applied.

	A	B	C	D	E	F	G
3	Max of Tickets	Column Labels					
4	Row Labels	Boston	Chicago	Dallas	Fargo	Grand Total	
5	Blaine	2	2	3	2	3	
6	Grand Total	2	2	3	2	3	
7							
8							
9							
10							
11							
12							

Figure 10-6: The PivotTable filtered to display only "Blaine" records.

Click the list arrow to choose how you want to filter the PivotTable.



Drag fields you want t filter for to this area.

Figure 10-7: Adding a field to the Report Filter area.

Working with PivotTable Layout

There are several options for altering the layout of your PivotTable and the PivotTable Field List task pane.

Adjust PivotTable Field List layout

You can change the layout of the PivotTable Field List makes it easier to work with. For example, you can display only the fields section if you have a long list of fields to choose from. Or, if you are done setting up the PivotTable, you can display only the area section.

1. Select a cell in the PivotTable.

   The PivotTable Field List task pane appears.

2. Click the **layout** button at the top of the PivotTable Field List task pane and select a layout option.

   You can choose to display only the fields section, only the report areas section, or both sections in different arrangements. The table below and to the right, *PivotTable Field List Layout Options*, is has more information about these arrangements.

Show/Hide PivotTable elements

You can change which elements are displayed in the PivotTable.

1. Select a cell in the PivotTable.

   The Options and Design tabs appear under PivotTable Tools on the Ribbon.

2. Under PivotTable Tools on the Ribbon, click the **Options** tab.

   The Show/Hide group contains three buttons. By default, they are all shown in the PivotTable.

   - **Field List:** Show or hide the PivotTable Field List task pane.
   - **+/- Buttons:** Show or hide the +/- buttons that allow you to expand or collapse multi-level PivotTable items.
   - **Field Headers:** Show or hide column and row field headers.

3. Click the button you want to use in the Show/Hide group.

   If the button is an orange color, the element is displayed in the PivotTable. If the button is not orange, the element is hidden.

Exercise

- **Exercise File:** TripSales10-5.xlsx
- **Exercise:** Change the layout of the PivotTable Field List so the field and area sections are side-by-side. Then change them back to stacked.

  In the Show/Hide group of the Options tab on the Ribbon, hide the Field List and Field Headers. Show both again.

  In the Layout group of the Design tab on the Ribbon, turn off the row and column grand totals. Enable them again.

  Change the report layout to Tabular Form.

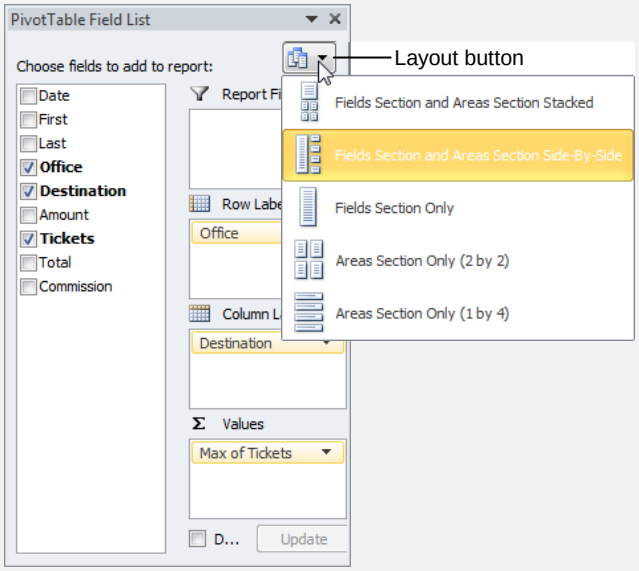


Figure 10-8: Changing PivotTable Field List layout.

Table 10-1: PivotTable Field List Layout Options

	This is the default layout. The fields are stacked above the areas.
	The fields appear side by side with the areas. This is useful if there is a long list of fields to choose from.
	Only the fields list is displayed. This is ideal if you only need to work with adding fields to the PivotTable report.
	Only the areas are displayed (2 by 2). This is ideal if the fields you want have been added and you want to work with the report's layout.
	Only the areas are displayed (1 by 4). This is ideal if the fields you want have been added and you want to work with the report's layout.

Layout group on the Design tab

The Layout group on the Design tab allows you to change what elements appear on the PivotTable.

1. Select a cell in the PivotTable.

   The Options and Design tabs appear under PivotTable Tools on the Ribbon.

2. Under PivotTable Tools on the Ribbon, click the **Design** tab.

   Here you can see the Layout group. It contains four buttons:

   - **Subtotals:** Click to show or hide subtotals, and to specify where to show them.
   - **Grand Totals:** Click to show or hide grand totals, and to specify whether they appear for rows, columns, or both.
   - **Report Layout:** Show the PivotTable in compact, outline, or tabular form.
   - **Blank Rows:** insert or remove a blank line between each grouped item in the PivotTable.

3. Click the button you want to use in the Layout group.

   A list of options appears, depending on the button that was selected.

4. Select an option from the list.

   The PivotTable layout is changed accordingly.

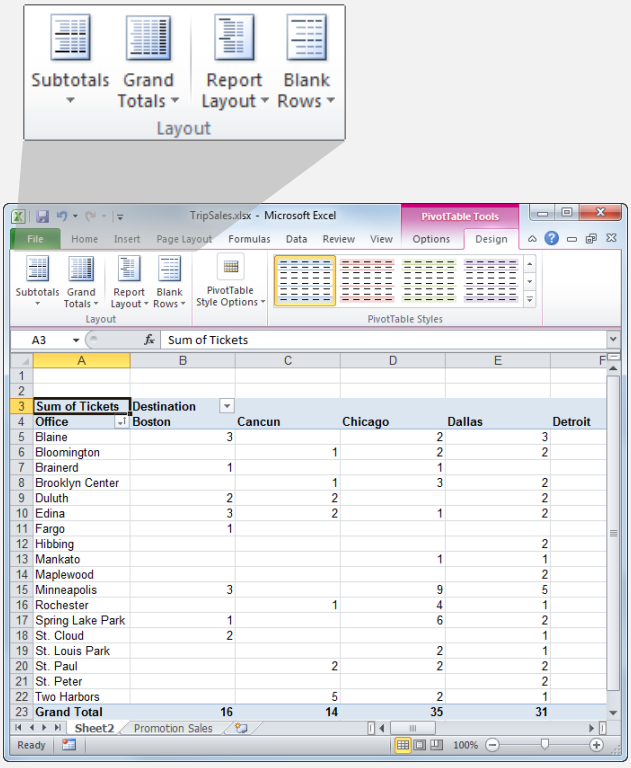


Figure 10-9: The layout of the PivotTable in Tabular layout, and the Layout group on the Design tab.

Grouping PivotTable Items

You can group PivotTable data in order to set it apart additional subsets of data. You can group most items, but dates are a common item to group. For example, you may want to group the information in the PivotTable by days, months, quarters, or years.

Group dates or times

1. Select the date or time field in the PivotTable.

   To select the field, click the name of the field in the PivotTable, such as the row or column header.

2. Under PivotTable Tools on the Ribbon, click the **Options** tab and click the **Group Field** button in the Group group.

   The Grouping dialog box appears.

3. Specify the starting and ending dates you want to group and the interval you want to group by.

   By default, the starting and ending dates are the first and last dates in the PivotTable.

4. Click **OK**.

   The grouping is applied to the PivotTable report.

   Tip: To group dates by weeks, select **Days** in the By area of the Grouping dialog box and enter 7 in the Number of days box.

Group numeric items

1. Select the numeric field in the PivotTable that contains the data you want to group by.

2. Under PivotTable Tools on the Ribbon, click the **Options** tab and click the **Group Field** button in the Group group.

   The Grouping dialog box appears.

3. Specify the starting and ending values you want to group and the interval you want to group by, then click **OK**.

Group other selected items

You can also group items that are not dates or numeric data, such as labels.

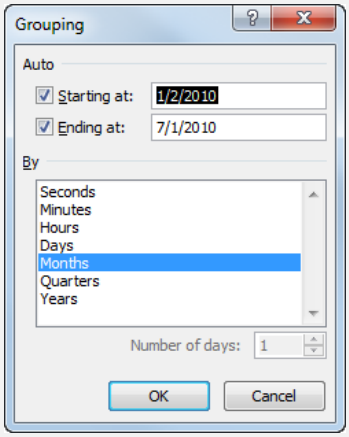
1. Select the items in the PivotTable that you want to group.

Exercise

- **Exercise File:** TripSales10-6.xlsx
- **Exercise:** First, set up the PivotTable for grouping: Remove the Office field from the Row Labels area of the PivotTable Field List. Move the Destination field to the Row Labels area. Add the Date field to the Column Labels area.
  Select cell B3 and group the dates by month. Then ungroup the dates.

	A	B	C	D	E	F
1						
2						
3	Sum of Tickets	Date				
4	Destination	1/2/2010	1/3/2010	1/4/2010	1/5/2010	1/8/2010
5	Boston	2				
6	Cancun					
7	Chicago		1			
8	Dallas				2	
9	Detroit				2	
10	Duluth			2		
11	Fargo					
12	Houston					
13	Lincoln					

1. Select the field by which you want to group. This example happens to group by the Date field.



2. Select the increment by which you want to group. This example will group the data so it is displayed by month, rather than by day.

	A	B	C	D	E	F
1						
2						
3	Sum of Tickets	Date				
4	Destination	Jan	Feb	Mar	Apr	May
5	Boston	6	1	3	2	2
6	Cancun	2	2	8		
7	Chicago	5	7	9	9	5
8	Dallas	4	4	10	4	4
9	Detroit	6		12	1	2
10	Duluth	10	7	6	1	4
11	Fargo	2		4	1	7
12	Houston	2	1	6	5	
13	Lincoln	2	5	3	2	

3. The data for each month is grouped together under one column, rather than being shown as separate days.

Figure 10-10: Grouping the PivotTable dates by month.

2. Under PivotTable Tools on the Ribbon, click the **Options** tab and click the **Group Selection** button in the Group group.

   The items are grouped and collapse buttons appear so you can collapse or expand the group of data.

   Tip: You can also use this method to group specific items in a field.

Ungroup items

1. Select the items in the PivotTable that you want to ungroup.

2. Under PivotTable Tools on the Ribbon, click the **Options** tab and click the **Ungroup** button in the Group group.

   The items are ungrouped.

Updating a PivotTable

If you make changes to the source data a PivotTable is based on, the PivotTable isn't automatically updated. Instead you must manually refresh the PivotTable anytime you change its underlying source data. This lesson explains how to do that, as well as how to change the source of the data the PivotTable is based on.

Refresh PivotTable data

If you've made changes to the data what your PivotTable pulls from, you need to refresh the PivotTable to update it.

1. Select a cell in the PivotTable.

   The PivotTable Tools are displayed on the Ribbon.

2. Under PivotTable Tools on the Ribbon, click the **Options** tab and click the **Refresh** button in the Data group.

   The PivotTable updates to include any changes to the source data.

Change PivotTable data source

You can easily change which data is used by the PivotTable.

1. Select a cell in the PivotTable.

   The PivotTable Tools are displayed on the Ribbon

2. Under PivotTable Tools on the Ribbon, click the **Options** tab and click the **Change Data Source** button in the Data group.

   The Change PivotTable Data Source dialog box appears, along with the current data source—which has a moving dotted line around it.

3. Select a new data range.

4. Click **OK**.

   The PivotTable updates with the data from the new source range.

Exercise

- **Exercise File:** TripSales10-7.xlsx
- **Exercise:** View the Promotion Sales worksheet and change the value in cell G2 to 5. Return to the PivotTable on Sheet2 and refresh the PivotTable. The data updates in C23.

  Change the PivotTable data source so that it uses only the range A1:G4 on the Promotion Sales worksheet.

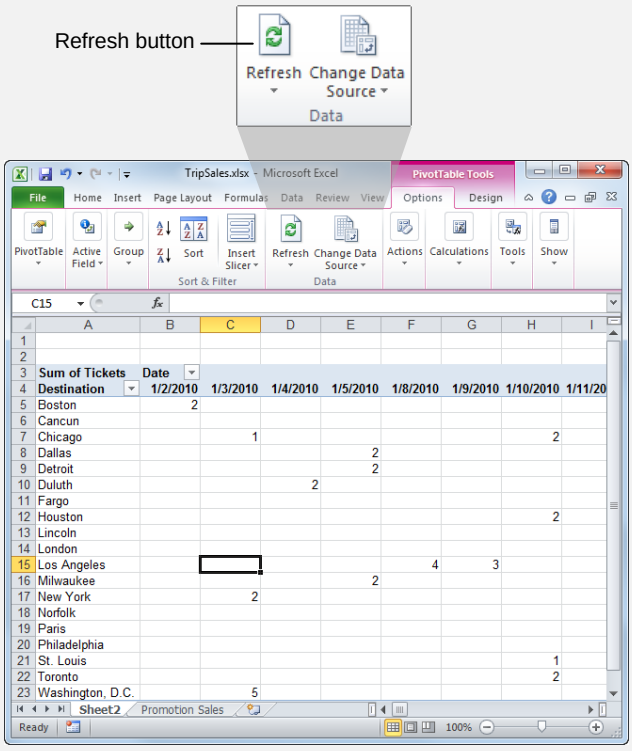


Figure 10-11: The Data group on the Options tab.

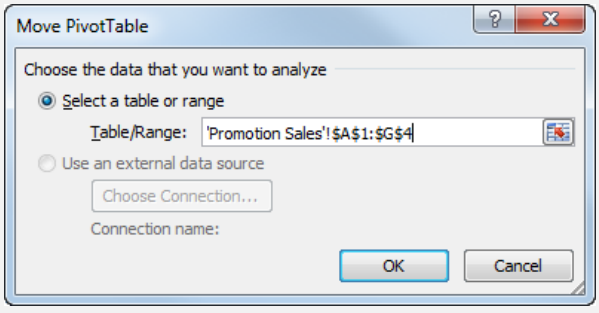


Figure 10-12: The Change PivotTable Data Source dialog box.

Formatting a PivotTable

You can quickly format a PivotTable with Excel's built-in styles and style options.

Apply a built-in style

1. Select a cell in the PivotTable.

   The PivotTable Tools are displayed on the Ribbon.

2. Click the **Design** tab and select a style in the PivotTable Styles group.

   The PivotTable is formatted with the style you selected.

   Tip: Click the **More** button in the PivotTable Styles group to display an expanded PivotTable Styles gallery.

Work with style options

Besides applying a style to the table, you can select PivotTable style options that allow you to adjust the format for a part of a PivotTable. For example, you can apply special formatting to row headers or make the columns banded.

1. Select a cell in the PivotTable.

   The PivotTable Tools are displayed on the Ribbon.

2. Click the **Design** tab and select an option in the PivotTable Style Options group.

   Here is a brief description of the style options you can select from in the PivotTable Style Options group:

   - **Row/Column Headers:** Displays special formatting for the first row or column of the PivotTable.
   - **Banded Rows/Columns:** Applies different formatting to alternate rows or columns.

Tips

✓ Besides using the formatting options on the Design tab, you can format a PivotTable using general formatting commands found on the Home tab.

Exercise

- **Exercise File:** TripSales10-8.xlsx
- **Exercise:** Apply Pivot Style Medium 24 from the PivotTable Styles gallery.

  Select the Banded Rows style option and deselect the Column Headers option.

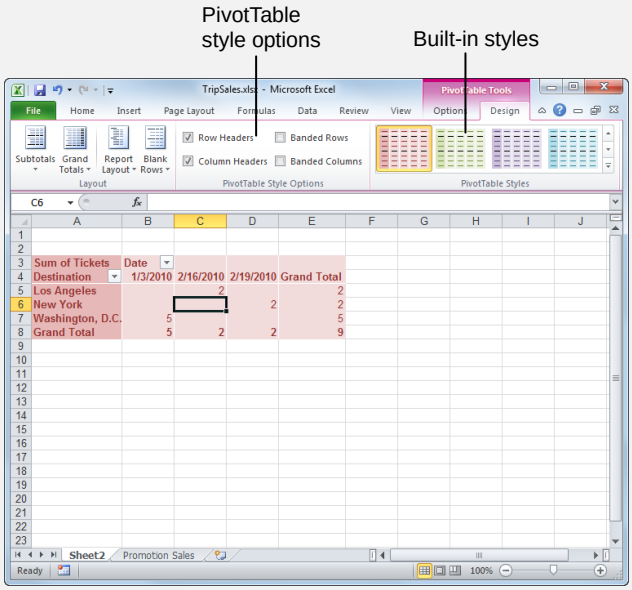


Figure 10-13: Selecting a built-in PivotTable style from the PivotTable Styles group.

	A	B	C	D	E	F
1						
2						
3	Sum of Tickets	Date				
4	Destination	1/3/2010	2/16/2010	2/19/2010	Grand Total	
5	Los Angeles		2		2	
6	New York			2	2	
7	Washington, D.C.	5			5	
8	Grand Total	5	2	2	9	
9						
10						
11						

Figure 10-14: The PivotTable report with the updated style and style options.

Creating a PivotChart

A PivotChart is similar to an ordinary chart created in Excel, except that it plots a PivotTable's information. Like PivotTable reports, PivotCharts are dynamic, which means you can change a PivotChart's structure.

1. Select a cell in the PivotTable.

The PivotTable Tools are displayed on the Ribbon.

2. Under PivotTable Tools on the Ribbon, click the **Options** tab and click the **PivotChart** button in the Tools group.

The Insert Chart dialog box appears, displaying different types of charts.

3. Select the type of chart you want to use and click **OK**.

The chart appears in the worksheet with your PivotTable.

Tip: Click and drag the PivotChart's border to move the chart around in the worksheet.

4. Modify the chart using the PivotChart Filter Pane and the PivotTable tools.

Tips

- ✓ If you modify the PivotTable, the PivotChart will change also.
- ✓ More detailed information about modifying and formatting charts can be found in the "Creating and Working with Charts" chapter.

Exercise

- **Exercise File:** TripSales10-9.xlsx
- **Exercise:** Insert a Clustered Column PivotChart.

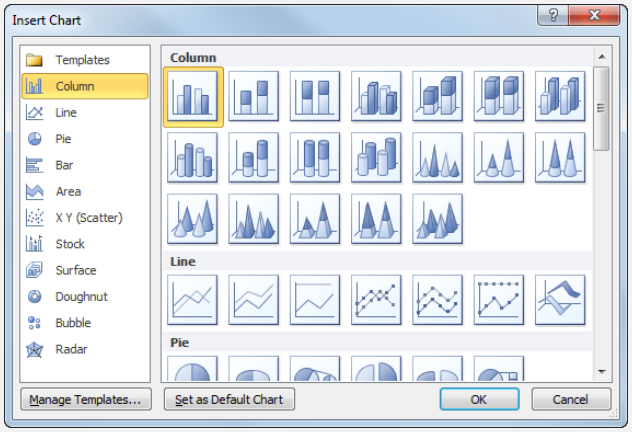


Figure 10-15: The Insert Chart dialog box.

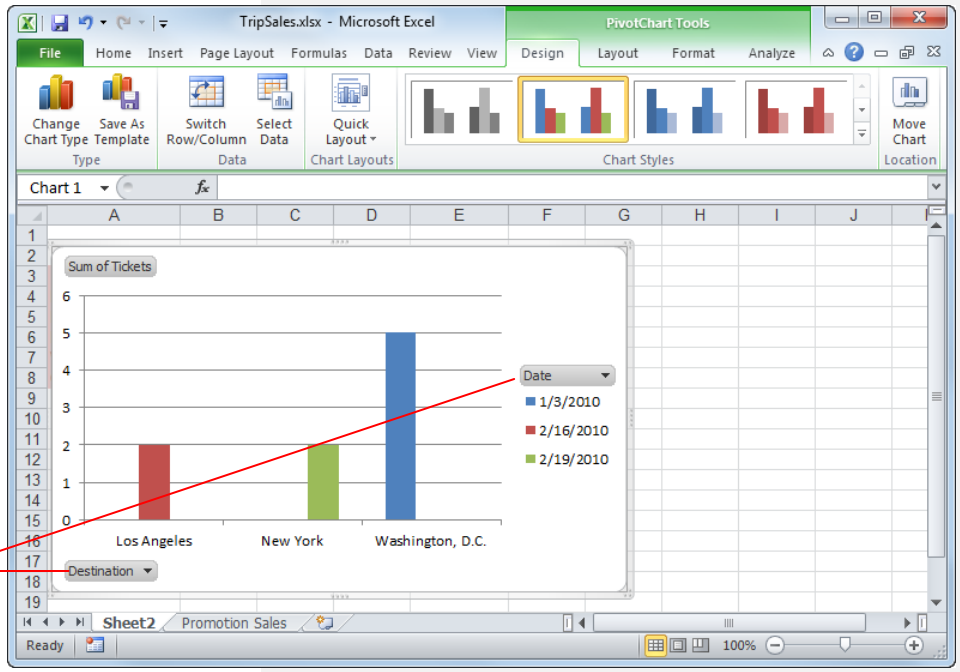


Figure 10-16: A clustered column PivotChart.

Click the row or column filter buttons to filter the data shown in the PivotChart.

Using Slicers

Slicers are a new feature in Excel 2010 that has been added in order to provide an easy way to filter PivotTable data. Slicers label the filters applied, with details, so you can easily understand the data that is displayed and filtered in the PivotTable report.

Create a PivotTable Slicer

Here's how to create a slicer in an existing PivotTable.

1. Click the PivotTable report to select it.

   The PivotTable Tools contextual tabs appear on the Ribbon.

2. Click the **Options** tab under PivotTable Tools on the Ribbon and click the **Insert Slicer** button in the Sort & Filter group.

   The Insert Slicers dialog box appears. All the fields in your PivotTable are listed here; you decide which fields you want to filter by in the PivotTable.

3. Click the check box of the PivotTable fields by which you wish to filter.

   Keep in mind that you'll get a separate slicer for each field you select.

4. Click **OK**.

   The slicer(s) appear above the PivotTable. You can move a slicer to another location on the worksheet, and resize it as needed.

Exercise

- **Exercise File:** Slicers1.xlsx; Sheet1
- **Exercise:** View the number of tickets the St. Cloud office sold to Boston, New York, and Washington D.C.

  (Insert slicers for the Destination and Office fields. Select the St. Cloud button in the Office slicer. Select the Boston, New York, and Washington, D.C. buttons in the Destination slicer.)

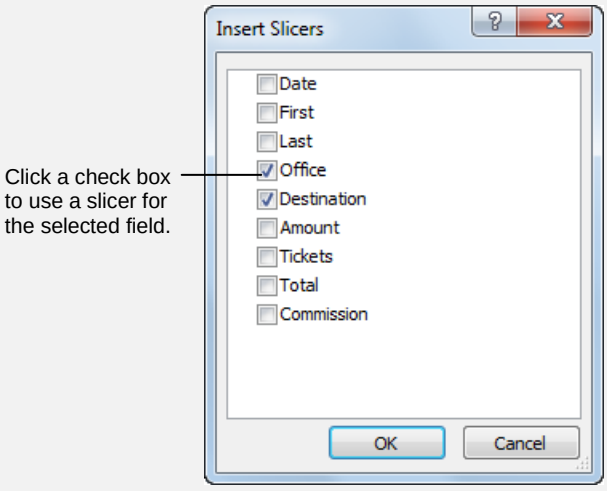


Figure 10-17: The Insert Slicers dialog box.

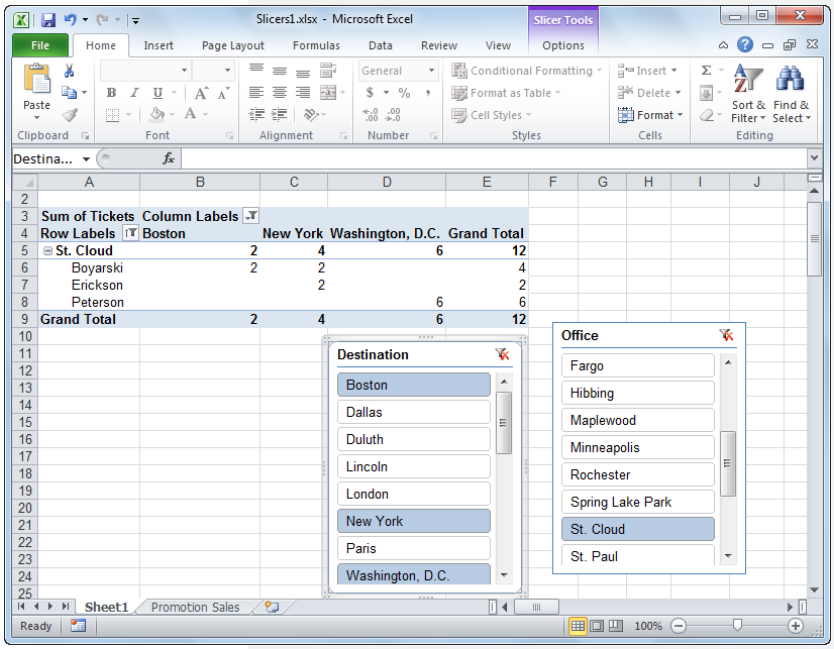


Figure 10-18: The PivotTable with two slicers applied.

Filter data using a slicer

After you create a slicer, it appears on the worksheet alongside the PivotTable, in a layered display if you have more than one slicer.

1. Click a button in a slicer. Press and hold the **<Ctrl>** or **<Shift>** keys to select multiple buttons.

   The button is selected, and the PivotTable data is filtered accordingly.

   Tip: Simply click the button again to stop filtering out the selected data.

Format a slicer

You can change the appearance of a slicer to match the color scheme of your PivotTable.

1. Click the slicer you want to format.

   The Slicer Tools appear on the Ribbon.

2. Click the **Options** tab under Slicer tools on the Ribbon and select the style you want in the Slicer Styles group.

   The style is applied to the slicer.

   Tip: You can also click the **More** button in the Slicer Styles group to view more styles.

Delete a slicer

If you no longer want to filter PivotTable data, you can remove the slicer completely.

1. Click the slicer and press **<Delete>**.

   The slicer no longer appears in the worksheet.

   Other Ways to Delete a Slicer:
   Right-click the slicer, and then select **Remove <Name of slicer>** from the contextual menu.

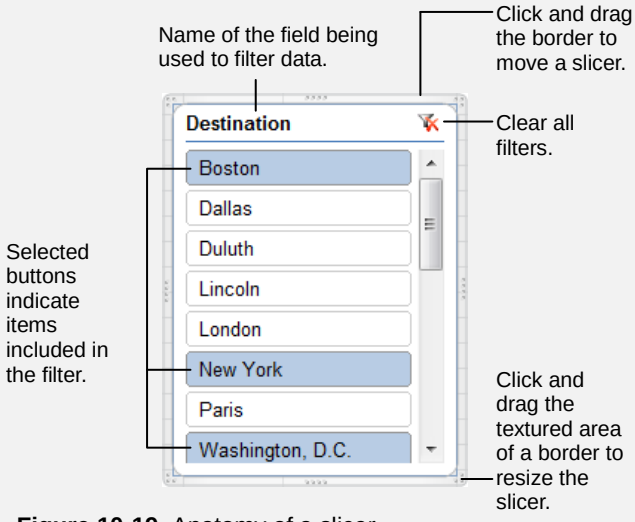


Figure 10-19: Anatomy of a slicer.

Sharing Slicers Between PivotTables

If you're working with a workbook that has several different PivotTables, it's likely that you'll want to apply the same filter to other PivotTables. This lesson shows you how to share slicers between PivotTables in a workbook.

Apply a slicer to another PivotTable

If you want to use a slicer in another PivotTable, you have to make the slicer available to that PivotTable.

1. Click the slicer that you want to share in another PivotTable.

   The Slicer Tools appear on the Ribbon.

2. Click the **Options** tab under Slicer Tools on the Ribbon and click the **PivotTable Connections** button.

   The PivotTable Connections dialog box appears. Other PivotTables you can share the slicer with are listed.

3. Click the check boxes of the PivotTables in which you want the slicer to be available.

4. Click **OK**.

   The slicer is now applied to the selected PivotTable(s).

Exercise

- **Exercise File:** Slicers2.xlsx, Sheet2
- **Exercise:** Apply the Destination slicer from PivotTable 1 to PivotTable 2.

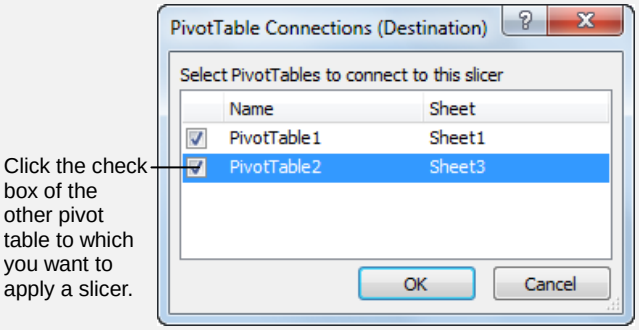


Figure 10-20: The PivotTable connections dialog box.

Working with PivotTables Review

Quiz Questions

96. You can create a PivotTable in its own new worksheet or in one that already exists in your workbook. (True or False?)

97. Specify the data you want to use in the PivotTable in the _____ task pane.
    A. Select Fields
    B. Specify Fields
    C. PivotTable Field List
    D. PivotTable Layout

98. Which of the following is NOT a calculation available in the Value Field Settings dialog box?
    A. Count
    B. Average
    C. StdDev
    D. These are all available

99. You can filter a PivotTable by dragging a field into the _____ box in the PivotTable Field List.
    A. AutoFilter
    B. Report Filter
    C. Pivot Filter
    D. Data Filter

100. Which of the following is NOT a button found in the Layout group on the Design tab?
    A. Header Row
    B. Grand Totals
    C. Report Layout
    D. Blank Rows

101. You can group any type of PivotTable item except for dates. (True or False?)

102. When you make changes to your PivotTable's source data, the PivotTable refreshes automatically to include the edits. (True or False?)

103. Which of the following is NOT an option in the PivotTable Style Options group?
    A. Banded Columns
    B. Banded Rows
    C. Bold Headers
    D. Row Headers

104. When you modify a PivotTable, the PivotChart is updated along with it. (True or False?)

105. A slicer is a visual way to filter PivotTable content. (True or False?)

106. PivotTables can only be applied to a single PivotTable at a time. (True or False?)

Quiz Answers

96. True. You can create a PivotTable in either a new or existing worksheet

97. C. Specify the data you want to use in the PivotTable in the PivotTable Field List task pane.

98. D. All are available.

99. B. You can filter a PivotTable by dragging a field into the Report Filter box in the PivotTable Field List.

100. A. Header Row is not a button found in the Layout group on the Design tab.

101. False. Dates are commonly grouped in PivotTables.

102. False. You must manually refresh the PivotTable to include changes made to your source data.

103. C. Bold Headers is not an option in the PivotTable Style Options group.

104. True. When you modify a PivotTable, the PivotChart is updated along with it.

105. True. Slicers provide a visual way to filter PivotTables.

106. False. PivotTables can applied to other PivotTables in a workbook.

11

11Analyzing Data

Most people don't realize that Excel has numerous tools for analysis and organization, so they perform Excel tasks the manual way.

This method can help you get by in simple situations, but isn't very effective when you need to perform more complex what-if analysis or organize large lists of data.

In this chapter, you will learn about Excel's tools for analyzing and organizing. These include tools for creating multiple worksheet scenarios, using Goal Seek and Solver tools to perform what-if analysis, and organizing your data by subtotaling, outlining, or consolidating.

Using Exercise Files

This chapter suggests exercises to practice the topic of each lesson. There are two ways you may follow along with the exercise files:

- Open the exercise file for a lesson, perform the lesson exercise, and close the exercise file.
- Open the exercise file for a lesson, perform the lesson exercise, and keep the file open to perform the remaining lesson exercises for the chapter. (This chapter does not use the same exercise file for the duration of the chapter.)

The exercises are written so that you may "build upon them", meaning the exercises in a chapter can be performed in succession from the first lesson to the last.

Creating Scenarios

If you've ever used a worksheet to answer the question "What if?" you've already performed what-if analysis. For example, what would happen if your advertising budget increased by 40 percent? How about 50 percent?

Excel has several tools for performing What-If Analysis, including Goal Seek, Data Tables, and Solver. In this lesson, you will learn how to create multiple what-if scenarios using Excel's Scenario Manager.

Create scenarios

A *scenario* is a set of input values that you can substitute in a worksheet to perform what-if analysis. For example, you could create scenarios to show various interest rates, loan amounts, and terms for a mortgage. Excel's scenario manager lets you create and store different scenarios in the same worksheet.

1. Create or open a worksheet that contains one or more formulas.

2. Click the **Data** tab on the Ribbon, click the **What-If Analysis** button in the Data Tools group, and select **Scenario Manager** from the list.

   The Scenario Manager dialog box appears with the message "No Scenarios defined. Choose Add to add scenarios." You want to add a new scenario.

3. Click the **Add** button.

   The Add Scenario dialog box appears.

4. Type a name for the scenario and press **<Tab>**.

   The cursor moves to the Changing cells box. Here you need to select the cells that contain the values you want to change.

   Tip: To select multiple nonadjacent cells, hold down the **<Ctrl>** key as you click them.

5. Select the cells in the worksheet that contain the values you want to change, then click **OK**.

   The Scenario Values dialog box appears. Here you need to enter desired values for the changing cells.

   Tip: To make sure you don't lose the original values for the changing cells, use the original cell values in the first scenario you create.

Exercise

- **Exercise File:** LoanPayment11-1.xlsx
- **Exercise:** Add a scenario called Original that uses the original values in cell range A4:C4.

  Next, add a scenario called 30 Year Loan and change the term of the loan to 30.

  Show the 30 Year Loan scenario in the worksheet.

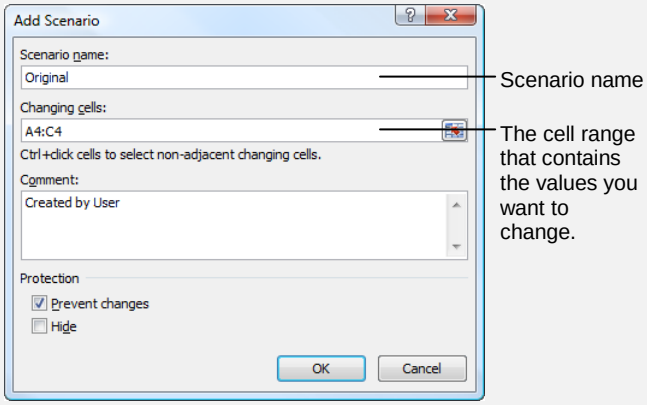


Figure 11-1: The Add Scenario dialog box.

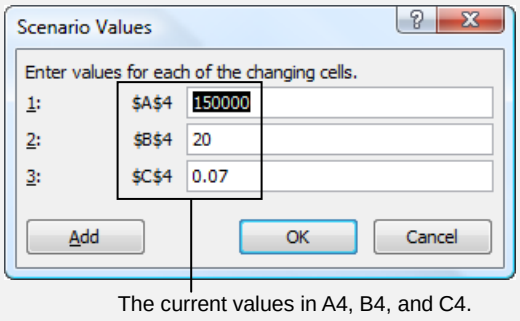


Figure 11-2: The Scenario Values dialog box.

6. Enter values in each of the boxes. Click **OK**, or click **Add** to add another scenario.

   The scenario is added. If you clicked OK, the scenario is listed in the Scenario Manager. If you clicked Add, the Add Scenario dialog box appears so you can add another scenario.

7. Repeat steps 4 – 6 to add a new scenario. Click **OK**.

   The Scenario Manager dialog box lists each scenario that you created.

8. Click the **Close** button.

   The Scenario Manager closes.

Tips

✓ To edit a scenario, select the scenario in the Scenario Manager dialog box and click the **Edit** button.

Display a scenario

Once you have created scenarios in a worksheet, you can display the worksheet using the values from those scenarios.

1. Click the **Data** tab on the Ribbon, click the **What-If Analysis** button in the Data Tools group, and select **Scenario Manager** from the menu.

   The Scenario Manager dialog box appears.

2. Select the scenario that you want to display and click the **Show** button.

   The worksheet's values are changed to the values you specified in the scenario.

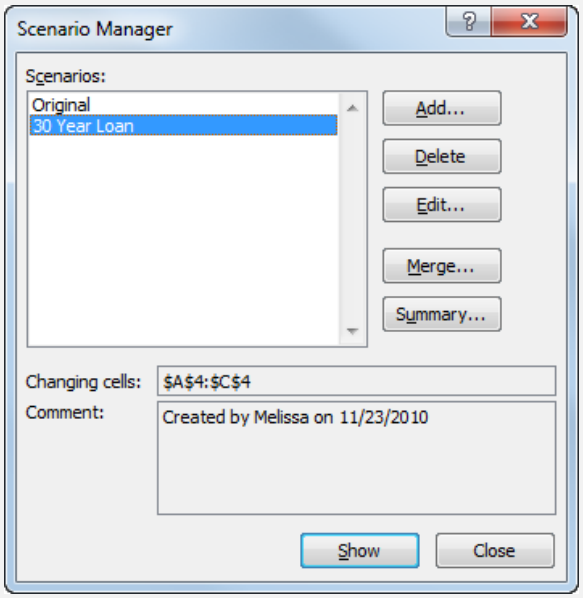


Figure 11-3: The Scenario Manager dialog box.

Creating a Scenario Report

A scenario summary report is a single compiled report that summarizes the results from several scenarios. It's easier to read than switching between different scenarios.

Create cell names

The first step in creating a scenario summary report is to create names for the cells that change.

1. Select the cells involved in the scenario and the labels you want to use to name them.

2. Click the **Formulas** tab on the Ribbon and click the **Create from Selection** button in the Defined Names group.

   The Create Names from Selection dialog box appears.

3. Select the option that describes where the labels are located in the selected cell range.

   The labels that are in the selected cell range will be used as names.

4. Click **OK**.

   The cells are named using the labels.

Create a Scenario Summary report

Once you've created at least two scenarios and have named cells, you can create a summary report.

1. Click the **Data** tab on the Ribbon, click the **What-If Analysis** button in the Data Tools group, and select **Scenario Manager** from the menu.

   The Scenario Manager dialog box appears.

2. Click the **Summary** button.

   The Scenario Summary dialog box appears.

3. Make sure the **Scenario summary** option is selected.

   Next you need to specify the result cells. These are the cells that are affected by the changing cells.

   Tip: Alternatively, select the "Scenario PivotTable report" option to create a report that gives you an instant what-if analysis of your scenarios.

4. Select the result cell range and click **OK**.

   A new Scenario Summary worksheet is added to the workbook that contains the summary report.

Exercise

- **Exercise File:** LoanPayment11-2.xlsx
- **Exercise:** Select the cell range A3:F4 and name the cells from the selection.

  Create a scenario summary report (the result cell range is D4:F4).

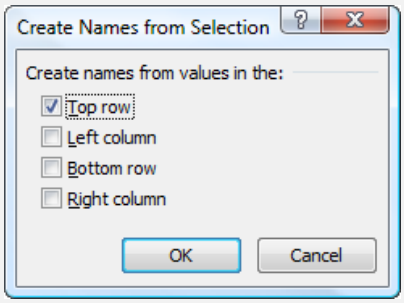
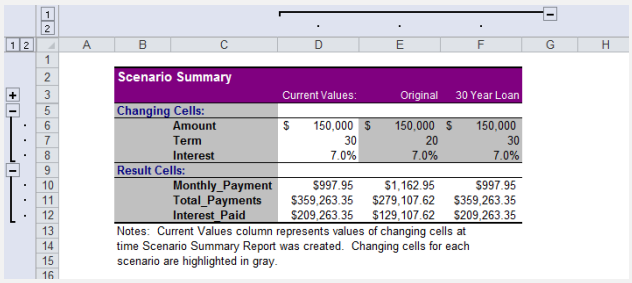


Figure 11-4: The Create Names from Selection dialog box.



Scenario Summary			
	Current Values:	Original	30 Year Loan
Changing Cells:			
Amount	$ 150,000	$ 150,000	$ 150,000
Term	30	20	30
Interest	7.0%	7.0%	7.0%
Result Cells:			
Monthly_Payment	$997.95	$1,162.95	$997.95
Total_Payments	$359,263.35	$279,107.62	$359,263.35
Interest_Paid	$209,263.35	$129,107.62	$209,263.35

Notes: Current Values column represents values of changing cells at time Scenario Summary Report was created. Changing cells for each scenario are highlighted in gray.

Figure 11-5: A Scenario Summary report.

Working with Data Tables

Another way to get answers to your what-if questions is by using a data table. A data table is a cell range that displays the results of a formula using different values.

For example, you could create a data table to calculate loan payments for several interest rates and term lengths.

There are two types of data tables:

- **One-input Data Table:** Displays the results of a formula for multiple values of a single input cell. For example, if you have a formula that calculates a loan payment you could create a one-input data table that shows payment amounts for different interest rates.
- **Two-input Data Table:** Displays the results of a formula for multiple values of two input cells. For example, if you have a formula that calculates a loan payment you could create a two-input data table that shows payment amounts for different interest rates and different term lengths.

Create a one-input data table

1. Set up the table area. Make sure you include the formula in the top row and the input values in the left column.

   Make sure the formula refers to the input cell.

2. Select the table range that contains the formula and substitution values.

   This should include blank cells below the formula and to the right of the values—this is where the data table will go.

3. Click the **Data** tab on the Ribbon, click the **What-If Analysis** button in the Data Tools group, and select **Data Table**.

   The Data Table dialog box appears.

4. Type the cell reference for the input cell in the Column input cell box and click **OK**.

   Excel displays the results of the formula using each of the substituted values.

   Tip: If you set up your table with the data in a row instead of a column, you would enter the cell reference for the input cell in the Row input cell box instead.

Exercise

- **Exercise File:** LoanPayment11-3.xlsx
- **Exercise: Create a one-input data table:**
  Enter =PMT(C4/12,B4*12,A4) in cell B7.
  Enter 6.0, 6.5, 7.0, 7.5, 8.0 in cells A8:A12.
  Select the cell range A7:B12 and create a data table. In the Data Table dialog box, enter C4 in the Column input cell box and click OK.

  Delete the contents of B8:B12 to prepare for the two-input table.

  Create a two-input data table: Move the formula in cell B7 to cell A7.
  Enter 5, 10, 15, 20 in cells B7:E7. Select the cell range A7:E12.
  Create a data table and enter B4 as the row input cell and C4 as the column input cell.

  Delete the contents of A7:E12.

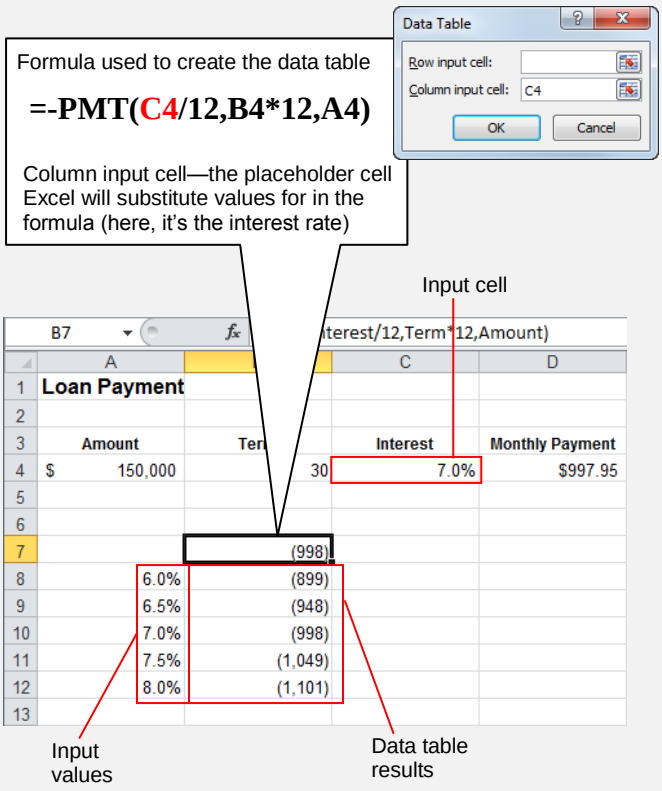


Figure 11-6: The Data Table dialog box and the resulting one-input data table showing different monthly payments at different interest rates.

Create a two-input data table

1. Set up the table area. Make sure you include the formula in the upper-left cell and the values for the first input cell in the left column and the values for the second input cell in the top row.

   Make sure the formula refers to the two input cells.

2. Select the table range that contains the formula and substitution values (both the row and column values).

   This should include blank cells below the formula and to the right of the values—this is where the data table will go.

3. Click the **Data** tab on the Ribbon, click the **What-If Analysis** button in the Data Tools group, and select **Data Table**.

   The Data Table dialog box appears. Since this is a two-input table, two input cells need to be entered.

4. Enter the cells you want to use for the Row input cell and the Column input cell and click **OK**.

   Excel displays the results of the formula with all the substituted values.

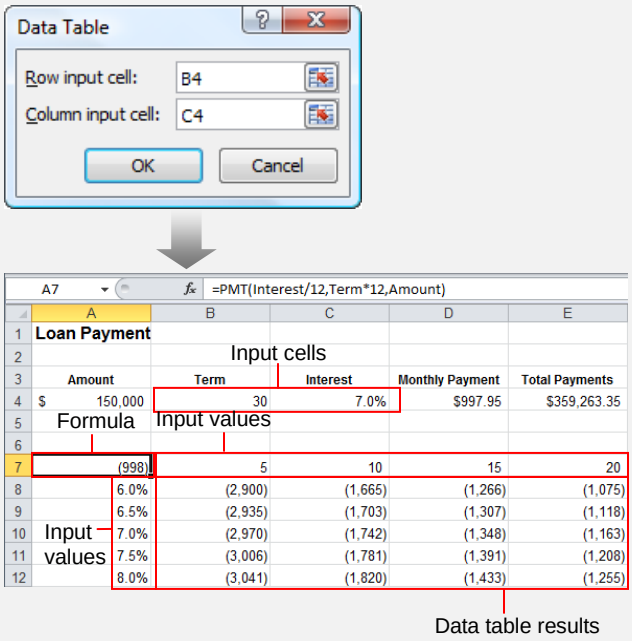


Figure 11-7: The Data Table dialog box and the resulting two-input data table showing different monthly payments at different interest rates and different terms.

Using Goal Seek

When you know the desired result of a single formula, but not the value the formula needs for the result, you can use the Goal Seek feature. For example, you can afford a $1,200 monthly payment, so how much of a loan can you take out? When goal seeking, Excel plugs different values into a cell until it finds one that works.

1. Open or create a workbook that contains the formulas you want to work with.

2. Click the **Data** tab on the Ribbon, click the **What-If Analysis** button in the Data Tools group, and select **Goal Seek**.

   The Goal Seek dialog box appears.

3. Click the **Set cell** box, and click the cell in the worksheet that contains the formula you want to use.

4. Click the **To value** box and enter the value you want to change it to.

5. Click the **By changing** cell box, and click the cell you want to change to achieve the formula result.

   This cell must be a cell that is referenced by the formula.

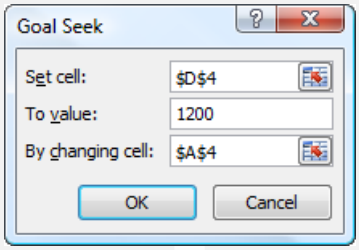
6. Click **OK**.

   Excel calculates and displays the value needed to achieve the formula result you desire.

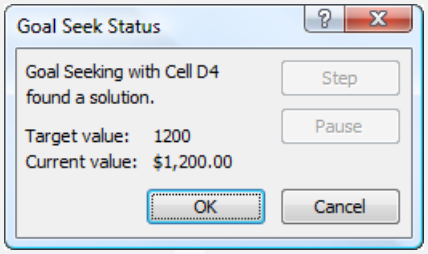
7. Click **OK** to replace the original values or click **Cancel** to keep the original values.

Exercise

- **Exercise File:** LoanPayment11-4.xlsx
- **Exercise:** Use Goal Seek to determine the maximum loan amount you could afford with a $1200 monthly payment.



First, set the Goal Seek parameters using data from the spreadsheet and the goal value.



Excel calculates the values needed to meet the goal.

	A	B	C	D	E
1	**Loan Payment**				
2					
3	**Amount**	**Term**	**Interest**	**Monthly Payment**	**Total Payments**
4	$ 180,369	30	7.0%	$1,200.00	$432,000.00
5					

Figure 11-8: Using Goal Seek to determine the maximum loan amount with a $1200 monthly payment.

Using Solver

Excel's Solver tool can perform advanced what-if analysis on problems with many variable cells. You can also specify constraints, or conditions that must be met to solve the problem.

Solver has been improved in Excel 2010 to include a new user interface, and better functionality.

Install the Solver add-in

Solver is an optional Excel add-in. You need to install it before you can use it.

1. Click the **File** tab on the Ribbon and select **Options** from the menu.

   The Excel Options dialog box appears.

2. Click the **Add-Ins** tab.

   By default, Excel Add-ins are displayed. The top of the list displays add-ins that are active, the bottom displays add-ins that are available, but are not currently active.

3. Click the **Go** button.

   The Add-Ins dialog box appears, displaying a list of the add-ins available for Excel.

4. Click the **Solver Add-in** check box to select it and click **OK**.

   A dialog box appears, asking to confirm that you want to install the add-in.

5. Click **Yes**.

   Microsoft Office reconfigures so that Solver is installed in Excel. The Solver command will now be available in the Analysis group on the Data tab on the Ribbon.

   Tip: You may need to restart Excel so that Solver installs properly.

Use Solver

1. Open or create a workbook that contains the problem you want to solve.

   A problem should consist of a formula that you want Excel to solve by changing the values of its inputs until it arrives at the desired result.

Exercise

- **Exercise File:** Mailings11-5.xlsx
- **Exercise:** Imagine you're in charge of a mailing campaign for five states. You have been given the following budget constraints: your total budget is $35,000, you must spend at least 50% of the budget on Minnesota mailings, and at least three mailings must go out in each state.

  Based on this information, and the fact that the number of mailings must be a whole number, use Solver to calculate the maximum number of mailings you can send out to each state.

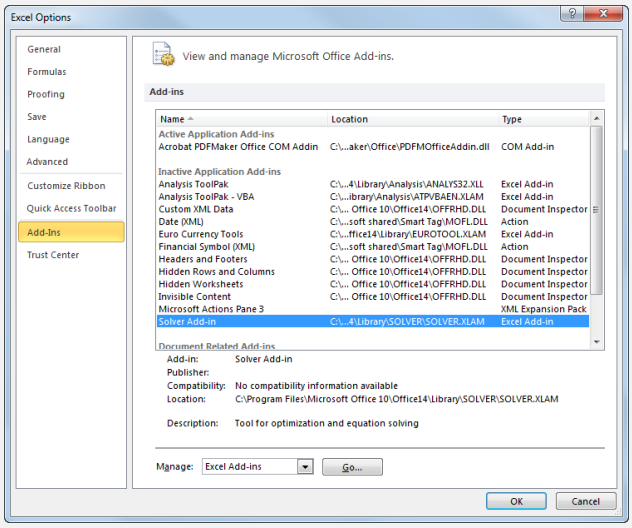


Figure 11-9: The Add-Ins tab of the Excel Options dialog box.

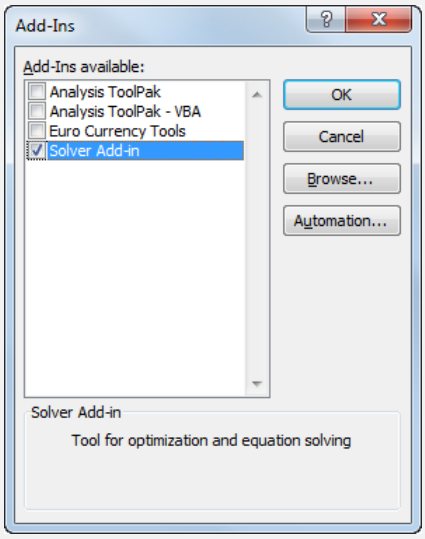


Figure 11-10: The Add-Ins dialog box.

2. Click the **Data** tab on the Ribbon and click the **Solver** button in the Analysis group.

   The Solver Parameters dialog box appears. First you need to tell Excel the target cell. This is the cell that contains the formula you want to solve.

3. Select the target cell in the worksheet.

   The cell reference for the target cell appears in the Set Target Cell box.

4. Select a **To** option. If you select the **Value of** option, enter a value.

   Choose from Max, Min, or Value Of, depending on what value you want Solver to calculate. For example, if you select Max, Solver will change the specified cells to make the target cell as large as possible.

   Next, you need to specify the cells that Solver can change to meet your target cell goal.

5. Click the **Collapse Dialog** button in the By Changing Cells box and select the cells that need to change to reach your goal.

   Tip: Press and hold the **<Ctrl>** key to select multiple nonadjacent cells.

   Finally, add any constraints on the problem. For example, you could specify that one of the formula's input cells can't be greater than a certain value.

6. Click the **Add** button in the Subject to the Constraints section.

   The Add Constraint dialog box appears.

7. Enter a cell reference, select an operator, then enter the constraint value you want to apply to the cell.

8. Click **Add** to add another constraint, or **OK** to continue.

   You return to the Solver Parameters dialog box.

9. Click the **Solve** button.

   The Solver Results dialog box appears, letting you know whether or not Solver found a solution.

10. Select **Keep Solver Solution** or **Restore Original Values** and click **OK**.

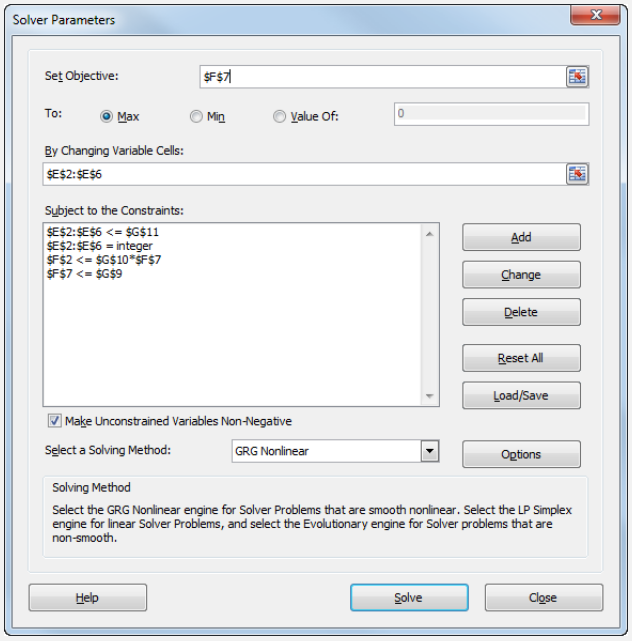


Figure 11-11: The Solver Parameters dialog box.

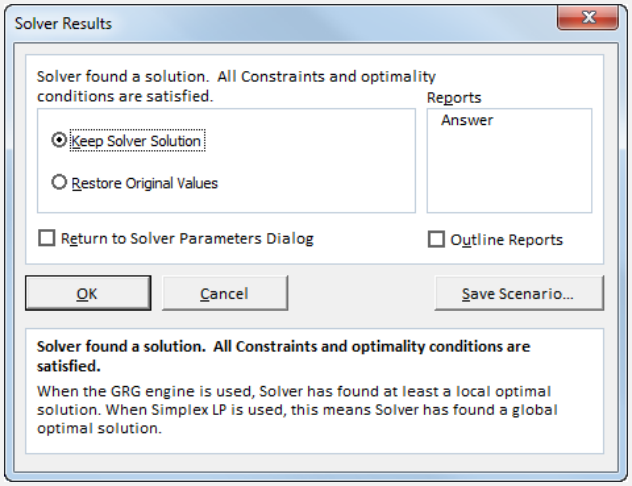


Figure 11-12: The Solver Results dialog box.

	A	B	C	D	E	F	G
1		Clients	Cost Per Flyer	Cost Per Mailing	Number of Mailings	Total Cost	Percent of Total
2	Minnesota	3500	0.65	3,430	5	17,150	50%
3	Wisconsin	3200	0.5	2,656	3	7,968	23%
4	Illinois	850	0.75	918	3	2,754	8%
5	Washington	950	0.8	1,074	4	4,294	13%
6	Texas	300	0.45	234	9	2,106	6%
7					Total Cost	34,272	
8							
9		**Budgeting Constraints**				Total Budget:	35,000
10						Minimum Minnesota %:	50%
11						Min Mailings:	3

Figure 11-13: The solution calculated by Solver.

Using Text to Columns

The Convert Text to Columns feature in Excel allows you to split the contents of a cell into different columns. For example, you could split a person's first and last name into separate columns.

You can split data into columns using two different methods:

- **Delimited:** The data will be separated based on the location of commas or tabs within the data.
- **Fixed Width:** You specify a fixed column break location.

Let's take a look at both methods.

Tips

✓ Before using the text to columns feature, make sure there are enough blank columns next to your data so that the split data will have somewhere to go without copying over the rest of your data.

Split data using a delimiter

If the data has delimiters such as commas or tabs, you can use them to split the data.

1. Select the cell range you want to convert.
2. Click the **Data** tab on the Ribbon and click the **Text to Columns** button in the Data Tools group.

   The Convert Text to Columns Wizard dialog box appears.
3. Select the **Delimited** option and click **Next**.

   Here you need to select the types of delimiters you want to use to separate your data. Tabs, semicolons, commas, and spaces are all common delimiters.

   Your selection will depend on the types of delimiters you have present in your data. For example, if you want to split first and last names using the space between the names, you'd select the Space option.
4. Click the check box next to each delimiter you want to select in the Delimiters area.

   A preview appears, showing you how the data will be split into different columns based on your selection.
5. Click **Next**.

   Next you can select a format for each column of data.

Exercise

- **Exercise File:** MonthlySales11-7.xlsx
- **Exercise:** Select cell A7 and split Denise Winters' first and last names into two cells using the space between the words as the delimiter.

	A	B
1	First	Last
2	Ron	Dahl
3	Clem	Brown
4	Elsa	Martinez
5	Denise	Winters
6	Tamara	Sweet
7	Denise Winters	

Figure 11-14: Before splitting text.

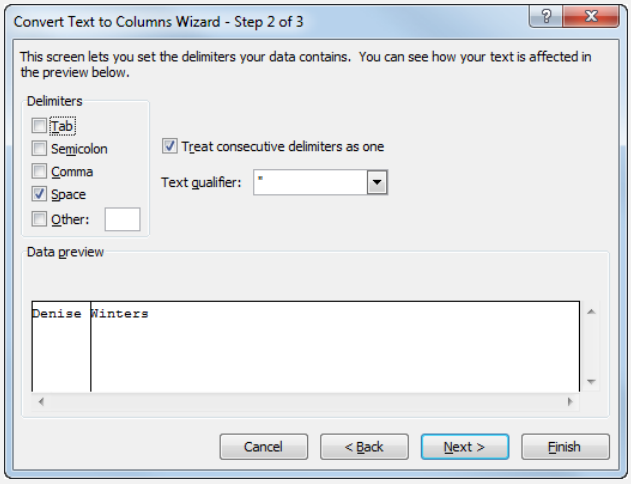


Figure 11-15: Step 2 of the Convert Text to Columns Wizard dialog box.

	A	B
1	First	Last
2	Ron	Dahl
3	Clem	Brown
4	Elsa	Martinez
5	Denise	Winters
6	Tamara	Sweet
7	Denise	Winters

Figure 11-16: After splitting text.

6. Select a column in the Data preview area and then select a format option for that column in the Column data format area. Repeat for additional columns.

   Tip: If you don't want the new columns to replace the original data, click the **Destination** Collapse Dialog button and select the range where you want to put the split data.

7. Click **Finish**.

   Tip: A message may appear, asking if you want to replace the contents of the destination cells. If so, click **OK**.

   The data is split into different columns.

Split data using a fixed column break

You can also decide for yourself where you want to split the data using a fixed column break.

1. Select the cell range you want to convert.

2. Click the **Data** tab on the Ribbon and click the **Text to Columns** button in the Data Tools group.

   The Convert Text to Columns Wizard dialog box appears.

3. Select the **Fixed width** option and click **Next**.

   Here you can manually add break lines to separate your data into different columns.

4. Click in the Data preview area where you want to place a break line.

   A line appears, showing you where the data will be separated.

5. Add additional break lines as desired, then click **Next**.

   Next you can select a format for each column of data.

6. Select a column in the Data preview area and then select a format option for that column in the Column data format area. Repeat for additional columns.

7. Click **Finish**.

   Tip: A message may appear, asking if you want to replace the contents of the destination cells. If so, click **OK**.

   The data is split into different columns.

Grouping and Outlining Data

Many spreadsheets are created in a hierarchical style. For example, a worksheet might contain a column for each month, followed by a total column. 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 use the Auto Outline feature and how to group data manually.

Group rows or columns manually

1. Select the column or row data you want to group.
2. Click the **Data** tab on the Ribbon and click the **Group** button in the Outline group.

   The Group dialog box appears. Here you need to select whether you want to group rows or columns.
3. Select the **Rows** or **Columns** option and click **OK**.

   The selected rows or columns are grouped together.

Hide or show detail

Once you've grouped or outlined data, you can collapse or expand the group detail.

1. Click the **Data** tab on the Ribbon and click the **Hide Detail** or **Show Detail** button in the Outline group.

   Other Ways to Hide or Show Detail:
   Click the outline symbols next to or above the worksheet. These include the **Row Level** and **Column Level** buttons and the **plus** and **minus** button.

Exercise

- **Exercise File:** MonthlySales11-8.xlsx
- **Exercise:** Manually group rows 3 through 6 and practice hiding and displaying details.

  Then remove the grouping.

  Use the Auto Outline feature (Excel should outline columns E to G). Clear the outline.

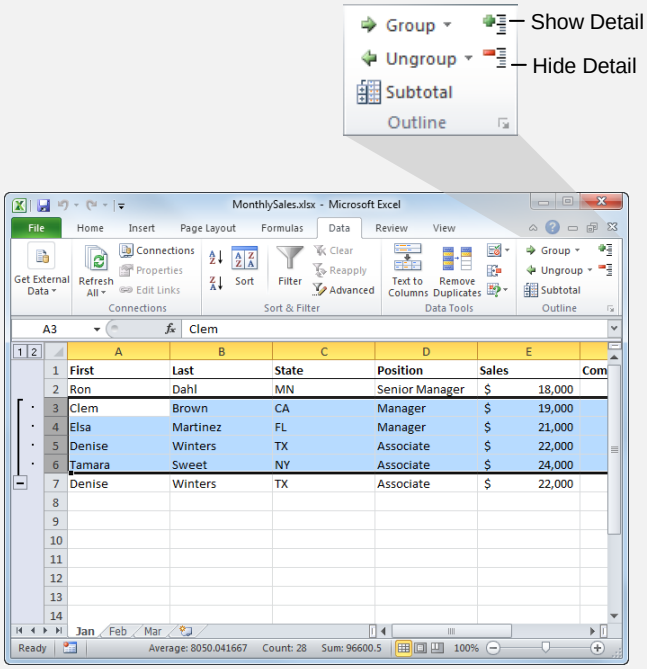


Figure 11-17: An example of grouped rows.

Ungroup rows or columns

1. Select the grouped row or column data.

2. Click the **Data** tab on the Ribbon and click the **Ungroup** button in the Outline group.

Outline data automatically

If your data contains detailed rows or columns that are summed or subtotaled, Excel can automatically group the data into outline form.

Tips

✓ Excel will only outline numerical data that is related by a sum or subtotal formula. It cannot outline text data or numerical data that is not totaled by a formula.

1. Make sure your data has column labels and contains formulas that summarize the data.

   The sum and subtotal functions are commonly used to summarize rows or columns.

   Tip: Summary rows and columns should be below and to the right of the data, respectively. If they are above or to the left, click the **Outline** Dialog Box Launcher in the Outline group. Remove the checkmark from the **Summary rows below detail** or **Summary columns to right of detail** check box.

2. Select a cell in the data range you want to outline.

3. Click the **Data** tab on the Ribbon, click the **Group** button list arrow in the Outline group, and select **Auto Outline**.

   The data is automatically outlined so that you can collapse the detailed rows or columns and view only the totals or subtotals.

Remove an outline

1. Click the **Data** tab on the Ribbon, click the **Ungroup** button list arrow in the Outline group, and select **Clear Outline**.

   The outline is cleared from the worksheet.

Columns E:G are grouped because they contain related data. Column G is a summary column of data contained in columns E and F.

	C	D	E	F	G	H
1	State	Position	Sales	Commission %	Commission	
2	MN	Senior Manager	$ 18,000	5%	$ 900	
3	CA	Manager	$ 19,000	15%	$ 2,850	
4	FL	Manager	$ 21,000	15%	$ 3,150	
5	TX	Associate	$ 22,000	10%	$ 2,200	
6	NY	Associate	$ 24,000	10%	$ 2,400	
7	TX	Associate	$ 22,000	10%	$ 2,200	
8						
9						
10						
11						
12						

Figure 11-18: An example of spreadsheet after using the Auto Outline command.

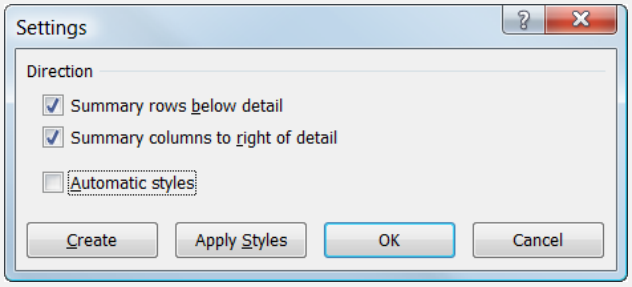


Figure 11-19: The Settings dialog box.

Using Subtotals

A quick and easy way to group and summarize data is to use Excel's Subtotals feature. Usually you create subtotals with the SUM function, but you can also create subtotals using functions such as COUNT, AVERAGE, MAX, and MIN. The Subtotals feature also outlines the data, allowing you to display and hide the detail rows for each subtotal.

Create subtotals

1. Make sure your data is arranged into labeled columns, that the data in each column is of the same type, and that you've sorted the data based on the column you want to group the subtotals by.

   Now you're ready to subtotal your data.

   Tip: Excel's Subtotals feature subtotals your data by automatically inserting the SUBTOTAL function.

2. Select a cell in the data range.

3. Click the **Data** tab on the Ribbon and click the **Subtotal** button in the Outline group.

   The Subtotal dialog box appears.

4. Click the **At each change in** list arrow and 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 customers, the products they bought, and the amounts of the sales, and you want to subtotal the list by the type of product, you would select the column that contains the products.

5. Click the **Use function** list arrow and select the function you want to use to calculate the subtotals.

   For example, you could select Sum, Count, Average, or Max.

6. In the "Add subtotal to" box, click the check box next to each column that has values you want to subtotal.

7. Click **OK**.

   The data is organized with subtotals.

Tips

- ✓ To hide or show subtotals detail, click the **Hide Detail** and **Show Detail** buttons in the Outline group on the Ribbon or use the outline symbols next to the worksheet to hide or display individual subtotals.

Exercise

- **Exercise File:** MonthlySales11-9.xlsx
- **Exercise:** Subtotal the data at each change in Position using the SUM function and subtotal the Sales and Commission columns.

  Click the 2 Column Level Symbol button to hide details, then click the 3 Column Level Symbol button to display them again.

  Remove the subtotals.

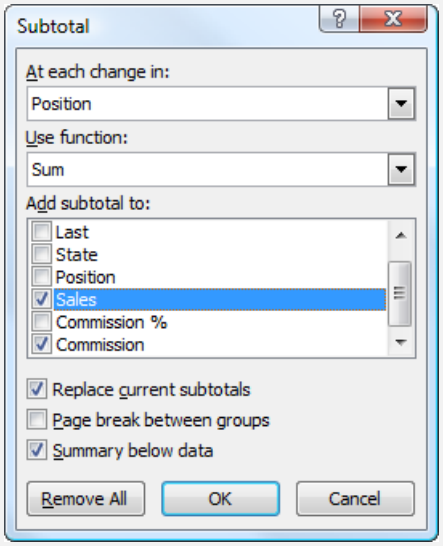


Figure 11-20: The Subtotal dialog box.

✓ To add more subtotals, repeat the steps but uncheck the **Replace current subtotals** check box so you don't overwrite the existing subtotals.

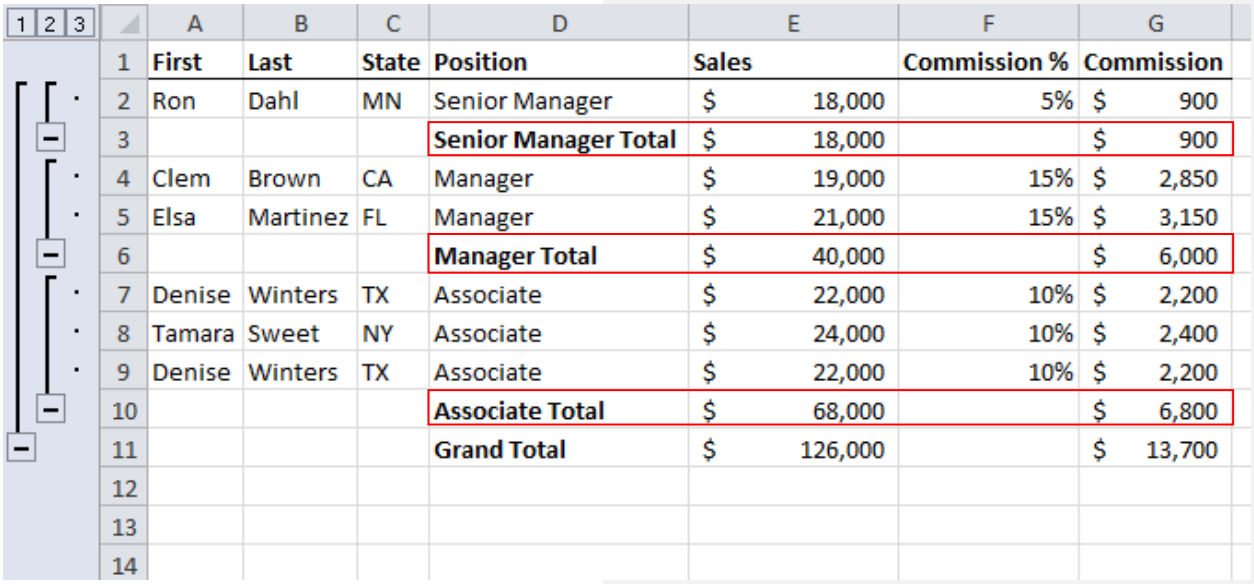
Remove subtotals

1. Click the **Data** tab on the Ribbon and click the **Subtotal** button in the Outline group.

   The Subtotal dialog box appears.

2. Click the **Remove All** button.

   The subtotals are removed.



	A	B	C	D	E	F	G
1	First	Last	State	Position	Sales	Commission %	Commission
2	Ron	Dahl	MN	Senior Manager	$ 18,000	5%	$ 900
3				**Senior Manager Total**	$ 18,000		$ 900
4	Clem	Brown	CA	Manager	$ 19,000	15%	$ 2,850
5	Elsa	Martinez	FL	Manager	$ 21,000	15%	$ 3,150
6				**Manager Total**	$ 40,000		$ 6,000
7	Denise	Winters	TX	Associate	$ 22,000	10%	$ 2,200
8	Tamara	Sweet	NY	Associate	$ 24,000	10%	$ 2,400
9	Denise	Winters	TX	Associate	$ 22,000	10%	$ 2,200
10				**Associate Total**	$ 68,000		$ 6,800
11				**Grand Total**	$ 126,000		$ 13,700
12							
13							
14							

Figure 11-21: Subtotals of sales and commissions calculated at each change in position. In other words, the subtotal of each position appears in the list, with the grand total appearing at the bottom.

Consolidating Data by Position or Category

Excel can automatically summarize or consolidate information from multiple worksheets into a single master worksheet using the Consolidate feature. For example, if you have sales data from three different offices on three different worksheets, Excel can total them for you on another worksheet.

Excel can consolidate information in three different ways: by position, by category, or by using formulas. This lesson describes the first two ways:

- **Consolidate by position:** Used when data in all the worksheets is arranged in exactly the same order and location.
- **Consolidate by category:** Used when the worksheets have the same row and column labels, but the rows and columns aren't arranged in the same order on all the worksheets. Excel uses the labels to match the data.

Tips

✓ Make sure the label spelling and capitalization are identical on each of the worksheets you want to consolidate by category.

Consolidate by position or category

Before you begin consolidating by position or category, make sure the data is arranged in labeled rows and columns without blank rows or columns. Each of the ranges you want to consolidate needs to be on a separate worksheet, with a blank worksheet for the consolidation's destination.

When consolidating, you don't actually specify whether you are consolidating by position or category—Excel knows how to consolidate based on the data range you select and whether or not the consolidating worksheets are arranged identically.

1. On the worksheet where you want to put the consolidated data, click the upper-left cell in the area where you want to put the consolidated data.

2. Click the **Data** tab on the Ribbon and click the **Consolidate** button in the Data Tools group.

   The Consolidate dialog box appears.

3. Click the **Function** list arrow and select the function you want to use to consolidate the data.

   Consolidation functions include Sum, Count or Average.

Exercise

- **Exercise File:** MonthlySales11-10.xlsx
- **Exercise:** Add a new worksheet to the workbook. Consolidate the data in E1:E6 (the Sales totals) from worksheets Jan, Feb, and Mar into the new worksheet. Copy the Sales label to the consolidated worksheet.

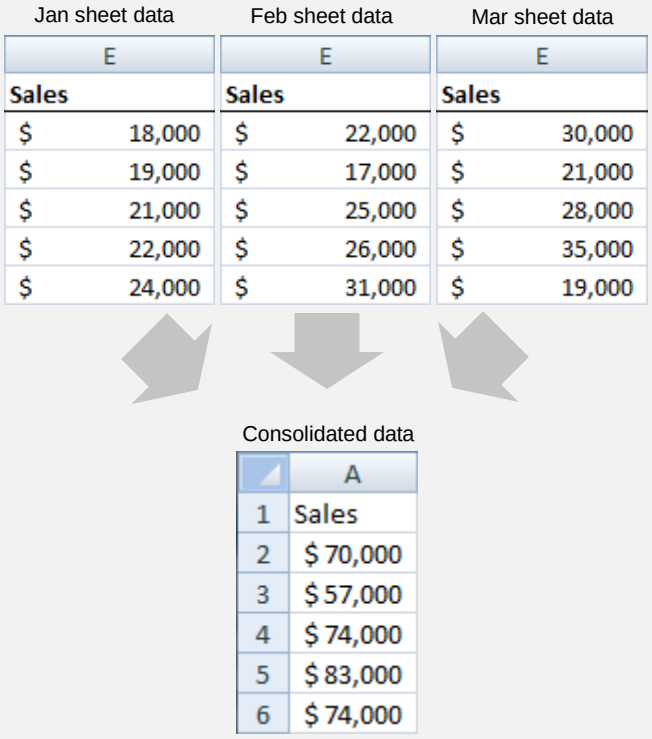


Figure 11-22: Consolidating sales data from three different worksheets.

4. Click the Reference text box. Then click the first worksheet tab you want to consolidate and select the range you want to consolidate.

   Tip: If source data is in a different workbook, click **Browse** to locate the file and click **OK**.

5. Click the **Add** button.

6. Repeat steps 4 and 5 to select the ranges on any other worksheets.

   Tip: If you're consolidating from multiple workbooks and you want the consolidation to update automatically whenever the source data changes, click the **Create links to source data** check box to select it.

7. To copy labels to the consolidated worksheet, click the **Top row** and **Left column** options.

   This tells Excel where the labels are located in the source ranges.

8. Once you're ready to consolidate, click **OK**.

   The values from the selected ranges are combined on the consolidation worksheet using the function you selected.

Tips

- ✓ If you choose to copy labels onto the consolidation worksheet, any labels that don't appear in all of the source ranges will appear in separate rows or columns on the consolidation worksheet, along with their corresponding data cells.

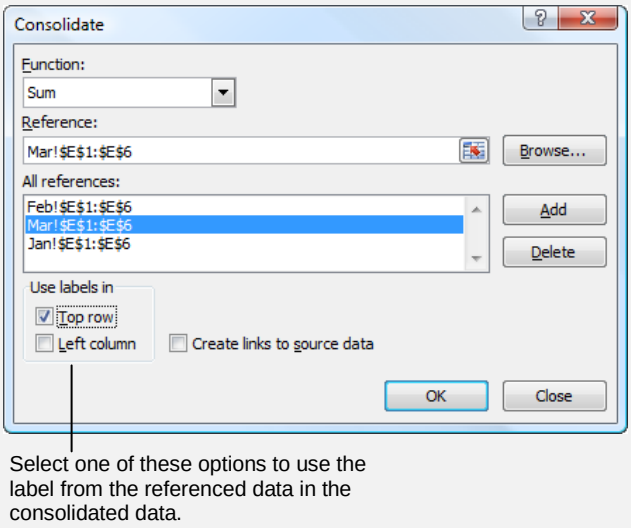


Figure 11-23: The Consolidate dialog box.

Consolidating Data Using Formulas

Consolidating with formulas is the most versatile and powerful way to consolidate data from multiple worksheets into a single worksheet because there is no prescribed format for the data that is consolidated.

The cells you reference don't need to be in the same position on each sheet, or even have the same labels, to be consolidated using this method.

1. Copy any column or row labels you want to use from the source worksheets to the consolidation worksheet, then paste the labels where you want to see consolidated data.

2. Enter a formula that references the source cells in each worksheet that you want to consolidate.

   For example, you could combine three different cells on three different worksheets by typing =SUM(Sheet2!A6,Sheet3!B7,Sheet4!D2). Or, to reference the same cell on different worksheets, you could enter =SUM(Sheet2:Sheet4!A6).

Tips

- ✓ Instead of typing each cell reference, you can type the first part of the formula, for example =SUM(, and then click the cells you want to include.
- ✓ Enter a comma between cell selections from different worksheets.
- ✓ The consolidation will automatically update when the source cell ranges are changed.

Exercise

- **Exercise File:** MonthlySales11-11.xlsx
- **Exercise:** Find the total commissions paid to managers in the first quarter of the year. Copy the Commission label from the Jan worksheet to cell C1 of the Sheet2 worksheet.

  In cell C2 on Sheet2, enter =SUM(
  Then select cells G3:G4 on the Jan sheet, type a comma, select G3:G4 on the Feb tab, type a comma, and select G3:G4 on the Mar tab. Press Enter.

  The total 19,650 appears in cell C2 on Sheet2.

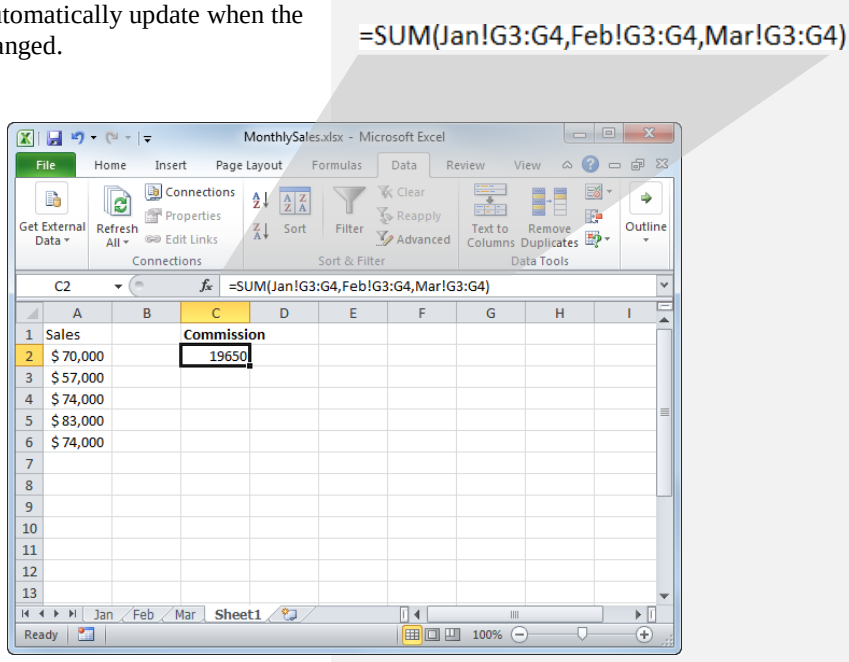


Figure 11-24: Consolidating data using a formula.

Analyzing Data Review

Quiz Questions

107. To make sure you don't lose the original values for the changing cells, you should use the original cell values in the first scenario you create. (True or False?)

108. The result cells you specify in the Scenario Summary dialog box are _____.
   A. the total row of your scenarios
   B. the data labels used in your scenarios
   C. the cells that you change in the scenarios
   D. the cells that are affected by the changing cells in the scenarios

109. You can create either a one- or a two-input data table. (True or False?)

110. Use Goal Seek when _____.
   A. you don't know the result of a formula, but you know the formula input values
   B. you know the desired result of a formula, but not the input value the formula needs to arrive at the result
   C. you want to quickly create scenarios
   D. you know the result of one formula, but not the result of another formula that references that formula

111. Solver is an optional Excel Add-In feature. (True or False?)

112. Which of the following is NOT a delimiter that Excel can use to split cell data?
   A. Space
   B. Semicolon
   C. Comma
   D. All of these are common delimiters

113. You can group rows and columns manually by selecting them. (True or False?)

114. You should sort data before you group and summarize its information using the Subtotals command. (True or False?)

115. You can consolidate by _____ when the data in all the worksheets is arranged in exactly the same order and location.
   A. position
   B. category
   C. absolute reference
   D. column

116. The cells you reference don't need to be in the same position on each sheet, or even have the same labels, to be consolidated using formulas. (True or False?)

Quiz Answers

107. True. To make sure you don't lose the original values for the changing cells, you should use the original cell values in the first scenario you create.

108. D. The result cells you specify in the Scenario Summary dialog box are the cells that are affected by the changing cells in the scenarios.

109. True. You can create either a one- or a two-input data table

110. B. Use Goal Seek when you know the desired result of a formula, but not the input value the formula needs to arrive at the result.

111. True. Solver is an optional Excel Add-In feature.

112. D. All of these are common delimiters that Excel can use to split cell data.

113. True. You can group rows and columns manually by selecting them.

114. True. Always sort data before using the Subtotals command.

115. A. You can consolidate by position when the data in all the worksheets is arranged in exactly the same order and location.

116. True. The cells you reference don't need to be in the same position on each sheet, or even have the same labels, to be consolidated using formulas.

12

12Working with the Web and External Data

Excel's Internet features let you add hyperlinks to your workbooks to link them to another workbook, a file created in another program, or even a Web page. You can also connect to data sources through the Web, or to other databases.

Inserting a Hyperlink

In this lesson, you will learn how to use hyperlinks in Excel. A hyperlink is text or an image that points to a file, a specific location in a file, or a Web page on your computer, on a network, or on the Internet. Whenever you click on a hyperlink, you jump to the hyperlink's destination (if it's available).

A hyperlink is usually indicated by colored and underlined text. On the Internet, hyperlinks are used all the time to move between different Web pages.

1. Select the cell you want to use for the hyperlink and enter the text or image you want to hyperlink.

2. Click the **Insert** tab on the Ribbon, and click the **Hyperlink** button in the Links group.

Other Ways to Insert a Hyperlink: Select the text and press **<Ctrl>** + **<K>**. Or, right-click the cell and select **Hyperlink** from the contextual menu.

The Insert Hyperlink dialog box appears. There are four different types of Hyperlink destinations you can create:

- **Existing File or Web Page:** Creates a link that takes you to another Excel workbook or to a file created in another program, such as a Microsoft Word document, or to a Web page on the Internet.
- **Place in This Document:** Takes you to a bookmark in the same document.
- **Create New Document:** Creates a new Excel workbook and inserts hyperlinked text into your existing workbook that connects to the new one.
- **E-mail Address:** Creates a clickable e-mail address.

3. Either browse to or enter the hyperlink's destination and click **OK**.

The hyperlink is created. Now whenever you click the hyperlink, Excel will take you to the hyperlink's destination file or the location that you specified.

Tips

✓ To edit an existing hyperlink, right-click the hyperlink and select **Edit Hyperlink** from the contextual menu.

✓ To remove a hyperlink, right-click the hyperlink and select **Remove Hyperlink** from the contextual menu.

Exercise

- **Exercise File:** TradeShow12-1.xlsx, Mileage.xlsx
- **Exercise:** Open the TradeShow12-1.xlsx workbook. Type "Mileage Report" in cell A10. Select cell A10 and insert a hyperlink to the Mileage file in your Practice folder.

  Click the hyperlink you just created to open the Mileage.xlsx file.

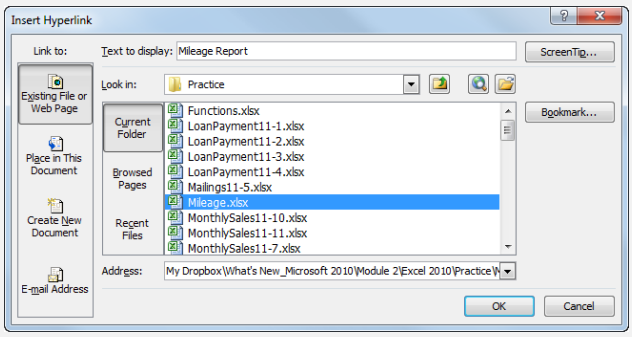
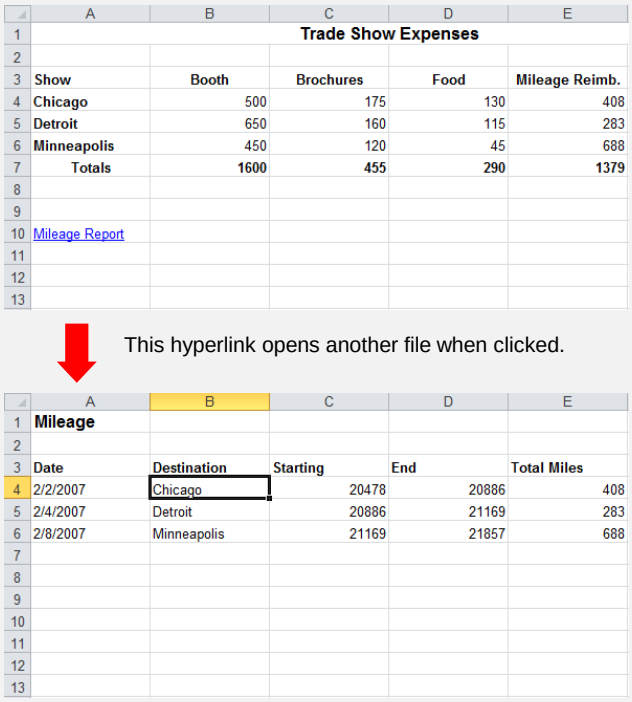


Figure 12-1: The Insert Hyperlink dialog box.



	A	B	C	D	E
1			Trade Show Expenses		
2					
3	Show	Booth	Brochures	Food	Mileage Reimb.
4	Chicago	500	175	130	408
5	Detroit	650	160	115	283
6	Minneapolis	450	120	45	688
7	Totals	1600	455	290	1379
8					
9					
10	Mileage Report				
11					
12					
13					

This hyperlink opens another file when clicked.

	A	B	C	D	E
1	Mileage				
2					
3	Date	Destination	Starting	End	Total Miles
4	2/2/2007	Chicago	20478	20886	408
5	2/4/2007	Detroit	20886	21169	283
6	2/8/2007	Minneapolis	21169	21857	688
7					
8					
9					
10					
11					
12					
13					

Figure 12-2: Click hyperlinked text to display the linked file or Web page.

Importing Data from an Access Database or Text File

Excel can connect to external data sources including other files, databases or Web pages. In order to work with data from an external source, you need to create a data connection in Excel.

Import data from an Access database

1. Click the **Data** tab on the Ribbon and click the **From Access** button in the Get External Data group.

   The Select Data Source dialog box appears. By default, it searches for data sources available on your computer and displays them in the dialog box.

   Trap: If the Get External Data group does not appear on the Ribbon, click the **Get External Data** button and select an option from the list.

2. Browse to and select the database file that contains the data you want to import. Click the **Open** button.

   The Select Table dialog box appears. Here you need to select which table you want to import from the database.

   Tip: If the Select Table dialog box does not appear, there is only one table in the database, and it is automatically selected.

3. Select a table and click **OK**.

   The Import Data dialog box appears. Here you tell Excel how you want the data displayed in your workbook—as a table, PivotTable, etc.—as well as where you want to put the data—in the existing worksheet or in a new one.

4. Select an option for how you want to view the data and then select an option for where you want to put it. Click **OK**.

   Tip: If you select to put the data in your existing worksheet, also select the cell where you want to put it.

   The data is imported from the Access database into your workbook.

Tips

- ✓ If, while connecting to external data, you see a security notice telling you that you are connecting to an external source that may not be safe, click **OK**.

Exercise

- **Exercise File:** Board of Directors Meeting.txt
- **Exercise:** Create a new workbook and import the Board of Directors Meeting.txt file data into it. In the Text Import Wizard, leave the default options selected. Save the new workbook as April.xlsx.

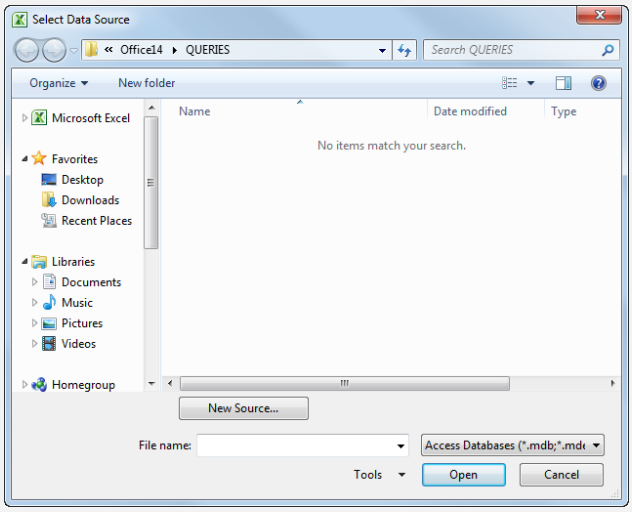


Figure 12-3: The Select Data Source dialog box.

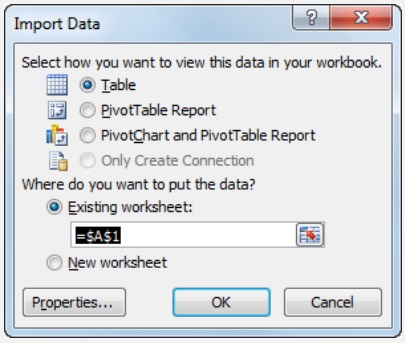


Figure 12-4: Select how you want to import the data into the workbook in the Import Data dialog box.

	A	B	C	D	E	F	G	H
1	Title	First Name	Last Name	Address Line 1	City	State	ZIP Code	TravelDate
2	Mr.	James	Britt	550 Pine Rd	Cedar Falls	MN	55543	7/8/07
3	Mrs.	Kim	Richter	103 7th St.	Mankato	MN	56001	4/5/07
4	Mr.	Joe	Pauls	39 Park Ave.	Hudson	WI	55318	6/9/07
5	Mrs.	Susan	Cho	4311 Riverside Lane	Minneapolis	MN	55439	1/8/07
6	Mrs.	Jane	Erickson	900 Redwood St. Apt #501	St. Paul	MN	55981	7/4/07
7	Mr.	Jeff	Mitchell	P.O. Box 103	Le Seuer	MN	56058	6/10/07
8	Mrs.	Melissa	Peterson	1536 Penkwe Way	Rock Island	IL	61201	

Figure 12-5: The Access database data imported into a table in Excel.

Import data from a text file

You can also import data from text files with .txt and .csv extensions.

1. Click the **Data** tab on the Ribbon and click the **From Text** button in the Get External Data group.

   The Import Text File dialog box appears.

   Trap: If the Get External Data group does not appear on the Ribbon, click the **Get External Data** button and select an option from the list.

2. Browse to and select the text file that contains the data you want to import. Click the **Import** button.

   Step 1 of the Text Import Wizard appears. Here you need to select whether the file is delimited or fixed width. You also need to select the row of text from which you want to start importing data.

3. Select a file type and enter the row at which you want to start importing. Click **Next**.

   Step 2 of the Text Import Wizard appears. Specify the delimiters used to separate the data in the text file.

4. Select delimiters or specify fixed width column breaks. Click **Next**.

   Step 3 of the Text Import Wizard appears. Select a column and choose the format you want to use for its data.

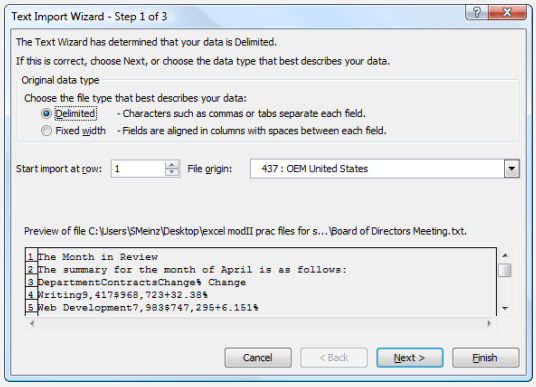
   You can also select "Do not import column (skip)" and the column will not be included in the Excel workbook.

5. Specify a format for each column, or skip the column. Click **Finish**.

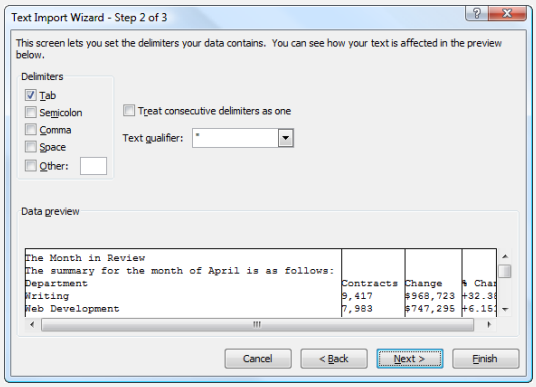
   The Wizard closes and the Import Data dialog box appears, asking you where you want to import the data in the workbook.

6. Select where you want to put the imported data. Click **OK**.

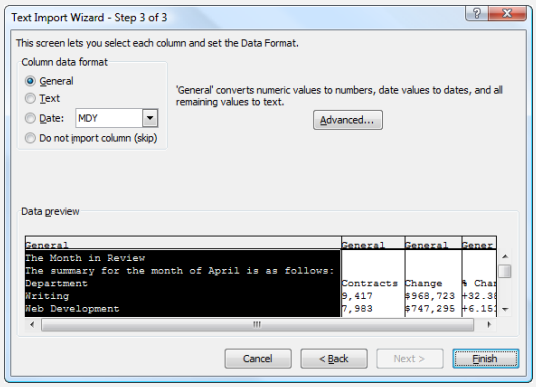
   The data from the text file appears in the workbook.



Step 1: Select the file type that describes the data you want to import from the text file.



Step 2: Set the delimiter used to separate data in the text file. A preview is shown of how the data looks with the selected delimiter.



Step 3: Select a column and choose the format you want to use for the data. Or, select the option to skip the column.

Figure 12-7: Importing data with the Text Import Wizard.

	A	B	C	D	E
1	The Month in Review				
2	The summary for the month of April is as follows:				
3	Department	Contracts	Change	% Change	
4	Writing	9,417	$968,723	32.38%	
5	Web Development	7,983	$747,295	6.15%	
6	Design	5,205	$529,207	13.80%	
7					
8					
9					
10					
11					
12					

Figure 12-6: Data imported from a text file.

Importing Data from the Web and Other Sources

Instead of copying and pasting data into a worksheet from a Web page—which normally causes no end of formatting problems—you can import data from a growing number of Web sites. You can also get data from a variety of sources such as a SQL server.

Tips

✓ 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 to assist you.

Import data from the Web

1. Click the **Data** tab on the Ribbon and click the **From Web** button in the Get External Data group.

   The New Web Query window opens, displaying the Internet Explorer Home page.

   Trap: If the Get External Data group does not appear on the Ribbon, click the **Get External Data** button and select an option from the list.

2. Enter the address of the Web site you want to visit in the Address box and click **Go**.

   If the Web site is set up for you to export data, you'll see table selection arrows next to the pieces of data.

3. Click the table selection arrows next to the data you want to import, then click **Import**.

   Tip: When you click a yellow table selection arrow, it turns into a green checkmark.

   The Import Data dialog box appears. Here you can specify where you want to put the data.

4. Select an option for where you want to put the data. Click **OK**.

   The Web data appears in the workbook.

Exercise

- **Exercise File:** None required.
- **Exercise:** Create a new workbook and import data from http:// moneycentral.msn.com.

  Close the workbook without saving.

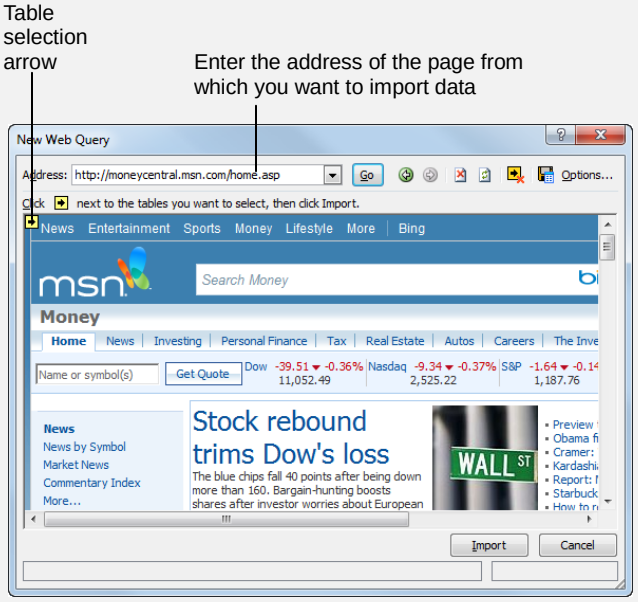


Figure 12-8: The New Web Query Window.

Import data from other sources

1. Click the **Data** tab on the Ribbon. Click the **From Other Sources** button in the Get External Data group.

   Trap: If the Get External Data group does not appear on the Ribbon, click the **Get External Data** button and select an option from the list.

   Several data source options appear.

2. Select a data source, then follow the onscreen instructions or instructions from your organization's technical support staff to complete the connection.

Working with Existing Data Connections

Besides allowing you to add connections, Excel has tools to help you view and manage the data connections that are accessible in your workbook, on your computer, or on your network.

Access existing connections

If you have added connections that you want to display, or if you want to open a connection that Excel has built in for you, you can use the Existing Connections dialog box.

1. Click the **Data** tab on the Ribbon and click the **Existing Connections** button in the Get External Data group.

   Trap: If the Get External Data group does not appear on the Ribbon, click the **Get External Data** button and select an option from the list.

   The Existing Connections dialog box appears. Here you can see the connections in the open workbook, on your network, or on your computer. Excel has automatically included a few Web site connections in the "on your computer" section.

2. Select the connection you want to display and click the **Open** button.

   The Import Data dialog box appears.

3. Select how and where you want to display the data in your workbook and click **OK**.

   The data appears in your workbook.

Manage connections

You can see the connections that are present in your workbook and change their properties using the commands in the Connections group.

1. Click the **Data** tab on the Ribbon.

   The Connections group offers several options for working with your workbook's connections:

   - **Connections button:** Display the Workbook Connections dialog box where you can see the connections and locations of connections in your workbook. Here you can add, remove, refresh, or adjust the properties of the connections.

Exercise

- **Exercise File:** April.xlsx
- **Exercise:** Click cell outside the A1:D6 data range and view the existing connections from which you can get external data. Close the dialog box.

  Click a cell within the A1:D6 data range and click the Connections button in the Connections group. Click "Click here to see where the selected connections are used" in the Workbook Connections dialog box. Close the dialog box.

  Click the Properties button in the Connections group to view the properties for the external data range. Close the dialog box.

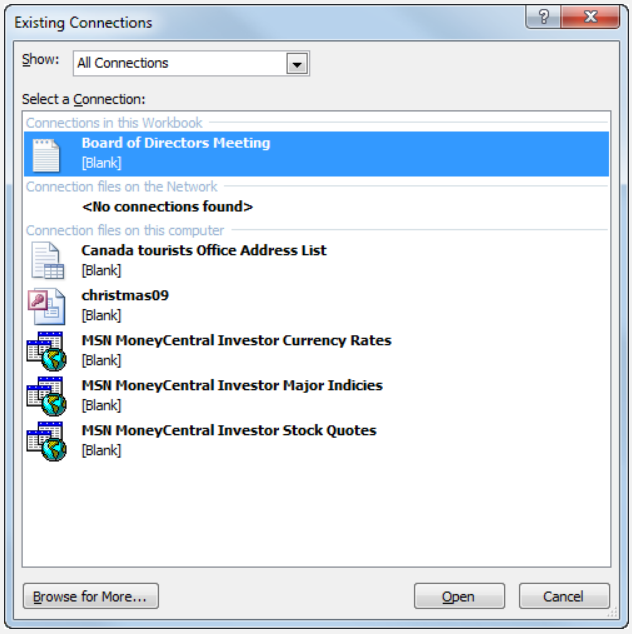


Figure 12-9: The Existing Connections dialog box.

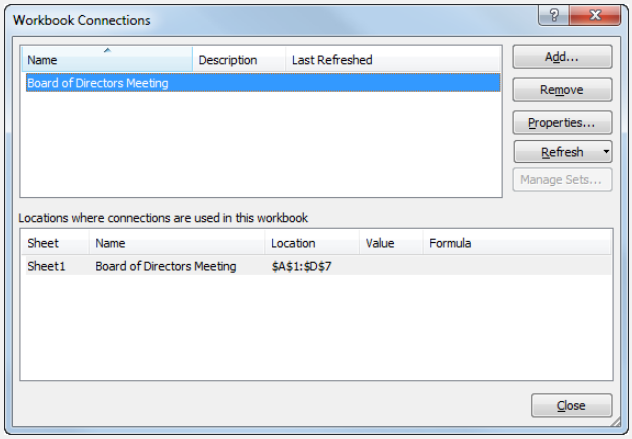


Figure 12-10: The Workbook Connections dialog box.

- **Properties button**: Change the connection properties of the imported data currently selected in your worksheet. Properties include the name of the connection, formatting and layout, and refresh options. Refer to the table below, *Data Range Properties*, for more information about properties.
- **Refresh All button:** Updates workbook data to match the external data source.
- **Edit Links:** Shows the other files the workbook is connected to so you can edit or remove the links.

2. Click a button in the Connections group and work with the connection as necessary.

Tips

✓ When working with workbooks that have data connections, a Security Warning banner may appear below the Ribbon telling you that connections have been disabled. Click the **Options** button, select **Enable this content**, and click **OK**.

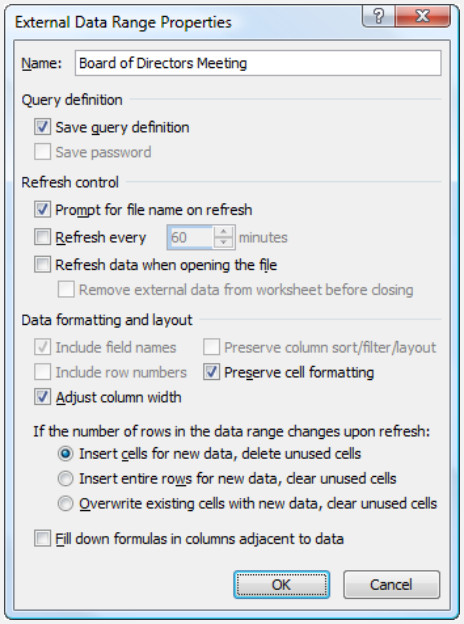


Figure 12-11: The External Data Range Properties dialog box.

Table 12-1: Data Range Properties

Save query definition	Check this option so your worksheet remembers where to go when it refreshes the data. Uncheck it so the data source cannot be refreshed again.
Save password	Check this option so that Excel automatically enters the password when the data source is refreshed.
Enable background refresh	Check this option so that when you refresh the data source you can continue working in Microsoft Excel. Otherwise, you must wait until Excel is completely finished refreshing the data source to work with the program.
Refresh every	Check this option to refresh the data source at specific intervals, and then enter the number of minutes you want between refreshes in the minutes box.
Refresh data on file open	Check this option so that the data source automatically refreshes when you open the workbook. The Save query definition check box must be selected to refresh the data.
Remove external data from worksheet before saving	Check this option so that Excel deletes the data source information when you save the worksheet.
Include field names	Check this option so that Excel automatically inserts the data source's field names as column labels for the data source.
Preserve column sort/filter/layout	Check this option to preserve any sort order, filtering or column order changes you make in a data source when it is refreshed.
Include row numbers	Check this option to allow the data source to use its own row numbering.
Preserve cell formatting	Check this option to retain cell formatting that you apply in Microsoft Excel when you refresh the data source.
Adjust column width	Check this option so that Excel automatically adjusts its column width to display the imported data source information.
Fill down formulas in columns adjacent to data	Check this option if you want Excel to copy formulas in a data source to new columns when it is refreshed.

Working with the Web and External Data Review

Quiz Questions

117. A hyperlink is text or an image that points to a file, a specific location in a file, or a Web page on your computer, on a network, or on the Internet. (True or False?)

118. To import data into Excel, use the buttons in the _____ group on the Data tab on the Ribbon.
   A. Connect to External Data
   B. Get External Data
   C. Import Data
   D. Import Files

119. When you click a yellow table selection arrow on a Web page, it turns into a green checkmarked box. (True or False?)

120. Which of the following is NOT a button in the Connections group on the Data tab on the Ribbon.
   A. Hyperlink
   B. Refresh All
   C. Properties
   D. Connections

Quiz Answers

117. True. A hyperlink is text or an image that points to a file, a specific location in a file, or a Web page on your computer, on a network, or on the Internet.

118. B. To import data into Excel, use the buttons in the Get External Data group on the Data tab on the Ribbon.

119. True. When you click a yellow table selection arrow on a Web page, it turns into a green checkmarked box.

120. A. Hyperlink is not a button in the Connections group.

13

13Working with Macros

If you find yourself performing the same task over and over again, you might want to consider creating a macro to complete the task for you. A macro helps you perform routine tasks by automating them. Instead of manually performing a series of time-consuming, repetitive actions, you can record a single macro that does the entire task all at once for you.

This entire chapter is devoted to macros. We start with the basics: learning how to record and play a macro. Then you'll move into some more advanced topics including how to write and edit macros using the Visual Basic programming language.

Using Exercise Files
This chapter suggests exercises to practice the topic of each lesson. There are two ways you may follow along with the exercise files:

- Open the exercise file for a lesson, perform the lesson exercise, and close the exercise file.
- Open the exercise file for a lesson, perform the lesson exercise, and keep the file open to perform the remaining lesson exercises for the chapter.

The exercises are written so that you may "build upon them", meaning the exercises in a chapter can be performed in succession from the first lesson to the last.

Recording a Macro

A macro is a series of Excel commands and instructions that are recorded so that they can be executed as a single command. Instead of manually performing a series of time-consuming, repetitive actions in Excel yourself, you can create a macro to perform the task for you.

There are two ways to create a macro: by recording them or by writing them in Excel's Visual Basic programming language. This lesson explains the easy way to create a macro—by recording the task(s) you want the macro to execute for you.

When you record a macro, imagine you're being videotaped; everything is recorded—all your commands, the data you enter, even any mistakes you make. Before recording a macro, it's helpful to write down a script that contains all the steps you want the macro to record. Practice or rehearse your script a couple times, to make sure it works, before you actually record it. If you do make a mistake while recording a macro, don't worry—you can always delete the existing macro and try again or edit the macro's Visual Basic source code to fix the mistake.

1. Click the **View** tab on the Ribbon and click the **Macros** button list arrow in the Macros group. Select **Record Macro**.

   The Record Macro dialog box appears.

   Tip: If you click the **Macros** button list arrow and select **Use Relative References**, actions are recorded relative to the initially selected cell.

2. Enter a name for the macro and press **<Tab>**.

   Next you can enter a shortcut key that will allow you to run the macro by pressing the <Ctrl> + <shortcut key>.

3. Enter a shortcut key, if desired.

   Now you can tell Excel where to store the macro. You have three choices:

   - **Personal Macro Workbook:** If you want a macro to be available whenever you use Microsoft Excel, store the macro in your Personal Macro Workbook.
   - **New Workbook:** Stores the macro in a new workbook.
   - **This Workbook:** Stores the macro in the active or current workbook.

Exercise

- **Exercise File:** WeeklySales13-1.xlsx
- **Exercise:** Create a macro that inserts the current date with Bold and Center Alignment formatting:
  Click cell B3. Open the Record Macro dialog box and name the new macro "DateStamp". Assign the macro the shortcut <Ctrl> + <d>, make sure This Workbook is selected, and enter the description "This macro inserts the current date". Click OK.

  To record the macro, type =Today() and click the Enter button on the Formula Bar. Make sure cell B3 is selected, copy it, and use the Paste Special command to paste values only in cell B3. Apply bold and center formatting. Stop recording the macro.

  Save the workbook as a macro-enabled file type (.xlsm).

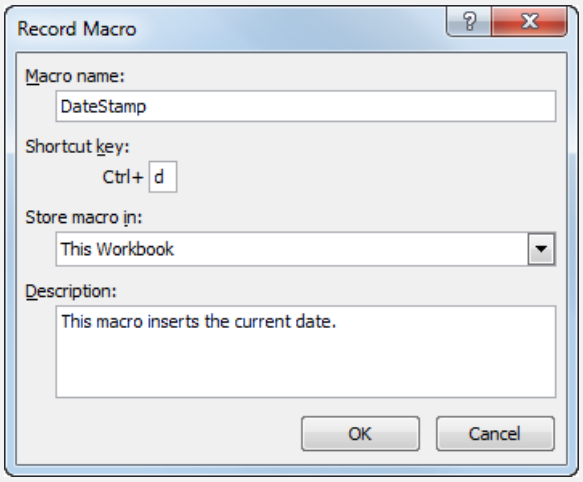


Figure 13-1: The Record Macro dialog box.

4. Click the **Store macro in** list arrow and select where you want to store the macro.

5. Click in the Description box and enter a description for the macro, if desired.

6. Click **OK**.

   Now comes the important part—recording the macro.

7. Record the macro: perform the actions you want to include in your macro.

   Once all the actions have been recorded, stop recording.

8. Click the **Macros** button list arrow in the Macros group and select **Stop Recording**.

   The macro is recorded and ready to use.

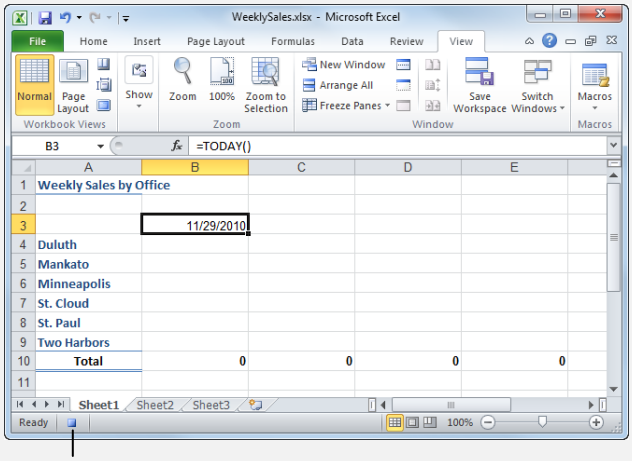
   Other Ways to Stop Recording:
   Click the **Stop Recording** button on the status bar.

9. Save the workbook. Click **No** to save the file as a macro-enabled workbook.

   The Save As dialog box appears.

10. Click the **Save as type** list arrow and select **Excel Macro-Enabled Workbook (.xlsm)** from the list. Click **Save**.

    The workbook is saved, and the macros will be available next time the workbook is opened.



Stop Recording button

Figure 13-2: The Stop Recording button in the status bar indicates all your actions are being recorded in the macro. Click the Stop Recording button to stop recording the macro.

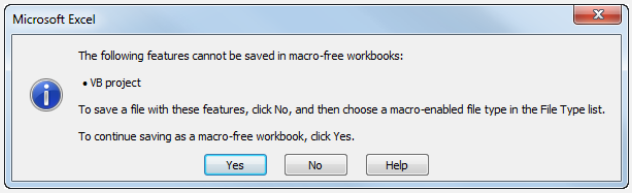


Figure 13-3: This dialog box appears to warn you that macros must be saved in a different file type.

Playing and Deleting a Macro

Once you've recorded a macro, you're ready to view and play it.

Tips

✓ If you see a Security Warning message beneath the Ribbon telling you that macros have been disabled, click the **Enable Content** button.

Play a macro

1. Click the **View** tab on the Ribbon and click the **Macros** button list arrow in the Macros group. Select **View Macros**.

   The Macro dialog box appears. Here you can see the macros that you have recorded.

2. Select the macro you want to run and click the **Run** button.

   The macro runs, performing the steps you recorded.

Delete a macro

1. Click the **View** tab on the Ribbon and click the **Macros** button list arrow in the Macros group. Select **View Macros**.

   The Macro dialog box appears.

2. Select the macro you want to delete and click the **Delete** button.

3. Click **Yes**.

   The macro is deleted.

Exercise

- **Exercise File:** WeeklySales13-2.xlsm
- **Exercise:** Run the DateStamp macro so that the current date appears in cell C3.

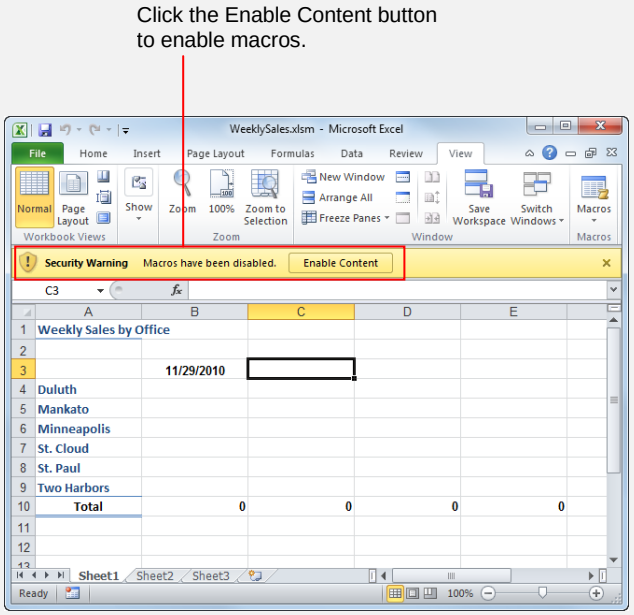


Figure 13-4: Macros are usually disabled when the file is opened, even if the file is saved to be macro-enabled.

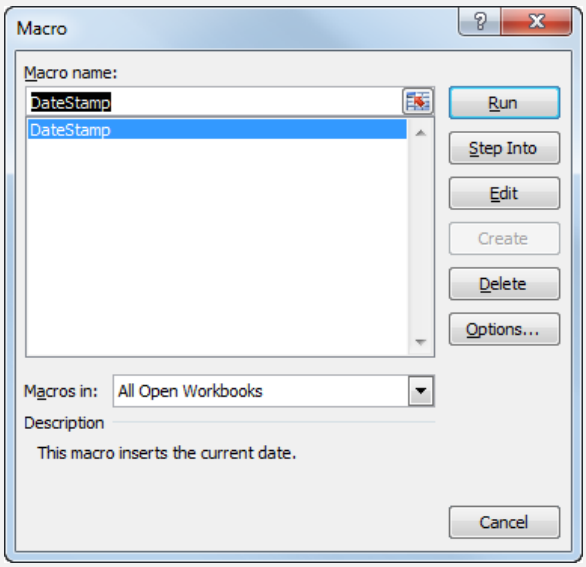


Figure 13-5: Playing a macro in the Macro dialog box.

Adding a Macro to the Quick Access Toolbar

To make macros fast and easy to access, you can add them as buttons on the Quick Access Toolbar.

Tips

✓ It may seem obvious, but you must create a macro before you can add it to the Quick Access Toolbar.

1. Click the **Customize Quick Access Toolbar** button next to the Quick Access Toolbar and select **More Commands**.

   The Quick Access Toolbar tab of the Excel Options dialog box appears.

2. Click the **Choose commands from** list arrow and select **Macros**.

   A list of your macros appears.

3. Select the macro you want to add to the Quick Access Toolbar and click the **Add** button.

   The macro now appears in the list on the right side of the dialog box. At this point, you can select a symbol to represent your macro on the toolbar.

4. Click the **Modify** button.

   The Modify Button dialog box appears, displaying dozens of symbols to choose from.

5. Select a symbol.

   You can also modify the display name that will appear when you hover over the button on the toolbar.

6. (Optional) Enter a different name for the button in the Display name box.

7. Click **OK** to close the Modify Button dialog box. Click **OK** to close the Excel Options dialog box.

   The macro appears as a button on the Quick Access Toolbar. Now you can click it to run the macro.

8. Click the macro button on the Quick Access Toolbar.

Tips

✓ To remove a macro from the Quick Access Toolbar, right-click the button and select **Remove from Quick Access Toolbar**.

Exercise

- **Exercise File:** WeeklySales13-3.xlsm
- **Exercise:** Add the DateStamp macro to the Quick Access Toolbar, selecting the green triangle symbol to represent the macro on the Toolbar.

  Then remove the DateStamp macro from the Quick Access Toolbar.

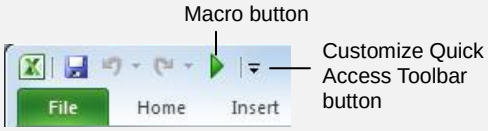


Figure 13-6: The Quick Access Toolbar with a macro button added.

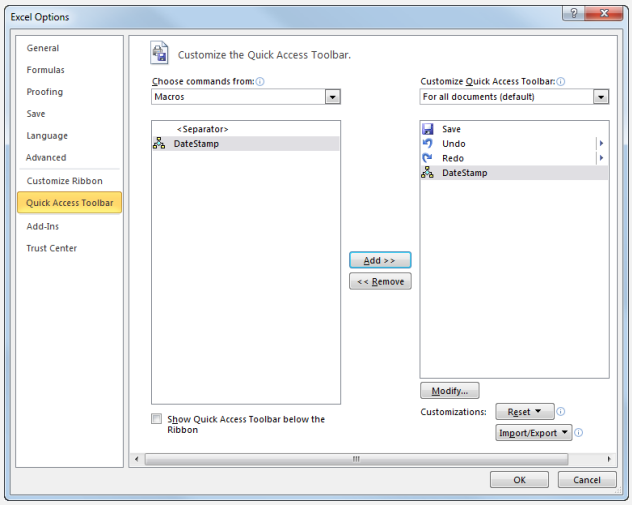


Figure 13-7: Adding the DateStamp macro button to the Quick Access Toolbar.

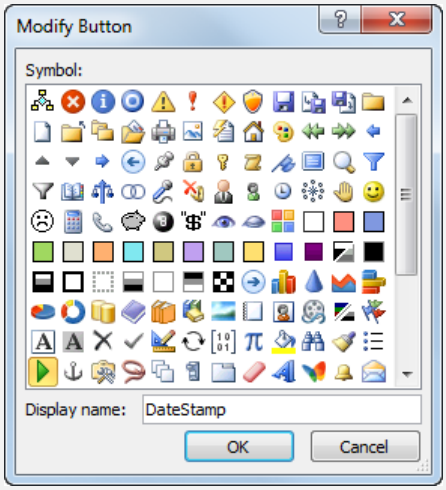


Figure 13-8: Selecting a button symbol in the Modify Button dialog box.

Editing a Macro's Visual Basic Code

This lesson introduces you to the Visual Basic (also called VB or VBA) programming language—the code Excel uses to record macros. Using the Visual Basic language and the Visual Basic editor you can make minor changes to your macros once you have recorded them.

The best way to learn about Visual Basic is to view existing code. In this lesson we'll look at how to view and edit the code for an existing macro.

1. Click the **View** tab on the Ribbon and click the **Macros** button list arrow in the Macros group. Select **View Macros**.

   The Macro dialog box appears. Here you can see the macros that you have recorded.

2. Select the macro you want to edit and click the **Edit** button.

   The Microsoft Visual Basic Editor program appears. Those funny-looking words are Visual Basic—the language that was used by Excel to record the macro you created.

   You don't have to learn Visual Basic to be proficient at Excel, but knowing the basics can be helpful if you ever want to modify an existing macro. If you take a close look at the code for your macro, some of the procedures should make a little sense to you. For example, if your macro contains a copy or paste command, you may see the text "Selection.Copy" or "Selection.Paste".

   You can delete sections of code to delete certain actions from the macro, or edit the code to change the macro's actions.

3. Edit the macro's code as desired, then click the **Save** button on the Standard toolbar.

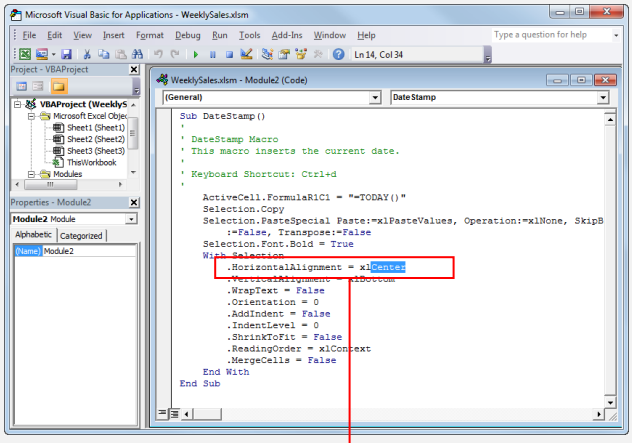
4. Click the **Close** button in the upper right-hand corner.

   The Visual Basic Editor window closes.

Exercise

- **Exercise File:** WeeklySales13-4.xlsm
- **Exercise:** Open the DateStamp macro in editing mode. Edit the code so that the date is horizontally aligned to the left instead of on center.

  Run the macro in cell D3 to see that the macro enters the date so it is aligned to the left side of the cell.



Edit code by finding the property you want to change, and changing its code. For example, this property controls if the text is aligned to the Left, Center, or Right side of the cell.

Figure 13-9: Editing a macro's code using the Microsoft Visual Basic Editor.

Inserting Copied Code in a Macro

Unless you're a programmer, it's unlikely that you will ever learn many of Visual Basic's hundreds of functions, statements, and expressions—and that's okay.

A very useful technique you can use to edit and create macros is to insert code that has been copied, or plagiarized, from another macro. This technique lets you add steps to your existing macros by recording the steps you want to add in new macros, copying the appropriate code and inserting it into the existing macro.

Display the Developer tab and enable macros

Before copying code, we'll display the Developer tab and enable macros by turning off macro security.

1. Open any workbook, click the **File** tab on the Ribbon and select **Options**.

   The Excel Options window appears.

2. Click the **Customize Ribbon** tab. Click **Developer** check box in the Customize the Ribbon column. Click **OK**.

   Next, enable all macros.

3. Click the **Developer** tab on the Ribbon and click the **Macro Security** button in the Code group.

   The Trust Center window appears, displaying the Macro Settings.

4. Select the **Enable all macros…** option and click **OK**.

   Tip: For security purposes, once you're done working with macros you'll want to disable them again in the Trust Center.

   Other Ways to Enable Macros for a Single Workbook:
   When a file that uses macros is open, click the **Enable macros** button in the Security Warning bar.

Insert code in a macro

1. Open the workbooks containing the macros you want to work with.

   This includes both the workbook with the macro to be copied from and the workbook with the macro to be pasted into.

Exercise

- **Exercise File:** ExpenseReport13-5.xlsm
- **Exercise:** The object of the exercise is to copy the code that inserts today's date from the DateStamp macro into the ExpenseFillin macro.

  First, open the ExpenseReport13-5 workbook, display the Developer tab and enable macros.

  Open the DateStamp macro and copy the block of code starting at the line `ActiveCell.FormulaR1C1 = "=TODAY()"` and ending at the line `Selection.PasteSpecial Paste:=xlPasteValues`.

  Paste this code into the ExpenseFillin macro under the line `Range("C5").Select`

  Save the changes to the ExpenseFillin macro.

  Run the ExpenseFillin macro in cell A5.

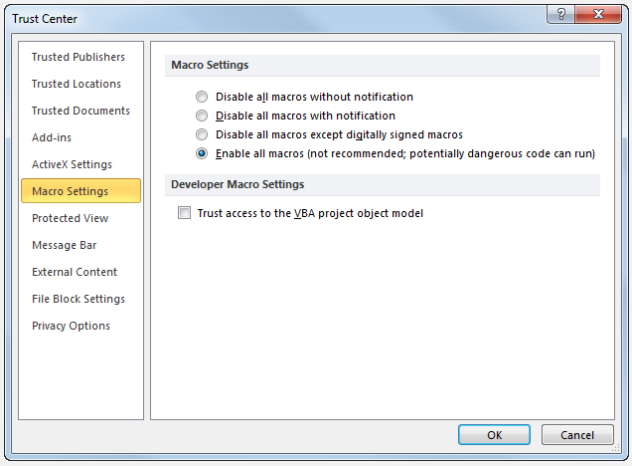


Figure 13-10: You can enable macros in the Trust Center so that macros are never blocked. Only do this if you are sure that files that you open that have macros are safe.

2. Click the **View** tab on the Ribbon and click the **Macros** button in the Macros group. Select the macro that contains the code you want to copy and click the **Edit** button.

   The Visual Basic Editor window opens. In the Project pane on the left side of the window you'll see the macros associated with all the workbooks that are open.

3. In the Project pane on the left side of the window, click the expand button to expand the source workbook's project until you see the Modules folder. Expand this folder and double-click the module that contains the code you want to copy.

   The code for the selected module, or macro, appears in the window to the right.

   Tip: A module is just like a folder where Excel puts the code each time you record a macro.

4. Scroll through the code until you see the code you want to copy, then select the code and click the **Copy** button on the Standard toolbar.

   The code is copied.

   Now open the macro in which you want to paste the copied code.

5. In the Project pane along the left side of the window, open the module in which you want to paste the copied code.

   The code for the selected module, or macro, is displayed in the window.

   Tip: If the macros you want to copy and paste between are in the same workbook, they appear in the code part of the window together. They are simply separated by a line.

6. Click where you want to paste the code and click the **Paste** button on the Standard toolbar.

   The copied code is inserted into the macro.

7. Click the **Save** button on the Standard toolbar, then click the Visual Basic Editor window's **Close** button.

   The Visual Basic Editor window closes. The macro with the newly inserted code is now ready to be run.

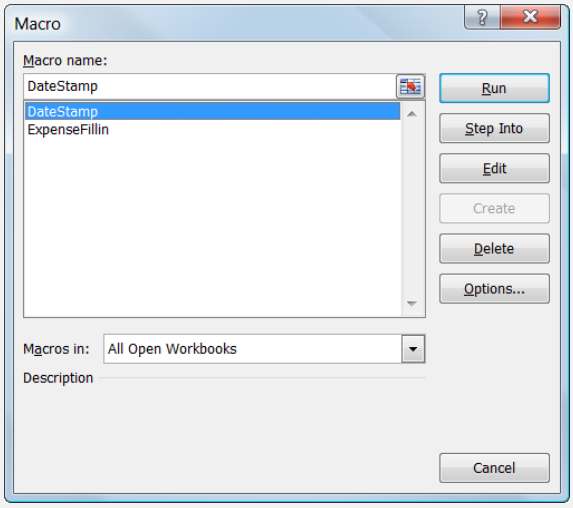


Figure 13-11: The Macro dialog box.

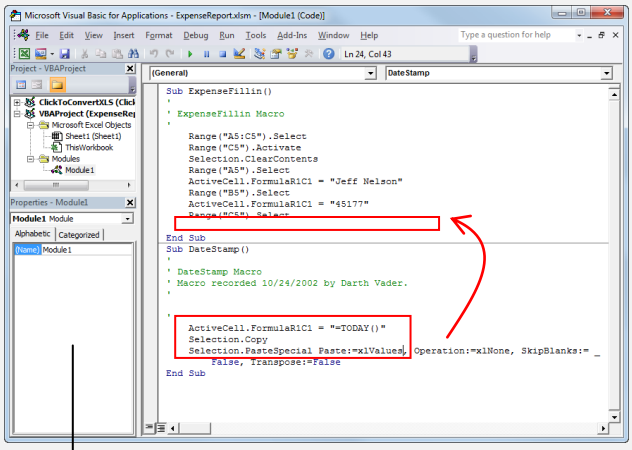


Figure 13-12: An example of copying code from one macro into another. The macros for the open workbook are displayed on the same screen. A line separates the macros.

Declaring Variables and Adding Remarks to VBA Code

You've probably heard that programming is a lot like algebra. In algebra you use variables, like *r* in the equation $\pi r2$. Programming uses variables too. You should always declare any variables when you use them in code. Declaring a variable is like telling Excel "I'm going to be using a variable named *r* in my code."

This lesson explains how to declare variables and how to add remarks—or declare variables—in your code.

Declare a variable (DIM statement)

In Visual Basic, you use the DIM statement to declare variables, using the syntax DIM *variablename* As *datatype*.

1. Open the workbook that contains the macro with the code you want to change.

2. Click the **View** tab on the Ribbon and click the **Macros** button in the Macros group.

   The Macros dialog box appears.

3. Select the macro that contains the code you want to work on and click **Edit**.

   The macro opens in the VBA window.

4. Click where you want to add the statement in the code. Add a Dim statement at the beginning of the procedure, using the syntax Dim *VariableName* As *DataType*.

   Here's what the arguments of the Dim statement mean:

   - **VariableName:** The name of the variable. Example: EmployeeName.
   - **DataType:** The type of data you want to use in the variable, such as a number, date, or text. See the table on the next page, *Data Types used in DIM Statements* for a list of data types that can be used.

   Make sure you add an As between the variable name and the data type. Example: As String.

Exercise

- **Exercise File:** ExpenseReport13-6.xlsm
- **Exercise:** Open the ExpenseFillin macro in the Visual Basic Editor. Enter the following DIM and REM statements at the top of the macro's code:

```
Dim EmployeeName As String
'Declares the EmployeeName variable as a text string
Dim EmployeeNo as Long
'Declares the EmployeeNo variable as an integer
```

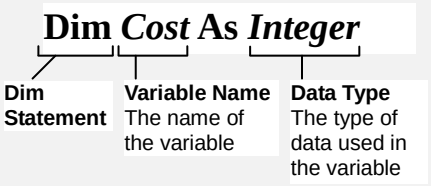


Figure 13-13: The syntax of a DIM statement.

Notice how the colors help distinguish the statements. This is something the Visual Basic Editor automatically does to help you read code.

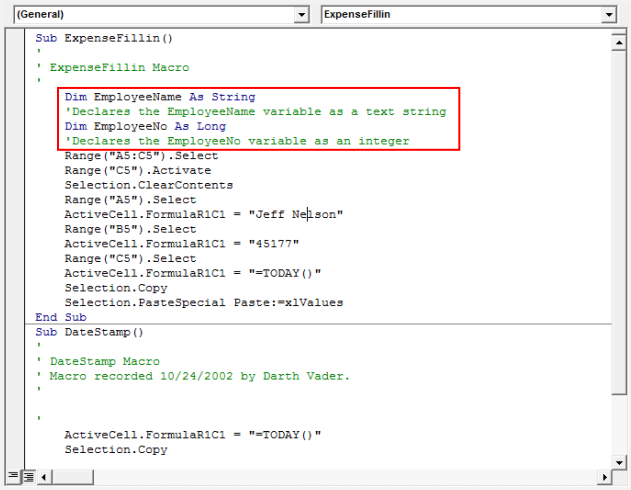


Figure 13-14: An example of DIM and REM statements.

Add a remark to a procedure (REM statement)

Code can be confusing, but you can make it easier to understand by adding explanatory remarks to it. These remarks are called REM statements. A REM statement doesn't do anything—it's just a way to add notes explaining the function of the code.

1. Open the workbook that contains the macro with the code you want to change.
2. Click the **View** tab on the Ribbon and click the **Macros** button in the Macros group.

   The Macros dialog box appears.
3. Select the macro that contains the code you want to work on and click **Edit**.

   The macro opens in the VBA window.
4. Click where you want to add the remark in the code. Type `'` (an apostrophe) then type the rest of the remark.

Table 13-1: Data Types used in DIM Statements

Date Type	Size	Range
Byte	1 byte	0 to 255
Boolean	2 bytes	True or False
Integer	2 bytes	-32,768 to 32,767
Long (Long Integer)	4 bytes	2,147,483,648 to 2,147,483,647
Date	8 bytes	January 1, 1000 to December 31, 9999
String (Text)	Varies	Approximately 2 billion characters

Prompting for User Input

When creating macros and code it is often useful to prompt the user for information. You can then use this information in any number of ways—place it in a cell, use it in a calculation, or print it in a header or footer.

This lesson explains one of the easiest ways to prompt the user for information—using the InputBox function. The InputBox function prompts the user for information by displaying a dialog box.

The syntax for the InputBox function is *InputBox("Prompt")* where "*Prompt*" is the message you want to display (usually enclosed in quotation marks).

1. Open the workbook that contains the macro with the code you want to change.

2. Click the **View** tab on the Ribbon and click the **Macros** button in the Macros group.

   The Macros dialog box appears.

3. Select the macro that contains the code you want to work on and click **Edit**.

   The macro opens in the VBA window.

4. Click where you want to add the InputBox function to the code.

5. Add an Input statement using the syntax `InputBox("Prompt")`.

Exercise

- **Exercise File:** ExpenseReport13-7.xlsm
- **Exercise:** Open the ExpenseFillin macro in the Visual Basic Editor. Enter the following InputBox statements below the second REM statement:

  EmployeeName = InputBox("Enter the Employee Name.")
  EmployeeNo = InputBox("Enter the Employee Number.")

  Run the ExpenseFillin macro in A5, entering your name and employee number when prompted.

  (Note: The result of the macro will not be the data you entered when prompted because the macro is still set to enter Jeff Nelson and 45177 in B5 and C5.)

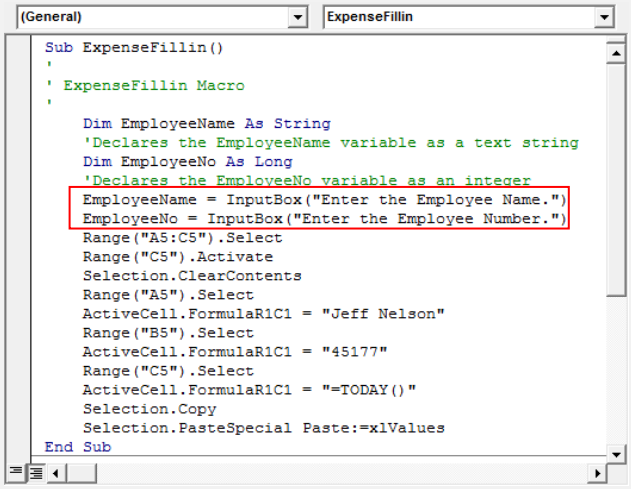


Figure 13-15: An example of the InputBox code in a macro.

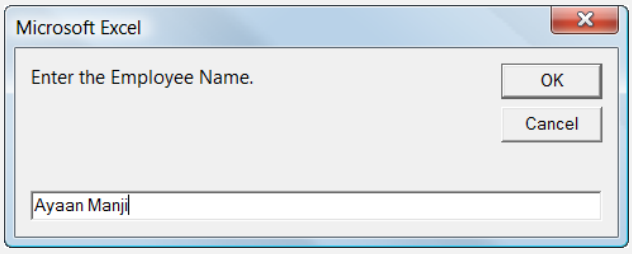


Figure 13-16: An example of a dialog box prompting a user for information.

Using the If…Then…Else Statement

The If…Then…Else statement takes action based on a certain condition. For example, if an employee's weekly sales are more than $2,500, then calculate a 5% commission bonus for the employee, else don't calculate a bonus.

1. Open the workbook that contains the macro with the code you want to change.

2. Click the **View** tab on the Ribbon and click the **Macros** button in the Macros group.

   The Macros dialog box appears.

3. Select the macro that contains the code you want to work on and click **Edit**.

   The macro opens in the VBA window.

4. Click where you want to add the remark in the code. Add an If…Then…Else statement using the following syntax (italicized text is where variables belong in the statement):

   If *condition* Then
   statement if true
   Else
   statement if false
   End If

Exercise

- **Exercise File:** ExpenseReport13-8.xlsm
- **Exercise:** Use the If…Then…Else statement to enter the employee number 45177 if the employee is Jeff Nelson, else the user will have to enter their employee number.

  Open the ExpenseFillin macro in the Visual Basic Editor. Enter the following If…Then…Else statement under the statement: EmployeeName = InputBox("Enter the Employee Name")

  If EmployeeName = "Jeff Nelson" Then
  EmployeeNo = 45177
  Else
  EmployeeNo = InputBox("Enter the Employee Number.")
  End If

  Run the ExpenseFillin macro entering Jeff Nelson as the Employee Name.

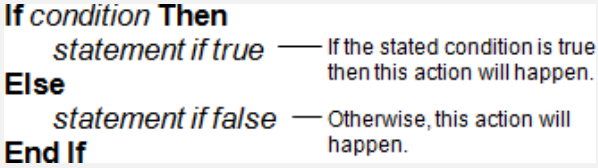


Figure 13-17: The syntax of an If…Then…Else statement.

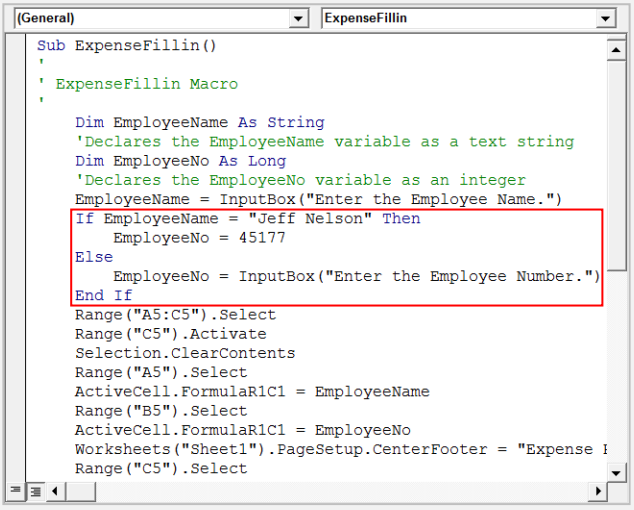


Figure 13-18: An example of an If…Then…Else statement used in a macro.

Working with Macros Review

Quiz Questions

121. Which of the following is NOT a place where you can choose to store a macro?
   A. This Workbook
   B. New Workbook
   C. Universal Macro Workbook
   D. Personal Macro Workbook

122. To play a macro in the Macro dialog box, click the _____ button
   A. Run
   B. Play
   C. Macro
   D. Go

123. You can select a symbol of your choice to represent the macro on the Quick Access Toolbar. (True or False?)

124. Excel macros are written in the _____ programming language.
   A. ABC
   B. Visual Basic
   C. Basic Macro
   D. Visual Excel

125. You can change your macro security settings in the _____ window.
   A. Macro Center
   B. Code Center
   C. Trust Center
   D. VBA Control

126. Which of the following statements declares a variable?
   A. REM HireDate as Date
   B. Dim HireDate as Date
   C. InputBox(HireDate) = Date
   D. Sub HireDate() = Date

127. Which of the following statements would prompt a user for information?
   A. REM DOB as Date
   B. Sub HireDate(
   C. DIM HireDate(
   D. InputBox(

Quiz Answers

121. C. The Universal Macro Workbook is not a place where you can store a macro.

122. A. Click the Run button in the Macro dialog box to play a macro.

123. True. You can select a symbol of your choice to represent the macro on the Quick Access Toolbar.

124. B. Excel macros are written in the Visual Basic programming language.

125. C. You can change your macro security settings in the Trust Center window.

126. B. Dim HireDate as Date would declare the variable 'HireDate' as a date.

127. D. The statement InputBox(

14

14Customizing Excel

Customization is a great asset in an application. Customization lets you use a particular mix of commands and shortcuts that are best for your working style.

The lessons in this chapter focus on how to customize the Ribbon, the Quick Access Toolbar, and AutoCorrect. We'll also discuss how to access and review the default options for a program.

Customizing the Ribbon

One of the most useful features in Office 2010 is that you can customize the Ribbon. Add your own tabs and groups, or rearrange the Ribbon to better fit your work style.

Create a new tab or group

You can add new groups to tabs, or you can create new tabs with new groups.

1. Click the **File** tab on the Ribbon and select **Options**.

   The Options dialog box appears.

2. Click the **Customize Ribbon** tab.

   The left column displays commands that you can add to the Ribbon.

   The right column displays the tabs on the Ribbon, and the groups and commands in each tab.

   Tip: Click the plus sign next to a tab or group to expand it.

3. In the right column, select the tab where you wish to add the new tab or group.

   A new tab, which automatically includes a new group, will be inserted below the selected tab.

   A new group will be inserted within the selected tab.

4. Click the **New Tab** or the **New Group** button.

   The new tab or group is added.

Rename a tab or group

Once you've created a tab or group, give it a name.

1. Select the tab or group you want to rename.

2. Click the **Rename** button.

   The Rename dialog box appears.

3. Enter a name for the selected tab or group in the Display Name text box.

   The tab or group is renamed. For a group, also select a symbol to represent the group.

4. Click **OK**.

   The tab or group is renamed.

Exercise

- **Exercise File:** None required.
- **Exercise:** Create a new group on the Home tab called "Printing" and include the command to Print Preview and Print.

  Restore the Ribbon defaults.

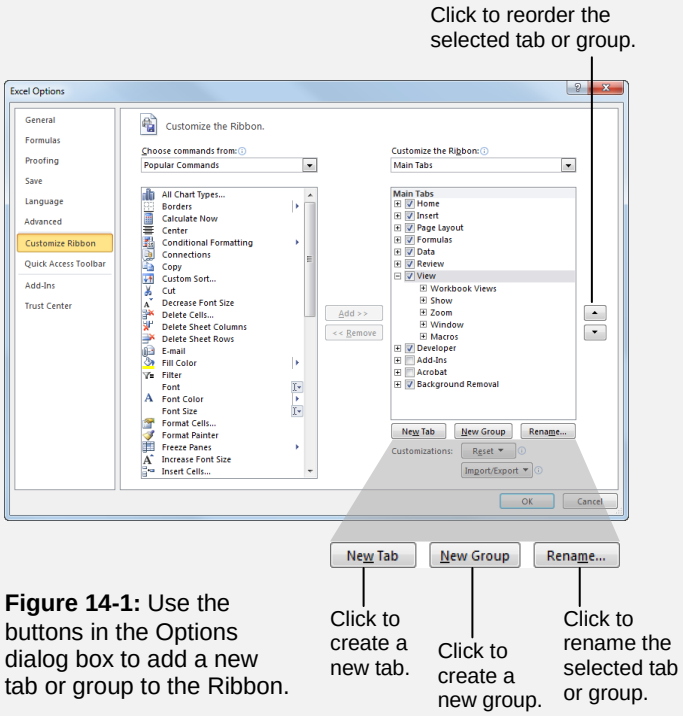


Figure 14-1: Use the buttons in the Options dialog box to add a new tab or group to the Ribbon.

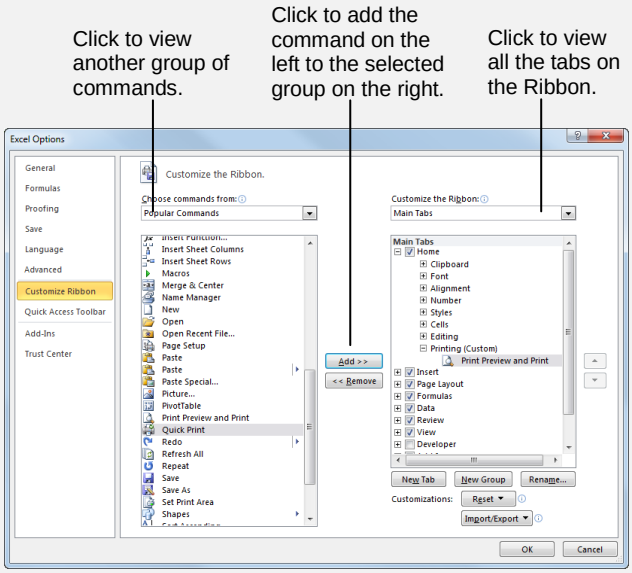


Figure 14-2: Adding commands to groups on the Ribbon.

Add a command to a group

Once you have created a new tab or group, you can add commands to the group. You can also add commands to groups that already appear on the Ribbon.

1. In the right column, select the group to which you want to add a command.

   This could be a group you've created from scratch, or even a group that appears by default.

2. In the left column, select the command you want to add to the Ribbon. Click the **Add** button.

   The command is added to the group.

   Tip: Not finding the command you want to add? Click the **Choose commands from** list arrow and select the group of commands you want to view.

Restore the default Ribbon

If you no longer want to use the customizations you've added to the Ribbon, you can restore the Ribbon to its original, default settings.

1. Click the **Reset** button.

   Two options appear:

   - **Reset only selected Ribbon tab:** Restores the default settings for the selected tab.
   - **Reset all customization:** Removes all Ribbon and Quick Access Toolbar customizations, restoring them to the default arrangement and appearance.

2. Select the reset option you wish to use.

   The Ribbon is restored to its default settings.

Remove a tab or group

You can also remove a specific tab or group from the Ribbon.

1. In the right column, right-click the tab or group you wish to use.

2. Select **Remove** from the contextual menu.

   The tab or group is removed from the Ribbon.

Tips

- ✓ Any changes you make to a program's Ribbon will appear only in that program.
- ✓ To hide a tab on the Ribbon, deselect its check box.

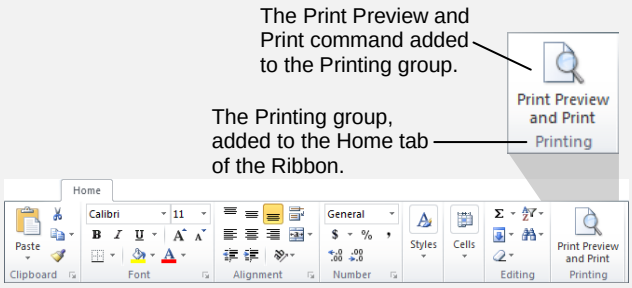


Figure 14-3: The Home tab of the Ribbon, customized with a new group.

Customizing the Quick Access Toolbar

The Quick Access Toolbar is a shortcut for commands that are used often. If the Quick Access Toolbar doesn't contain enough of your frequently used commands, you can customize it by adding or deleting commands.

1. Click the **File** tab and select **Options**.

   The Excel Options dialog box appears.

2. Click the **Quick Access Toolbar** tab.

   This tab displays options for customizing the Quick Access Toolbar.

   The left column displays commands you can add to the Quick Access Toolbar. The right column displays commands that appear there.

3. In the left column, select the command you want to add to the Quick Access Toolbar.

4. Click the **Add** button.

   The command is added to the Quick Access Toolbar.

Tips

- ✓ Arrange the order in which the commands are displayed by clicking the **Move Up** and **Move Down** buttons to the right of the column.
- ✓ Click the **Reset** button and select **Reset only Quick Access Toolbar** to return the Quick Access Toolbar to its default commands.
- ✓ Select a command in the Quick Access Toolbar column and click the **Remove** button to remove it from the Quick Access Toolbar.

Exercise

- **Exercise File:** None required.
- **Exercise:** Add the Print Preview command from the Popular Commands group to the Quick Access Toolbar.

  Move the Quick Access Toolbar below the Ribbon.

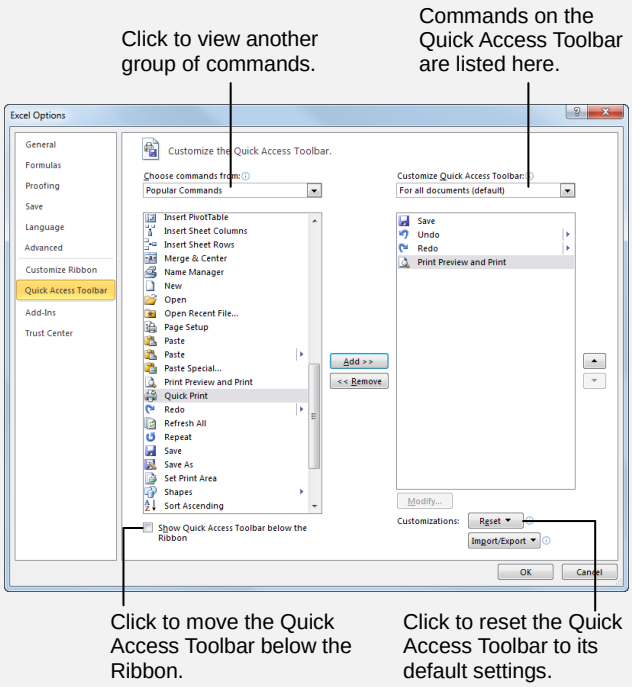


Figure 14-4: Adding a command to the Quick Access Toolbar.

Using and Customizing AutoCorrect

AutoCorrect automatically corrects many common typing and spelling errors as you type. It is also a great way to use shorthand for longer words, phrases, or symbols.

AutoCorrect is a feature that is shared across the Microsoft Office suite—so any additions or changes you make to AutoCorrect in one program, such as Word, will appear in all Microsoft Office programs, like Excel, Excel, and Outlook.

How AutoCorrect works

You may have already noticed that sometimes your typos are corrected as you enter text in Word. When you type an AutoCorrect entry and then press the <Spacebar>, AutoCorrect replaces that text with the correct text.

For example, AutoCorrect will change the mistyped words “hte” to “the”, or “adn” to “and”. AutoCorrect also corrects simple grammar mistakes, such as capitalization problems. For example, it would change “GOing” to “Going,” or capitalize the first letter in sentences.

Create an AutoCorrect entry

Excel already has many entries in AutoCorrect, but you can add your own entries to correct habitual misspellings, quickly insert a symbol, or insert a shorthand version of a long phrase that you frequently use.

1. Click the **File** tab and select **Options**.

   The Excel Options dialog box appears.

2. Click the **Proofing** tab.

   This tab displays options for how Excel corrects and formats text.

3. Click the **AutoCorrect Options** button.

   The AutoCorrect dialog box appears with the AutoCorrect tab in front.

4. Type the word or phrase you want to correct or use as shorthand in the **Replace** text box.

   This is the text that AutoCorrect will recognize when you type.

5. Type the word or phrase you want to appear in the **With** text box.

   When the text in the “Replace” text box is typed with a space, the text in the “With” text box will appear.

Exercise

- **Exercise File:** None required.
- **Exercise:** Create an AutoCorrect entry that replaces “ot” with “to”.

  Try the AutoCorrect entry with this phrase, “He was going ot the store.”

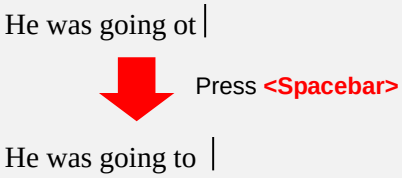


Figure 14-5: An example of how AutoCorrect works.

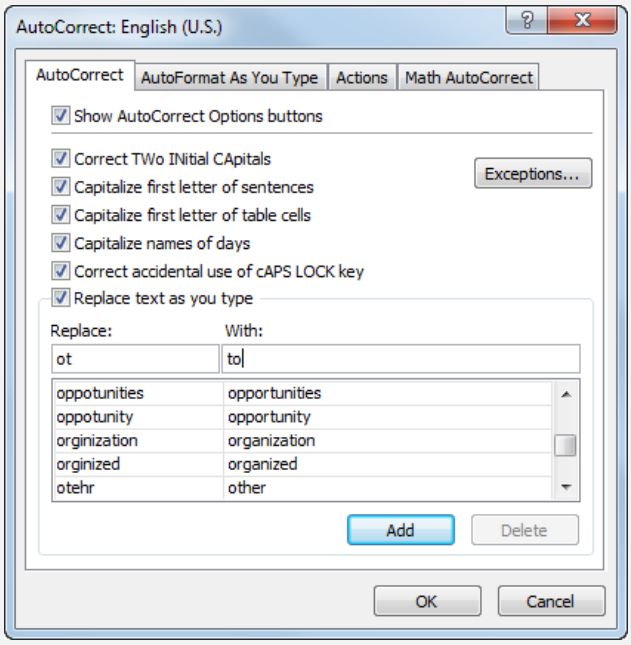


Figure 14-6: The AutoCorrect tab of the AutoCorrect dialog box.

6. Click **Add**.

   The entry is added to the AutoCorrect list.

7. Click **OK** to close the AutoCorrect dialog box. Click **OK** to close the Excel Options dialog box.

   The dialog boxes close and the entry will now be available in all Excel workbooks, and also in all other Office applications.

Changing Excel's Default Options

Microsoft spent a lot of time and research when it decided what the default settings for Excel should be. However, you may find that the default settings don't always fit your own needs.

This lesson isn't so much an exercise as it is a reference on how to customize Excel by changing its default settings.

1. Click the **File** tab and select **Options**.

   The Excel Options dialog box appears.

2. Click the tabs on the left to view different option categories.

   See the table below, *Tabs in the Excel Options Dialog Box*, for more information on these categories.

3. Change the options as you see fit. Click **OK** to confirm the changes.

   The changes are applied to the Excel program.

Exercise

- **Exercise File:** None required.
- **Exercise:** Explore the tabs in the Excel Options dialog box.

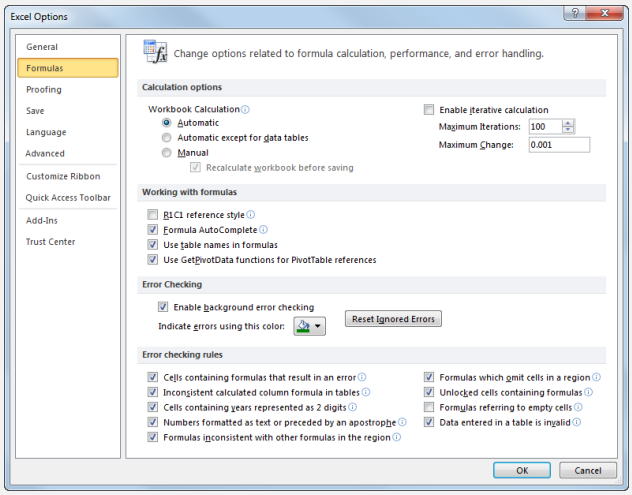


Figure 14-7: The Formulas tab of the Excel Options dialog box.

Table 14-1: Tabs in the Excel Options Dialog Box

General	Change the most commonly modified options in Excel. This includes enabling the Mini Toolbar and Live Preview. Also, change the color scheme, control ScreenTips, and change the user name.
Formulas	Change options related to formula calculation, performance, and error handling.
Proofing	Change how Excel corrects and formats your text. Change the types of errors that Excel flags when looking for spelling and grammar errors.
Save	Customize how workbooks are saved, such as how often AutoRecover saves a workbook, and change default file locations.
Language	Add additional languages to edit your documents. Also set the language priority order for added languages.
Advanced	Advanced options for working with Excel. Change how Excel works when you edit text; modify how cut, copy, and paste commands operate; customize tools in the window, such as how it displays screen tips and scroll bars; adjust how Slide Show view looks and operates; control how the workbook is printed; choose advanced save options; and control various Web options.
Customize Ribbon	Create custom tabs and groups for the Ribbon.
Quick Access Toolbar	Add commands to the Quick Access Toolbar.
Add-Ins	View and manage Microsoft Office add-ins, such Acrobat PDFMaker and custom XML data.
Trust Center	Help keep your workbooks safe and your computer secure and healthy. Read privacy statements and change Trust Center Settings to control how Excel works with macros, add-ins, the message bar, trusted publishers and locations, and more.

Creating a Custom AutoFill List

You're already familiar with Excel's AutoFill feature. It's the nifty function that automatically enters a series of values. If you find yourself typing the same list of words frequently, you can save yourself a lot of time by creating a custom AutoFill list. Once you have created a custom AutoFill list all you have to do is type the first entry of the list in a cell, and use AutoFill to have Excel complete the rest of the list for you.

Create a custom AutoFill list

1. Click the **File** tab on the Ribbon and select **Options**.
2. Click the **Advanced** tab and scroll down to the General section. Click the **Edit Custom Lists** button.

   The Custom Lists dialog box appears.
3. Select **NEW LIST** under the Custom lists section.
4. Type the first entry you want to include in the AutoFill list and press **<Enter>**. Repeat for each entry of the list.

   Other Ways to Enter Custom List Entries: Select the cell range that contains the information you want to include in your custom AutoFill list. Then open the Custom Lists dialog box. Click **Import**.
5. Click **Add**.

   The custom list is added to the dialog box.
6. Click **OK**, **OK**.

Use a custom AutoFill list

Using a custom AutoFill list is just like completing any other series with AutoFill.

1. Click the cell where you want to begin the custom fill series.
2. Type an item from the series.
3. Click and drag the cell's fill handle to complete the series in the cells you select.

Exercise

- **Exercise File:** CustomizingExcel.xlsx
- **Exercise:** Use the data in A1:A10 to create a custom AutoFill list.

  Try using the AutoFill list in the worksheet.

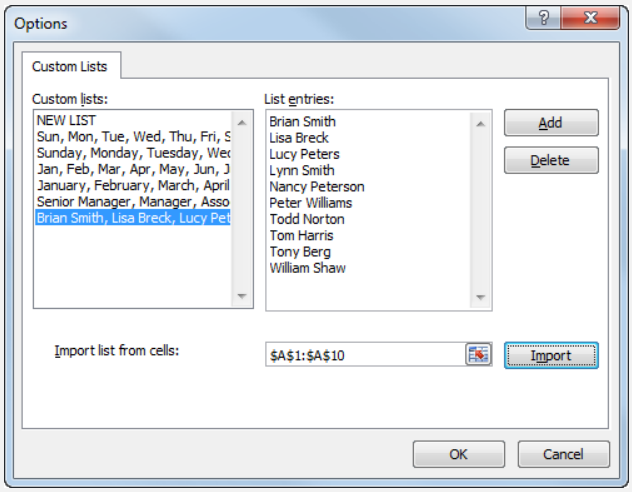


Figure 14-8: The Custom Lists dialog box.

Creating a Custom Number Format

You learned how to format values (numbers) in a previous lesson in this chapter. Excel comes with a huge number of predefined number formats you can use. With so many available number formats, it is unlikely that you will ever need to create your own custom number format, but if you do, here's a brief overview.

1. Click the **Home** tab on the Ribbon and click the **Dialog Box Launcher** in the Number group.

2. Click **Custom** in the Category box.

This is where you can modify a copy of an existing format code to meet your specifications. A custom number format is created by specifying format codes that describe how you want to display a number, date, time, or text. The table below, *Format Codes for Numbers and Dates*, gives some examples of how to use these codes when creating custom number formats.

Tip: The sample area of the number dialog box becomes very important when you're creating custom number formats. Watch the sample area carefully to see how the custom number format

3. In the Type list, select a number format that you want to customize.

The number format appears in the Type box.

4. Make changes to the number format in the Type box using the format codes shown in the table below, *Format Codes for Numbers and Dates*.

Exercise

- **Exercise File:** CustomizingExcel.xlsx
- **Exercise:** Select cell C1 and create this custom number format: ##-####

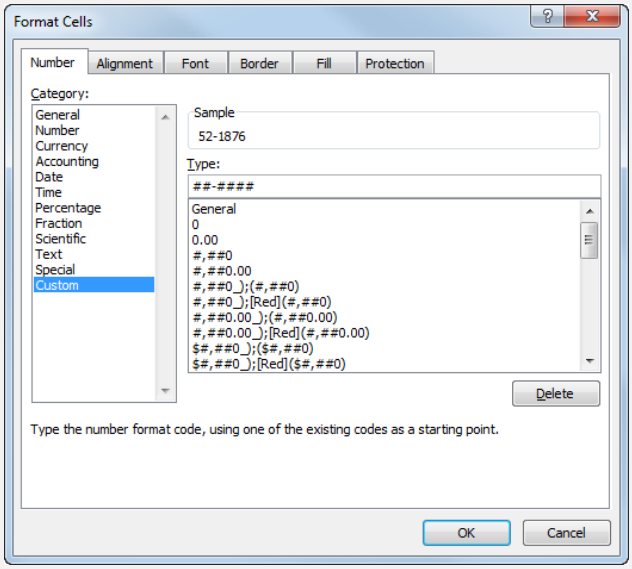


Figure 14-9: Creating a custom number format.

Table 14-2: Format Codes for Numbers and Dates

Numbers		Dates and Times	
To Display	**Use this Code**	**To Display**	**Use this Code**
1234.59 as 1234.6	####.#	1/1/11 as 1-1-11	m-d-yy
12499 as 12,499	#,###	1/1/11 as Jan 1, 11	mmm d, yy
12499 as 12,499.00	#,###.##	1/1/11 as January 1, 2011	mmmm, d, yyyy
1489 as $1,489.00	$#,###.##	1/1/11 as Fri 1/1/11	ddd m/d/yy
.5 as 50%	0%	1/1/11 as Friday, January 1	dddd, mmmm, d
.055 as 5.5%	0.0%	4:30 PM as 4:30 PM	h:mm AM/PM
Hide value	;;	4:30 PM as 16:30	h:mm

Customizing Excel Review

Quiz Questions

128. You can only add custom groups to custom tabs. (True or False?)

129. What is the purpose of the Quick Access Toolbar?
   A. To provide quick access to the commands you use most frequently.
   B. To make Excel 2010 look more like previous versions.
   C. To provide Microsoft Access commands in the Excel program.
   D. To provide a backup in case the Ribbon fails

130. AutoCorrect changes:
   A. Spelling errors
   B. Grammar errors
   C. Capitalization errors
   D. All of these.

131. AutoCorrect entries created in Excel will not appear in any other programs. (True or False?)

132. Which of the following is NOT a tab in the Excel Options dialog box?
   A. Proofing, which changes how Excel corrects your text.
   B. Display, which changes how content appears on the screen.
   C. General, which lists the most commonly modified options in Excel.
   D. Trust Center, which changes your privacy options.

133. Which of the following is NOT an example of information that could be used in an AutoFill list?
   A. Since you can create your own AutoFill lists, you could use any of this information in an AutoFill list.
   B. The names of the seven dwarves.
   C. A product list.
   D. A list of employees.

134. The United States decides to change the format of social security numbers. How can you create a custom number format for the new social security format?
   A. Click the Number tab on the Ribbon and click the Custom List button in the Number group. Select the Custom category and type the number format in the Type box.
   B. Buy and install the Custom Number Wizard Add-On for Microsoft Excel.
   C. Enter the number format in the Number Format list on the Formatting tab of the Ribbon.
   D. Click the Home tab on the Ribbon and click the Dialog Box Launcher in the Number group. Select the Custom category and type the number format in the Type box.

Quiz Answers

128. False. You can add custom groups to default tabs or to custom tabs.

129. A. The purpose of the Quick Access Toolbar is to provide quick access to the commands you use most frequently.

130. D. AutoCorrect changes spelling errors, grammar errors, and capitalization errors.

131. False. AutoCorrect entries created in Excel will appear in all other Microsoft Office programs.

132. B. There is no Display tab in the Excel Options dialog box.

133. A. Since you can create your own AutoFill lists, you could use any of this information in an AutoFill list.

134. D. To create a custom number format, click the Home tab on the Ribbon and click the Dialog Box Launcher in the Number group. Select the Custom category and type the number format in the Type box.