MASTERY SERIES

Microsoft® Excel 2019 & 365

LEVEL 1 OF 3

ALEX SCOTT
Conestoga College

LABYRINTH LEARNING™

Microsoft Excel 2019 & 365: Level 1

LABYRINTH LEARNING™

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Contents

Excel Chapter 4:
Data Visualization and Images

Excel Chapter 5:
Organizing Large Worksheets

Preface

This textbook is part of our new approach to learning for introductory computer courses. We've kept the best elements of our proven, easy-to-use instructional design and added interactive elements and assessments that offer enormous potential to engage learners in a new way.

Why Did We Write This Content?

In today's digital world, knowing how to use the most common software applications is critical, and those who don't are left behind. Our goal is to simplify the entire learning experience and help every student develop the practical, real-world skills needed to be successful at work and in school. Using a combination of text, videos, interactive elements, and assessments, we begin with fundamental concepts and take learners through a systematic progression of exercises to achieve mastery.

What Key Themes Did We Follow?

We had conversations with dozens of educators at community colleges, vocational schools, and other learning environments in preparation for this textbook. We listened and adapted our learning solution to match the needs of a rapidly changing world, keeping the following common themes in mind:

Keep it about skills. Our content focus is on critical, job-ready topics and tasks, with a relentless focus on practical, real-world skills and common sense. We use step-by-step instructional design to ensure that learners stay engaged from the first chapter forward. We've retained our proven method of progressively moving learners through increasingly independent exercises to ensure mastery—an approach that has successfully developed skills for more than 25 years.

Keep it simple. Our integrated solutions create a seamless experience built on a dynamic instructional design that brings clarity to even the most challenging topics. We focus our content on the things that matter most and present it in the easiest way possible. Concise chunks of text are combined with visually engaging and interactive elements to increase understanding for all types of learners.

Keep it relevant. Fresh, original, and constantly evolving content helps educators keep pace with today's student and work environments. We reviewed every topic for relevancy and updated it where needed to offer realistic examples and projects for learners.

How Do I Use This Book?

Our comprehensive learning solution consists of a print textbook, a groundbreaking interactive ebook, and our easy-to-use eLab course management tool featuring additional learning content, such as overviews and video tutorials, and assessment content. Our interactive ebook contains learning content delivered in ways that will engage learners.

The eLab assessment solution includes Project Grader exercises for most chapters that are automatically graded by the system, in addition to clear feedback and analytics on student actions.

Included with Your Textbook Purchase

Depending on your purchase option, some or all of the following are included with your textbook:

Interactive ebook: A dynamic, engaging, and truly interactive textbook that includes elements such as videos, self-assessments, slide shows, GIFs, and other interactive features. Highlighting, taking notes, and searching for content is easy.

eLab Course Management System: A robust tool for accurate assessment, tracking of learner activity, and automated grading that includes a comprehensive set of instructor resources. eLab can be fully integrated with your LMS, making course management even easier.

Instructor resources: This course is also supported on the Labyrinth website with a comprehensive instructor support package that includes detailed lesson plans, lecture notes, PowerPoint presentations, a course syllabus, test banks, additional exercises, and more.

Student Resource Center: The exercise files that accompany this textbook can be found within eLab and in the Student Resource Center, which may be accessed from the ebook or online at: **labyrinthelab.com/Office19**

We're excited to share this innovative, new approach with you, and we'd love you to share your experience with us at: lablearning.com/share

Visual Conventions

This book uses visual and typographic cues to guide students through the lessons. Some of these cues are described below:

Cue Name	What It Does
`Type this text`	Text you type at the keyboard is printed in this typeface.
Action words	The important action words in exercise steps are presented in boldface.
Ribbon	Glossary terms are highlighted with a yellow background.
Note! Tip! Warning!	Tips, notes, and warnings are called out with special icons.
	Videos, WebSims, and other ebook or online content are indicated by this icon.
Command→Command→ Command→Command	Commands to execute from the Ribbon are presented like this: Ribbon Tab→Command Group→Command→Subcommand.
Design→Themes→Themes	These notes present shortcut steps for executing certain tasks.

Display Settings

Multiple factors, including screen resolution, monitor size, and window size, can affect the appearance of the Microsoft Ribbon and its buttons. In this textbook, screen captures were taken at the native (recommended) screen resolutions in Office 2019 running Windows 10, with ClearType enabled.

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OVERVIEW

1 Introducing Microsoft Office and Using Common Features

In this chapter, you will be introduced to Microsoft Office and given an overview of the various versions of the software. Understanding what is offered in each will help you make the best decision about which version meets your needs. You'll also practice using some of the features that are common across the Office suite. Once you learn how to use a feature in one application, you can use the same or similar steps in the others.

LEARNING OBJECTIVES

- Describe similarities and differences between Office 2019 for the desktop, Office 365, and Office Online
- Identify uses of cloud storage
- Identify parts of the Office user interface
- Use the spelling checker and other review features
- Identify Office features available through Backstage view
- Use the Office Clipboard
- Format text in Office applications
- Search for Help within Office applications
- Capture a screen in an Office application

Introduction to Microsoft Office

Microsoft Office is a software suite that enables users to create, format, revise, collaborate, and share files quickly across multiple devices. The Microsoft Office 2019 software suite for Windows includes Word, Excel, Access, PowerPoint, Outlook, OneNote, Publisher, and Skype. A software suite is a collection of applications generally produced by the same manufacturer and bundled together for a better price. Being produced by the same manufacturer also means that each application offers the same user interface. Examples of features shared among the different Office 2019 apps are the Ribbon, Quick Access toolbar, a spelling and/or grammar checker, and collaboration tools.

What Devices Will Microsoft Office Work With?

Microsoft Office works on desktops, laptops/notebook computers, and all-in-one PCs and Macs, as well as Windows, Android, and iOS smartphones and tablets (though some apps, like Publisher and Access, work only on PCs).

If you are writing a paper or preparing a business plan, you probably want to create it on a desktop, laptop, or all-in-one computer. If you want to open, read, share, or make simple changes to a Word document, you can select any device. This chapter assumes you will be using a desktop, laptop, or all-in-one computer.

To learn more about the operating systems (Windows, Android, macOS, or iOS) and types of devices (all-in-one computer, desktop, laptop, smartphone, or tablet) that will run Microsoft Office, do a web search for *Microsoft Office 2019 products*.

What Storage Does Microsoft Office Provide?

Microsoft OneDrive is the cloud storage location included with Microsoft Office 2019 and Office 365, and it provides a convenient way to save, store, and share files, photos, and videos via your computer, smartphone, or tablet anytime, anywhere, and on any device—provided you have an Internet connection or Wi-Fi access. Depending on the Microsoft Office product you use or purchase, you will receive anywhere from five gigabytes to five terabytes of OneDrive cloud storage.

You may want to use cloud storage as your primary saving method so you can access your files at home, at school, at work, or anywhere. Or you may decide to use cloud storage as a backup for files located on your computer's hard drive or your flash drive. Instead of emailing files to yourself, use OneDrive as a faster way to store something in the cloud. To learn more about OneDrive, do a web search for *OneDrive*.

Which Microsoft Office Should I Use?

You may have heard others talk about Microsoft Office 2019, Office 365, and Office Online and are not sure which one is right for you. Base your decision on the apps and features you need, in addition to the pricing structure.

- **Office Online:** This version is free and requires a Microsoft account. It includes limited versions of Word, Excel, PowerPoint, and OneNote. No software is installed on your computer, as the apps are accessed and run in a web browser. The apps are not the same as the full-version apps in the other variations of Office and lack many features of those full versions. This version requires an Internet connection. Office Online is great for simple tasks, like writing a short letter or creating a basic slideshow presentation.

- **Microsoft Office 2019:** This version is software that is purchased once and installed on one PC. It does not require an Internet connection to run. It does not have all the features of Office 365, and you must pay for future major upgrades. Choose from a variety of plans that may include Word, Excel, PowerPoint, OneNote, Outlook, Publisher, Access, and Skype.
- **Office 365:** This version requires users to pay a monthly or annual subscription fee for installing and using the software on one or more devices (PC/Mac and mobile devices). All upgrades are included, so you always have the latest-and-greatest version, and all Office 2019 apps are included. Microsoft says the Office 365 apps can include features not present in the Office 2019 apps, as Office 365 is updated more frequently than Microsoft Office.

While Microsoft Office has three distinct formats—Microsoft Office 2019, Office 365, and Office Online—and the examples provided in this chapter can work in each of the Office formats, this book assumes you are using Office 2019 on the desktop or Office 365 in a subscription-based plan, as well as Windows 10. Remember that Office 365 can change at any time. If you are using Office 365, keep in mind that your screen may not match all the illustrations in this book. Changes made to Office 365 after publication of this title may result in additional differences between your book and the software.

What Are the Microsoft Office Apps?

In this chapter, you will learn about four of the Microsoft Office applications included in the Microsoft Office suite: Word, Excel, Access, and PowerPoint.

Application	What It Is Used For
Word 	Word-processing software used to create, edit, format, and share documents, such as letters, reports, essays, and business plans.
Excel 	Spreadsheet software, arranged with rows and columns, used to perform calculations and analyze numerical data. Use Excel to prepare a budget or income statement, or to determine the amount of interest paid on a loan.
Access 	Database software that stores and helps you quickly retrieve data. In Access, you create and enter data into a table and then use forms, reports, and queries to display the desired results.
PowerPoint 	Presentation software used to create, edit, format, and share slides designed to tell a story; market a product; or explain a concept.

The Microsoft Office suite includes the following additional applications:

Application	What It Is Used For
OneNote 	Note-taking software used to organize notes (handwritten or typed), audio recordings, screen captures, or sketches you have collected or created to share with others.
Outlook 	Personal information management software used to create, send, and receive emails, record tasks, maintain one or more calendars, schedule meetings and appointments, manage contacts, and take notes.
Publisher 	Desktop-publishing software used to design and lay out text and images, often for newsletters or brochures.
Skype 	Internet communication software used to share audio, video, text, messages, files, or desktop screens.

Microsoft Accounts

A Microsoft account provides you with access to your Microsoft settings, files, contacts, and more. A valid Microsoft account can include Hotmail, Bing, MSN, Office, OneDrive, Outlook, Skype, Store, Windows, or Xbox Live. Once logged in to your computer, you can log in to your Microsoft account from any Office app. If you do not have a Microsoft account, you can create one for free by doing a web search for *Microsoft account*.

Common Features in Microsoft Office Apps

The Office 2019 applications share some frequently used features. These include the Ribbon, Quick Access toolbar, and common commands.

The Ribbon

Within each application, you will find the Ribbon displayed along the top of the window. The Ribbon contains tabs and commonly used buttons and other icons that are specific to the application. The buttons are arranged in groups within each tab. While the Ribbon changes with each application, some tabs, groups, and commands are common throughout the Microsoft suite. In this chapter, we will look at the Excel Ribbon and, specifically, the File, Home, Review, and Formulas tabs.

View the video "Ribbon Overview."

The Quick Access Toolbar

Each application has a one-line Quick Access toolbar located, by default, in the top-left corner of the application window. This helpful toolbar contains some frequently used commands to help you be more efficient as you work. You can customize the toolbar with the buttons you use most frequently. The settings for each application's Quick Access toolbar work independently; therefore, you need to customize the Word, Excel, Access, PowerPoint, and Outlook Quick Access toolbars separately.

View the video "Quick Access Toolbar Overview."

Undo/Redo

Within any application, you may type text or perform a command or action and then change your mind about what you did. As long as you have not exited the application, you may be able to undo the action.

Note! *Some actions, such as saving or sharing, cannot be undone.*

You may want to redo an action you just undid. Sounds confusing, right? Use the Redo button to undo the undo, or to reapply the action. This puts the command or action you just undid back into effect.

Undo and Redo on the Quick Access toolbar

Quick Access toolbar→Undo *or* Redo

DEVELOP YOUR SKILLS: O1-D1

In this exercise, you will use the Undo and Redo buttons.

1. Log in to your computer, start Excel, and tap Enter to accept the default template, Blank Workbook.

   A new blank workbook appears.

2. Type the following into **cell A1** and then tap Enter: **`My favorite Excel feature is creating formulas.`**

   The typed text is inserted in cell A1, but you may notice that the text does not fit in one cell; it appears across multiple columns. The Enter key completes the entry and moves the active cell to cell A2.

3. Type this text in **cell A2** and then tap Enter: **`I also like using the Undo button.`**

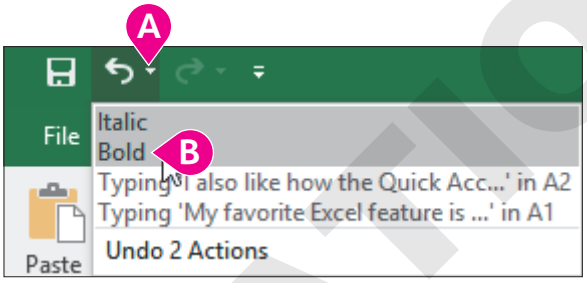
4. Click **cell A1** to select it.

   The cell location is referred to by its column and then its row. Cell A1 is located below the A, for column A, and to the right of the 1, for row 1.

5. Choose **Home→Font→Bold** B to apply bold formatting.

6. Now apply **Italic** *I* formatting to **cell A2**.

7. Follow these steps to undo more than one action at a time:



   A. Click the **Undo menu** button ▾.

   B. Point to the second step, Bold, to select both the Bold and the Italic actions, and then click the mouse button. **Cells A1** and **A2** will have the bold and italic formatting removed at the same time.

8. Click the **Undo** button once to remove the text typed into **cell A2**.

9. Click the **Redo** button three times to reinsert the text and reapply the bold and italic formatting to the cells.

10. Keep Excel open.

    Unless otherwise directed, always keep any files or programs open at the end of an exercise.

Common Features on the File Tab

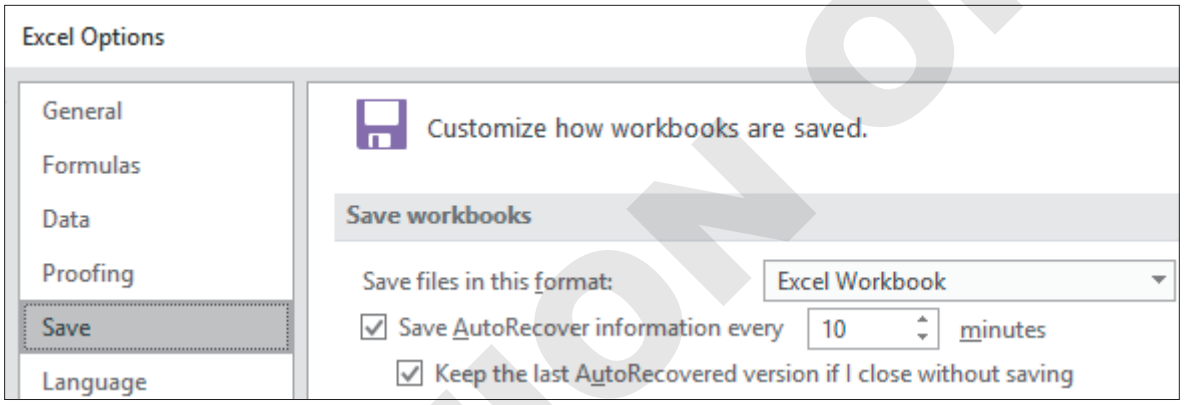
In this section, you will learn about the features on the File tab that are used in a similar manner throughout multiple Microsoft applications, including Word, Excel, and PowerPoint. Here you will use Microsoft Excel 2019 to save, close, and share a file; explore printing options; and open a template.

Backstage View

When you are working in your file and open the File tab, the Backstage view displays. Think of your Backstage view as your personal manager for the open file and application. Use the Backstage view to update file information, select account settings, view program options, open new files, save, print, share, export, provide feedback to Microsoft, and recover unsaved files. These are the "big-picture" items you do to your file and not the specific tasks you perform using the other tabs on the Ribbon.

Program Options

Microsoft provides preference settings that you can customize for each application (that is, Word or Excel) so they are automatically applied each time you use the application on your device. To change your preferences, use the Options feature on the File tab. Some custom options include adding your username and initials so they automatically display in some downloaded templates, displaying formatting marks, correcting spelling, and saving files to a default file location.



The Save options allow you to set defaults for the file format and the frequency with which documents are automatically saved.

File→Options

Saving Files

As you work in your file, you should save frequently to prevent data or information loss. Some people prefer to save important files every few minutes, while others save at less frequent intervals.

The saving commands are found on the File tab, and you'll see different options, including Save and Save As. You can use the Save command the first time you save a file, and when you do, the Save As screen will appear.

View the video "Using Save and Save As."

You may choose to save files to your device (for example, on the hard drive in the Documents folder), to your flash drive, or to the cloud in OneDrive.

View the video "Saving Files to Multiple Locations."

You can even set Microsoft Office to save your work automatically whenever a specific interval of time has elapsed. A good rule of thumb is to save as often as you can afford to lose data. If you can only afford to lose one minute of data, save your file every minute!

File→Save *or* Save As

DEVELOP YOUR SKILLS: O1-D2

In this exercise, you will use Save As to store an Excel document in a new folder.

Before You Begin: *Download the student exercise files from your eLab course or the Student Resource Center (labyrinthelab.com/Office19) and determine your file storage location before beginning this exercise.*

1. In your open Excel document, choose **File** to display the Backstage view and then click **Save**.

   The first time you save a file, the Save As screen displays. Otherwise, choosing File→Save updates the file with the same name, location, and file type. Once it has been saved you can also use the Save As command if you wish to change the name, location, or file type.
2. Click the **Browse** button and navigate to the **Overview Chapter 1** folder in your file storage location.
3. In the Save As dialog box, click the **New Folder** button.

   The New Folder button is to the right of the Organize button, just under the address bar.
4. Type **`My Excel Work`** for the new folder name and tap Enter twice (once to enter the name, a second time to open the folder).
5. Click in the **File Name** box and type: **`O1-D2-Features`**
6. Verify that Excel Workbook displays for Save as Type and click the **Save** button.
7. Close the file.

Finding, Searching, and Opening Files

Files can be opened within an application by using the Open dialog box, choosing from a recently saved files list within the application, using File Explorer, or typing the filename in the Windows Search box. Within Windows 10, as well as previous versions of Windows, you can use File Explorer to locate and manage your files. You can click the File Explorer icon on the taskbar and then search for files located on your PC, flash drive, or OneDrive.

View the video "Opening Files."

Sharing Files via Email and with People

You can share open files directly from the application to either email or OneDrive. Sharing a file directly to email is usually faster than opening an email application, such as Microsoft Outlook, locating the file to send, and then attaching it. When someone shares a file with you from an application to OneDrive, you will receive a link (in your email account) to access the file.

View the video "Sharing Files via Email."

If the Automatically Share Changes option is set to Always, once the file is shared, anyone who has editing rights to the file can make changes to it.

Tip! *You can also use the Share* Share *button located in the top-right corner of the application window.*

File→Share→Email

File→Share→Share with People

DEVELOP YOUR SKILLS: O1-D3

Complete this exercise via the online WebSim.

In this exercise, you will share an open Excel file by using the Share with People option that saves to the cloud.

1. In your web browser, go to: **labyrinthelab.com/websims/E19-00-D3**

   If your classroom is using eLab, you can complete this exercise in your eLab course.

2. Follow the onscreen instructions to complete this exercise.

Printing

If you are connected and have access to a printer, you should be able to print. Before printing, you should save your file, run Spelling & Grammar (Word) or Spelling (Excel and PowerPoint), proofread your file, verify formats, and review the file to see if you have used the fewest possible number of pages. Use the Print Preview feature to browse the pages in your file prior to printing so you don't waste time or printing resources, and use the options in the Settings area to adjust elements such as page orientation, paper size, margins, and more.

Keep in mind that you can print to a PDF file if you want to be eco-friendly.

View the video "Printing Files."

File→Print

Templates

A template is a document, worksheet, or presentation that has the fonts, paragraph styles, and page layout settings such as margins, orientation, and size already built in. Instead of selecting these settings each time you prepare a similar file, you may opt to use a template to save time when you need to add new text, images, and additional formats specific to the file.

Usually an application includes sample templates that are stored on the hard drive of your computer when you install the software. You can also search for online templates using the Search feature available when you create a new document. Templates are arranged according to categories; for example, by business, personal, and industry.

File→New

DEVELOP YOUR SKILLS: O1-D4

In this exercise, you will open a prebuilt Excel template.

1. If necessary, start Excel. Choose **File→New**, select the **Simple Monthly Budget** template, and click **Create**. (If that specific template is not available, choose a different budget template. The templates often change when you launch Excel.)

   Browse through the Excel workbook to view some of the information that you may want to include in a budget of your own.

2. Choose **File→New**, select the **Student Schedule** template, and click **Create**.

   You may have to scroll down to find the template. Notice some of the features that are automatically built in, such as Schedule Start and Time Interval, which can easily be adjusted to suit your own schedule. You should also see the current timeslot is formatted with a different color.

3. Choose **File→New** and select the **Welcome to Excel** template or another template of your choice.

   Notice the workbook formatting and review the text contained in the file.

4. Close all open files without saving and then exit Excel.

Common Features on the Home Tab

In this section, you will learn about the features on the Home tab that are used in a similar manner throughout multiple Microsoft applications, including Word, Excel, and PowerPoint. You will use Microsoft Excel to Cut, Copy, and Paste with the Office Clipboard, format text, use the Mini toolbar, and find and replace text. Excel is generally used for keying numbers and performing calculations.

DEVELOP YOUR SKILLS: O1-D5

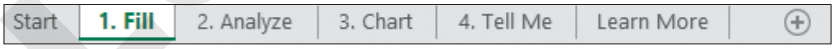
In this exercise, you will open a file created from an Excel template and become familiar with Excel.

1. Start Excel and click the **Open Other Workbooks** link under the Recent menu at the left side of the window.
2. Click the **Browse** button, navigate to your file storage location, and open the **O1-D5-Clipboard** file.
3. Click **Enable Editing** in the Security Warning bar at the top of the screen, if necessary.

   The Security Warning bar may display the first time you open a file. If you know the file sender and trust the content, always choose Enable Content.

4. Scroll down to display **rows 19–25**, if necessary, and then click the **Let's Go** button.
5. Click the various worksheet tabs at the bottom of the Excel window and review the helpful information about Excel on each worksheet.

   In this figure, six worksheet tabs are shown:



The Office Clipboard

Located at the far left on the Home tab, the Clipboard group contains the Cut, Copy, Paste, and Format Painter buttons. Selecting the Clipboard dialog box launcher opens the Clipboard pane, which displays at the side of your application. The Clipboard contains thumbnails (small images) of what you have recently cut or copied from your Microsoft Office file(s) during your Windows session, with the most recent item at the top of the list. You can use the Clipboard to quickly paste text, pictures, images, or charts into your file. You can paste all items on the Clipboard into your file(s) as many times as desired, and you can clear all items from the Clipboard.

The Cut feature in the Clipboard group functions much like a scrapbook in which you cut out information, such as newspaper articles about yourself, and then paste it on the desired page(s). When data is cut, the original selection is removed from the source location and is pasted at the target location. When data is copied, the original selection remains in the source location and a new selection is pasted at the target location.

View the video "Clipboard Overview."

CLIPBOARD FEATURES

Feature	What It Does
Cut	**Cut:** Removes the original selection from the source location and places the selection on the Office Clipboard.
Copy	**Copy:** Creates a duplicate of the original selection, which remains in the source location, and places a copy of the selection on the Office Clipboard.
Paste	**Paste:** Inserts a copy of the most recent item found on the Office Clipboard at the target location, or destination. Depending on the application, there are usually at least three paste choices, Keep Source Formatting, Merge Formatting, and Keep Text Only. **Keep Source Formatting:** Pastes the text and the formatting (bold, italic, underline) of the selection from the source location to the target location. The selection pasted retains the original formatting from the source location. **Merge Formatting:** Pastes the text and formatting (bold, italic, underline) of the selection from the source location to the target location and combines it with any formatting that is already at the target location. The selection pasted has formats from both the source and target locations. **Keep Text Only:** Pastes the selection from the source location to the target location. The selection pasted takes on the formatting of the target location.
Format Painter	**Format Painter:** Applies the character and paragraph formatting from the source selection to any characters or text selected. Double-click the Format Painter to apply formats to multiple selections. Click the Format Painter button to turn it off when you are finished.

Home→Clipboard→Cut | Ctrl+X

Home→Clipboard→Copy | Ctrl+C

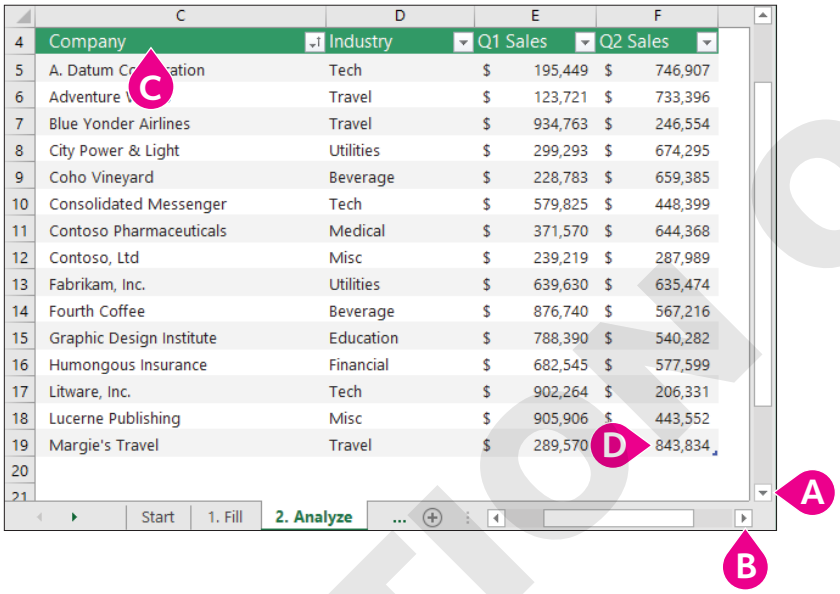
Home→Clipboard→Paste | Ctrl+V

DEVELOP YOUR SKILLS: O1-D6

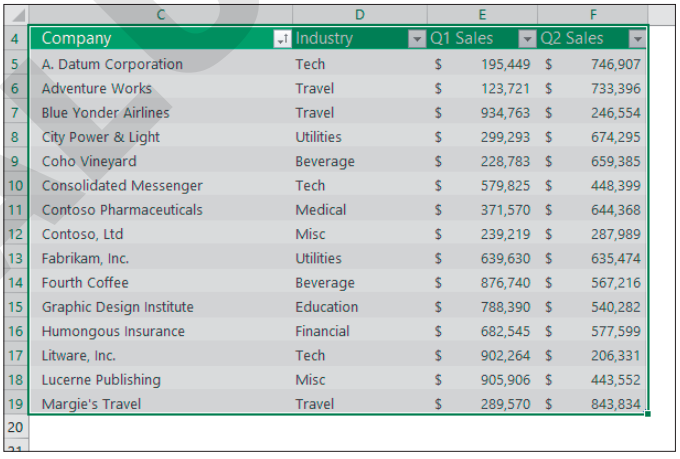
In this exercise, you will use Excel to copy data from the source destination to the target destination and cut data from its original location and paste it into the target location.

To begin, you will navigate to the desired tab and locate the range to be copied. Depending on the size of your monitor, you may or may not need to scroll.

1. Click the **2. Analyze** worksheet tab at the bottom of the screen.
2. Follow these steps to view and select a specific part of a worksheet:



   A. If necessary, scroll down to display **rows 4–20**.
   B. If necessary, scroll right to display **columns C–F**.
   C. Click in **cell C4** to select the Company cell.
   D. Press and hold the Shift key and click **cell F19**.
3. Release Shift and notice that the **range C4:F19** is selected.



	C	D	E	F
4	Company	Industry	Q1 Sales	Q2 Sales
5	A. Datum Corporation	Tech	$ 195,449	$ 746,907
6	Adventure Works	Travel	$ 123,721	$ 733,396
7	Blue Yonder Airlines	Travel	$ 934,763	$ 246,554
8	City Power & Light	Utilities	$ 299,293	$ 674,295
9	Coho Vineyard	Beverage	$ 228,783	$ 659,385
10	Consolidated Messenger	Tech	$ 579,825	$ 448,399
11	Contoso Pharmaceuticals	Medical	$ 371,570	$ 644,368
12	Contoso, Ltd	Misc	$ 239,219	$ 287,989
13	Fabrikam, Inc.	Utilities	$ 639,630	$ 635,474
14	Fourth Coffee	Beverage	$ 876,740	$ 567,216
15	Graphic Design Institute	Education	$ 788,390	$ 540,282
16	Humongous Insurance	Financial	$ 682,545	$ 577,599
17	Litware, Inc.	Tech	$ 902,264	$ 206,331
18	Lucerne Publishing	Misc	$ 905,906	$ 443,552
19	Margie's Travel	Travel	$ 289,570	$ 843,834
20				

4. Choose **Home→Clipboard→Copy** and notice that a moving border displays around the **range C4:F19** to indicate that the selection is copied.

   The copied text is placed on the Office Clipboard and is ready to be pasted in a destination location. The copied text also remains in cells C4:F19 on the 2. Analyze *worksheet tab.*

5. Click the **New Sheet** button (located below the worksheet, to the right of the *Learn More* tab) to create a new worksheet.

The new worksheet, called Sheet1 by default, is inserted to the right of the 2. Analyze worksheet. Verify that cell A1 in the new worksheet is selected. The empty cell A1 is your target location.

6. Choose **Home→Clipboard→Paste**.

In Excel, when you copy cell contents, you also can copy the format(s) associated with the cells. In this case, you only copied the cell contents. Anytime you see ##### in a cell in Excel, it means the column is not wide enough to display the cell's contents.

Cut and Paste

7. Click the **2. Analyze** worksheet tab below the worksheet.

The moving border displays because the selection is still copied.

8. Tap Esc to remove the moving border.
9. Select the **range C5:F7** and choose **Home→Clipboard→Cut**.
10. Click the **Sheet1** worksheet tab and then select **cell A17**.
11. Choose **Home→Clipboard→Paste**.
12. Click the **2. Analyze** worksheet tab.

Notice that the data from the range C5:F7 is no longer there since it was cut, or removed, from the worksheet.

13. Choose **File→Save As** to save the file in your **Overview Chapter 1** folder as: **O1-D6-Clipboard**

Drag and Drop

If you want to cut or copy text and then paste it in a different location on the same worksheet, try using drag and drop. Whether you want to cut or copy text, the first step is always to select the desired cell or cells. The difference between cutting and copying in this method has to do with the Ctrl key. That is, to copy, you hold down Ctrl while moving from one location to the next; when cutting, you do not use Ctrl.

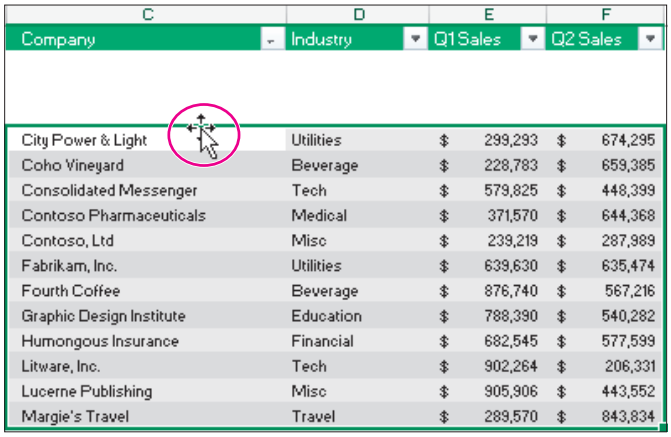
View the video "Using Drag and Drop."

DEVELOP YOUR SKILLS: O1-D7

In this exercise, you will use drag and drop in Excel to cut, or move, data from one group of cells to another location.

1. Choose **File→Save As** to save the worksheet in your **Overview Chapter 1** folder as: **O1-D7-Drag**
2. Click the **2. Analyze** worksheet tab, if necessary.
3. Click **cell C8**, and then press Shift while clicking **cell F19** to select the **range C8:F19**.

4. Position the mouse pointer over the top border in column C of the selection so the four-headed arrow displays.



C	D	E	F
Company	Industry	Q1 Sales	Q2 Sales
City Power & Light	Utilities	$ 299,293	$ 674,295
Coho Vineyard	Beverage	$ 228,783	$ 659,385
Consolidated Messenger	Tech	$ 579,825	$ 448,399
Contoso Pharmaceuticals	Medical	$ 371,570	$ 644,368
Contoso, Ltd	Misc	$ 239,219	$ 287,989
Fabrikam, Inc.	Utilities	$ 639,630	$ 635,474
Fourth Coffee	Beverage	$ 876,740	$ 567,216
Graphic Design Institute	Education	$ 788,390	$ 540,282
Humongous Insurance	Financial	$ 682,545	$ 577,599
Litware, Inc.	Tech	$ 902,264	$ 206,331
Lucerne Publishing	Misc	$ 905,906	$ 443,552
Margie's Travel	Travel	$ 289,570	$ 843,834

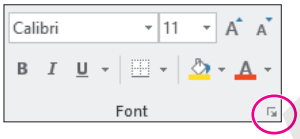
5. Click and hold the mouse button, drag up to **cell C5**, and then release the mouse button.

   Using drag and drop to cut removes the range from the original location and pastes it in the new location.

6. Choose **File→Save** to save your changes.

Formatting Text Using Font Group Settings

To make your selection more visibly appealing and easy to read, you may want to use some or all of the font formats available in the Font group or in the Font dialog box. To apply the formats, you must first select a cell or group of cells, words, or phrases.



Use the Font dialog box launcher to open the Font dialog box.

The Format Painter applies multiple formats located in one range to another range within the application. Think of the selected range's original location as your paint can. You apply the formats found in your paint can, the selected range, to another range with the help of the paintbrush, or Format Painter. Whatever cells you click get the formatting. You can use Format Painter to format multiple cells or ranges by double-clicking the Format Painter button. To turn off the multiple-use feature and stop "painting," tap the Esc key.

DEVELOP YOUR SKILLS: O1-D8

In this exercise, you will increase the font size, make text bold, remove the bold, change the font color, launch the Font dialog box, and use the Format Painter.

1. Use **Save As** to save the worksheet in the **Overview Chapter 1** folder as: **`O1-D8-Format`**
2. At the bottom of the worksheet, click the **3. Chart** worksheet tab and then select the **range C5:D16**.
3. Choose **Home→Font→Increase Font Size** A two times to increase the font size of the selection to 14 points.

4. Select **cell C9**, and then choose **Home→Font→Bold** B.

   Bold is used to add emphasis to a cell. When a format such as bold is applied, the button on the Ribbon displays a dark-gray background. To turn the format off and remove the dark-gray background behind the button, click the button again. This is known as a toggle format.

5. Select **cell C14**, and then choose **Home→Font→Bold** B to toggle Bold to off.
6. Select **cell D6**, and then press and hold the Ctrl key and click **cells D8**, **D9**, **D13**, and **D15** to select multiple cells that are not side by side.
7. Choose **Home→Font→Font Color** A **menu button** and then select **Red** under Standard Colors.
8. Select **cells C8:D8** and click the **dialog box launcher** at the bottom-right corner of the Font group on the Home tab to open the Font dialog box.
9. Select the **Strikethrough** setting under Effects and click **OK**.
10. With the **range C8:D8** still selected, choose **Home→Clipboard→Format Painter**.
11. Select cells **C10:D10**.

    Notice that the strikethrough format found in cell C8 and the red font found in D8 were applied to cells C10 and D10.

12. Save the file.

The Mini Toolbar

The Mini toolbar is a floating toolbar that contains some of the more commonly used formatting buttons found on the Home tab and specific to the application. The Mini toolbar appears at various times in all the Office applications, giving you a convenient way to choose the most commonly used commands. If the Mini toolbar does not display, right-click the mouse.

The Mini toolbar in Word (left) and Excel (right)

File→Options→General→Check Show Mini Toolbar on Selection

DEVELOP YOUR SKILLS: O1-D9

In this exercise, you will use the Mini toolbar in Excel to apply formatting.

1. Use **Save As** to save the worksheet in the **Overview Chapter 1** folder as: **`O1-D9-Toolbar`**
2. Click the **Sheet1** tab and then select **cell C4**.
3. Press and hold Ctrl and then select **cell C19** so two cells are selected.
4. Right-click **cell C4** to display the Mini toolbar and the context, or shortcut, menu.
5. In the Mini toolbar, click the **Bold** B button and the **Fill Color** button to apply a yellow background color to the two cells (C4 and C19).

6. Click any cell to hide the Mini toolbar again.
7. Save the file.

Find and Replace

Within a document, worksheet, database, or presentation, you may need to locate text quickly. You may also need to substitute one word or phrase, or formatting, for something else. The Find command is used to search for characters, symbols, numbers, words, phrases, or formats that meet the criteria. The Replace command first finds whatever meets the criteria and then replaces it with what you desire.

DEVELOP YOUR SKILLS: O1-D10

In this exercise, you will use the Find command to locate the word Contoso *and then replace each occurrence with* Labyrinth.

1. Use **Save As** to save the worksheet in the **Overview Chapter 1** folder as: **`O1-D10-Replace`**
2. Choose **Home**→**Editing**→**Find & Select** →**Find**.
3. Type **`Contoso`** in the Find What box.
4. Click **Find Next** two times.

   The first click finds the first occurrence. The second click finds the next, and final, occurrence.
5. Click the **Replace** tab in the Find and Replace box.

   Verify that the Find What box displays Contoso.
6. Type **`Labyrinth`** in the Replace With box.
7. Click **Replace All** to change the two occurrences of the word Contoso to Labyrinth.
8. Click **OK** in the Microsoft Excel message box.
9. Close the Find and Replace box.
10. Save the file.

Common Features on the Review Tab

In this section, you will learn about the features on the Review tab that are used in a similar manner throughout multiple Microsoft applications, including Word, Excel, Access, and PowerPoint.

Spelling & Grammar

Whether you are working in a Word document, an Excel worksheet, an Access database, or a PowerPoint presentation, you should always check the spelling and proofread carefully before you print or share the file with anyone. The Spelling feature reviews the file for misspelled words or words that do not match the Microsoft dictionary for that computer.

DEVELOP YOUR SKILLS: O1-D11

In this exercise, you will use the Spelling feature to correct mistakes.

1. Insert a new sheet into the workbook.
2. Type **`Parctice makes prefect`** in **cell A1** and tap Enter.

   Yes, you are deliberately typing misspelled words so you will have a worksheet that can be spellchecked in the next few steps!
3. Type **`Poepple nottace spelling mistakes`** and tap Enter.
4. Choose **Review→Proofing→Spelling** to launch the Spelling checker.

   Excel asks if you want to continue checking at the beginning of the sheet.
5. Click **Yes**.

   The first spelling mistake is found. Parctice *is not in the dictionary, so the suggested word is* Practice.
6. Click **Change** to accept the suggestion and locate the next misspelled word.
7. Continue correcting two more misspelled words (People and notice), and then click **OK** when the spell check is complete.

   Since prefect *is a word (just not the correct word for this sentence), it is not identified as a misspelled word when running the spelling checker. You must remember to proofread your work!*
8. Select **cell A1**, then in the Formula Bar double-click prefect and type: **`perfect`**

   The figure on the left shows the incorrectly spelled word selected in the Formula Bar after a double click. The figure on the right shows the corrected word.
9. Use **Save As** to save the file to your file storage location as: **`O1-D11-Spelling`**

Thesaurus

There are times when you end up using a word over and over and over again! Instead of using the same word, you could use a synonym. The Thesaurus provides definitions, word forms, synonyms (words with similar meanings), antonyms (words that are opposite in meaning), and word forms in other languages when dictionaries of other languages are installed on your computer.

DEVELOP YOUR SKILLS: O1-D12

In this exercise, you will use the Thesaurus feature to replace a word with one of its synonyms.

1. Select the **2. Analyze** worksheet tab and then select **cell D16**.
2. Choose **Review→Proofing→Thesaurus**.
3. In the Thesaurus pane, hover the mouse pointer over the word Tourism, (below the Tourism (n.) category) click the **menu** button ▾, and then choose **Insert** to replace Travel with Tourism.
4. Close the Thesaurus pane.
5. Use **Save As** to save the file to your file storage location as: **`O1-D12-Proofing`**

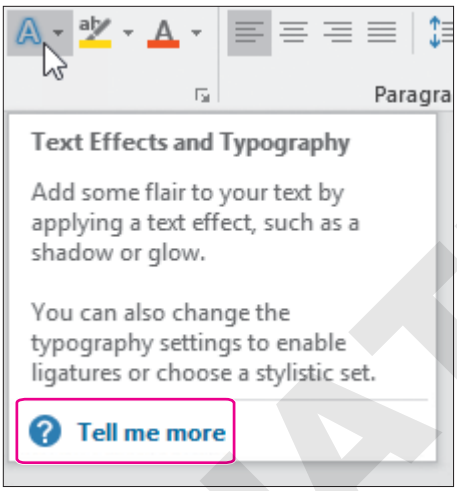
Other Common Features

In the preceding exercises you learned about features found on multiple programs' Ribbons. Here are three additional common features that are available no matter what Microsoft Office program is being used.

Help

When you are working in Microsoft Office, you may need to find out more about a topic as it relates to the application. Located to the right of the last tab on the Ribbon is the *Tell Me What You Want to Do* box. This box provides a quick way to access help or learn more about a feature in the application. When you click the box, suggestions related to the application display. Use the text box to enter words or phrases describing what you would like to do or locate next in the application. You can use the Tell Me... box to research or explain the meaning of a term with Smart Lookup. To view a list of Help topics, tap the F1 function key on the keyboard.

Another Help feature is the *Tell Me More* link that may display at the bottom of a button's help tip. When you click the link, the Help window displays with more information about the specific feature. Using this method, you learn more about the feature without typing any search text.



Some buttons display robust help tips with a Tell Me More link when you point to them.

Smart Lookup with the Insights Pane

Smart Lookup is available within an application on the context menu. In the Insights pane, you can view and listen to pronunciations, look at word forms and definitions of selected text, and view results of wikis and web searches related to your selected text. Using the Smart Lookup feature can be especially helpful, as it saves you the time of having to retype the same selection in your search engine.

Take a Screenshot

The Take a Screenshot button in Excel allows you to take a picture of anything you see on your screen and insert that picture into any Office program without having to use a separate app (such as the Windows Snipping Tool). The Available Windows gallery gives you the option of inserting any of the open windows on your computer, or, if you only need part of a window, you can use the Screen Clipping option. The Screen Clipping tool returns you to the most recent window, fades the display to white, and changes the mouse pointer to crosshairs that you use to drag and select the area of the window you want to capture.

DEVELOP YOUR SKILLS: O1-D13

In this exercise, you will use the Tell Me More help link and the Tell Me What You Want to Do box to learn more about the Insights feature. Then, you will use the Screenshot feature to copy what you found onto a new worksheet.

1. Save the Excel workbook in the **Overview Chapter 1** folder as: **`O1-D13-Help`**
2. On the Ribbon, go to the **Formulas** tab.
3. Point to the Insert Function button to see the name of the button, the keyboard shortcut, a description of the button, and the Tell Me More Help link.
4. Click the **Tell Me More** link and then scroll through the content on creating formulas in the Help pane on the right side of the screen; close the Help window.
5. On the Ribbon to the right of the View tab, click in the **Tell Me What You Want to Do** box and type: **`Insights pane`**

   Observe the options that Microsoft displays in the Tell Me... box.
6. From the displayed list, point to the Get Help on the "Insights Pane" option to display its submenu.
7. Click the **Get Insights into What You're Working on with Smart Lookup** or similar option.
8. Read about the Insights pane.
9. Scroll to the bottom of the Help pane and click **Read Article in Browser**.

   Your web browser opens to the Microsoft website and displays the help page.
10. Click the **Excel** button on the taskbar to return to Excel.
11. Insert a new sheet into the workbook.
12. Choose **Insert→Illustrations→Screenshot**.
13. Click **Screen Clipping** to display the browser window with the article in it, and then drag over a portion of the browser window to take a screenshot of it.

    You are returned to Excel and the screenshot is pasted on the new sheet.
14. Save the workbook and then close Excel.

EXCEL

1 Tracking Customer Data

In this chapter, you will use Excel to enter detailed information about customers into a worksheet. You will learn about fundamental Excel features as you create and modify a simple worksheet. By the end of the chapter, you will have a solid grasp of the basic tools used to create worksheets in Excel.

LEARNING OBJECTIVES

- Enter data into a worksheet
- Navigate a workbook
- Format a worksheet
- Apply number and date formats
- Enter a series of related data
- Print a worksheet
- Adjust the view with Zoom tools

Project: Tracking Customer Invoices

Airspace Travel is a company that provides luxurious travel packages to tropical destinations. It is a small, family-run business, and the owners want your help tracking their customer accounts using Excel.

You will use Excel to enter information about each customer who books a trip. Some of the important information to include for each customer is the airline, destination, number of guests, and cost per person.

Introducing Excel

Microsoft Excel is a very popular tool used by millions of people every day. Why do people like it? Partly because it makes work easier! Excel is a worksheet program that allows you to work with numbers and data much more quickly and efficiently than with the pen-and-paper method.

Excel can perform instant calculations and process, analyze, and store large amounts of data. It can perform a variety of tasks such as:

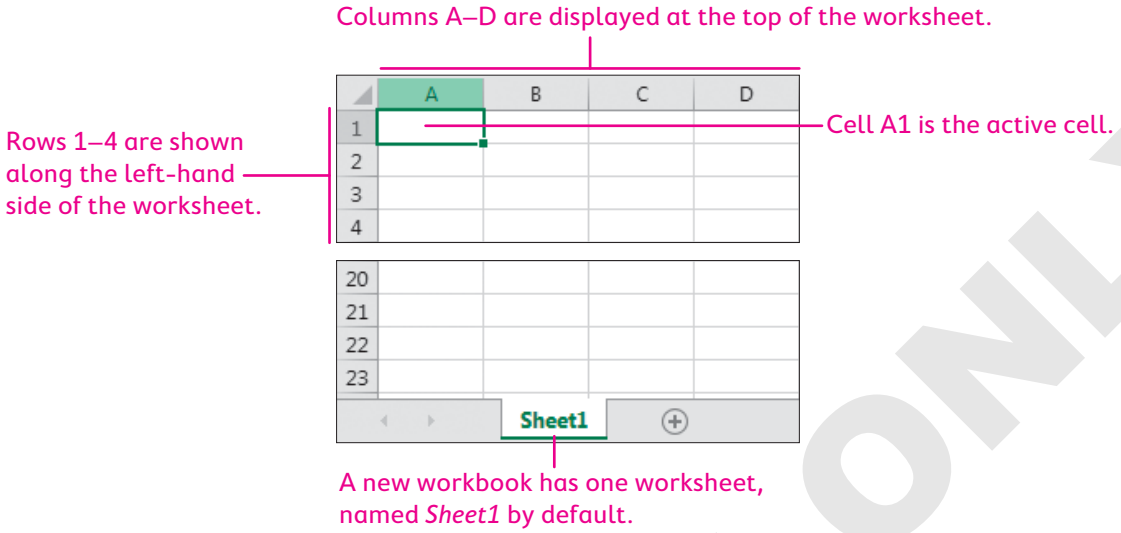
- Creating payment schedules and budgets
- Creating sales reports and performing sales analysis
- Tracking invoices and controlling inventory
- Creating databases or analyzing data imported from a database

The more you learn about and become skilled at using Excel, the more ways you will discover to make work fast and easy.

What Is a Worksheet?

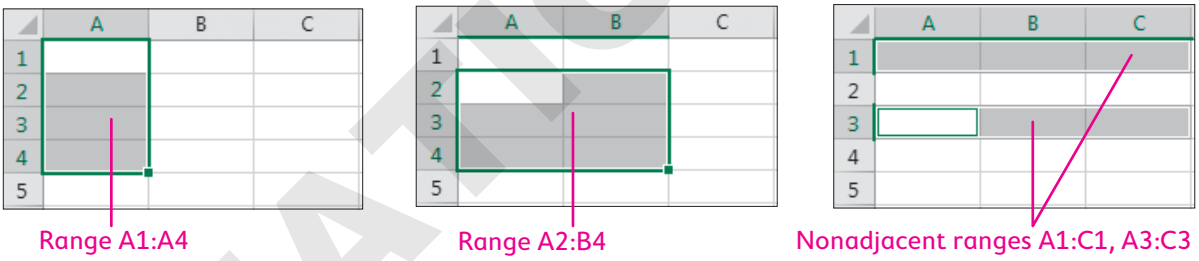
An Excel file is called a workbook, and it contains one or more worksheets (also called spreadsheets) that can be used for small tasks or to create large databases of information. Each worksheet is made up of rows and columns of individual cells, into which you can add data. When you open a new blank workbook, the selected cell is A1. The cell is referred to as A1 because this is where column A meets row 1.

The selected cell, also known as the active cell, is indicated by the thick box around it. The active cell is where you can type data or insert objects into your worksheet.



Cell Ranges

For many tasks, you will want to select a group of cells instead of a single cell. A group of cells is referred to as a range. A range is identified by the first and last cell, separated by a colon. The cells in a range are adjacent (side by side), but you can also choose to select two or more nonadjacent ranges.



Cell Selection and the Mouse Pointer

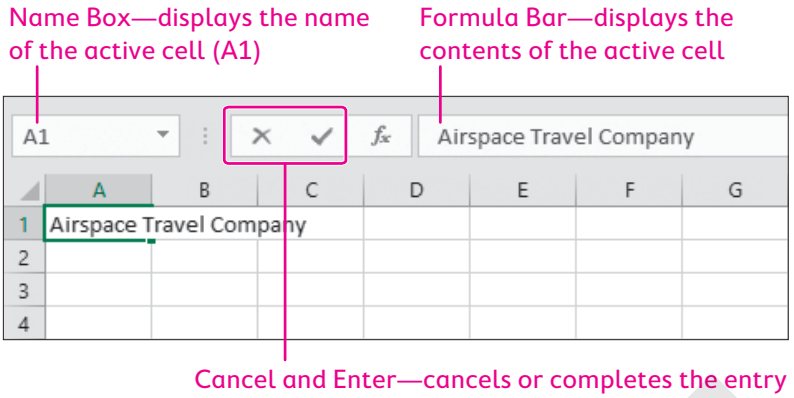
One of the challenges for new Excel users is getting used to the different mouse functions. The shape of the mouse pointer changes as you point to different parts of the Excel window, so pay close attention to the shape of the pointer to ensure you're performing the intended action.

MOUSE POINTER SHAPES

Pointer Shape	Task
	Click to select a cell; drag to select a range of cells
	Drag to move the selected cell contents to another location
	Enter or edit cell contents in the cell or in the Formula Bar
	Drag the fill handle to fill adjacent cells with a series of numbers, dates, or formulas
	Select an entire column (Column A) or row (Row 1)

Entering and Editing Data

Data is easily entered into Excel by selecting a cell and typing. If a cell already contains data, you can double-click the cell to edit it; or, to replace the existing data, just start typing (no need to delete it first!). Text is used for headings or descriptive data, and numbers can either be typed into a cell or calculated with a formula.



Completing Cell Entries

After typing or editing data in a cell, you need to complete the entry before you can continue. The method you use to complete the entry will determine which cell becomes active next.

Excel is in Ready mode when a cell is selected and Enter mode when data is being inserted. The difference between Enter and Ready modes is that many Excel features are unavailable while you are entering data.

Tapping Enter, Tab, or any of the arrow keys (→, ←, ↑, ↓) will complete the entry as shown in the table below. Another option is to use the Enter ✓ button on the Formula Bar, which will keep the current cell active.

COMPLETING A CELL ENTRY

Completion Method	New Active Cell Location
Enter	Moves one cell down
Tab	Moves one cell to the right
→, ←, ↑, ↓	Moves to the next cell in the direction of the arrow key
✗	Cancels the entry (or modification) and keeps the current cell active
✓	Completes the entry without moving

DEVELOP YOUR SKILLS: E1-D1

In this exercise, you will enter the data for your worksheet title and headings.

1. Start Excel.
2. Click the **Blank Workbook** template on the Excel start screen.
3. Save your workbook in your **Excel Chapter 1** folder as: **`E1-D1-Invoices`**

4. Type **`Airspace Travel Company`** in **cell A1** and tap Enter to complete the entry.

   Notice that cell A2 is now the active cell.

5. Type **`Monthly Customer Invoices`** in **cell A2** and tap Enter to complete the entry.

   So far you've used the Enter key to move down column A while entering the data. Now you'll use the Tab key to move across row 3 as you enter more data.

6. Type **`First Name`** in **cell A3** and tap Tab to complete the entry, which also moves the active cell one cell to the right.

7. Type **`Last Name`** in **cell B3** and tap Tab.

   The First Name *text in cell A3 is no longer fully visible because it's wider than column A. Long entries are cut off like this when the cell to their right contains data. You will fix this in a later exercise.*

8. Type **`Provider`** in **cell C3** and tap Tab.

9. Type **`Destination`** in **cell D3** and tap Tab.

10. Type **`# of Guests`** in **cell E3**, but this time click **Enter** ✓ on the Formula Bar to complete the entry.

    Cell E3 remains the active cell. Use Enter on the Formula Bar to complete entries when you want the current cell to remain active. Your worksheet should now look like this:

	A	B	C	D	E	F
1	Airspace Travel Company					
2	Monthly Customer Invoices					
3	First Nam	Last Name	Provider	Destinatio	# of Guests	

11. Save the workbook.

Note! *Always leave the file open at the end of an exercise unless instructed to close it.*

Navigating Around a Worksheet

Navigating around your worksheet quickly is an important skill to master. The following table lists some useful keystrokes for changing the active cell. You can also click with the mouse to select the desired cell or type a cell name into the Name Box to quickly jump to it. A worksheet has up to 1,048,576 rows and up to 16,384 columns, so for large amounts of data, you definitely want a quicker way to get around than simply scrolling!

NAVIGATION METHODS

Keystroke(s)	How the Active Cell Changes
→, ←, ↑, ↓	Moves one cell right, left, up, or down
Home	Moves to the beginning (column A) of current row
Ctrl + Home	Moves to the home cell, usually cell A1
Ctrl + End	Moves to the last cell in active part of worksheet
Page Down	Moves down one visible screen
Page Up	Moves up one visible screen
Alt + Page Down	Moves one visible screen to the right
Alt + Page Up	Moves one visible screen to the left
Ctrl + G	Displays the Go To dialog box

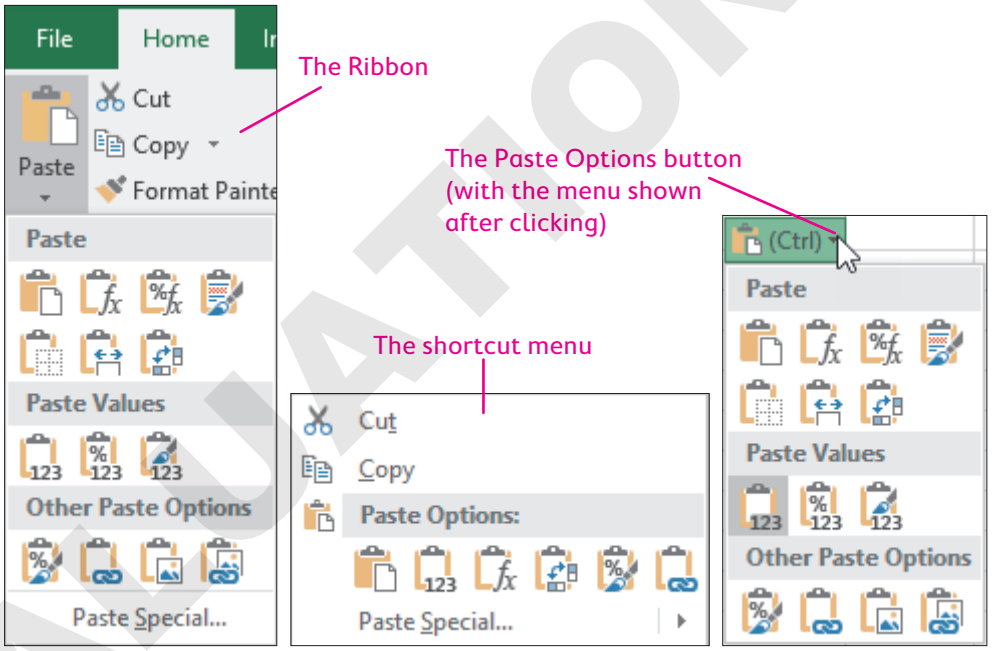
Using AutoComplete to Enter Data

When inputting data, consistency is extremely important. If you are entering employee records in a large database, you want to ensure that information such as department names and position titles is entered accurately; for example, you wouldn't want some employees to be listed in the *Financial* department and others to be listed in the *Finance* department because that would create problems when looking up, sorting, and filtering your data.

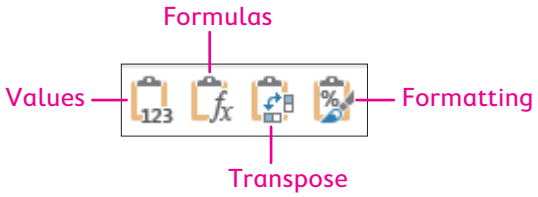
Excel has a feature that helps with this problem and also saves you time when repeatedly entering the same text. AutoComplete suggests text for you as you type, using data from the same column. For example, if you type *Accounting* for a department name in one cell, and then farther down in the same column you type the letter *A*, AutoComplete will suggest *Accounting*. You can either accept the suggestion the way you normally complete a cell entry or ignore it and keep typing.

Rearranging Data in Excel

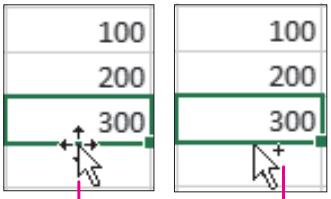
To move or copy content in Excel, you can use the tools in the Clipboard group of the Home tab on the Ribbon, similarly to how you would in other Microsoft Office apps. However, Excel has many unique options for pasting data that aren't available in the other Office apps. The Paste Options are accessible from the Ribbon, the shortcut menu when you right-click a cell after copying, or the Paste Options button that appears after you have pasted something into a worksheet.



Some of the important paste options unique to Excel that are frequently used include pasting values, pasting formulas, transposing data, or pasting only the formatting from the copied cell or range.



To quickly move data, you can also point to the border of the selected cell (or range), and when the mouse pointer changes to a four-headed arrow, you can then drag the cell's contents to the desired location. To copy instead of move data, hold down Ctrl while dragging. These two methods are best used when the original location and new location are relatively close and both are visible on the same screen.



You can move cell contents by pointing to the active cell border so the four-headed arrow appears.

If you hold Ctrl while pointing to the active cell border, you can copy rather than move the cell contents.

DEVELOP YOUR SKILLS: E1-D2

In this exercise, you will enter the customer data below each of the column headings.

1. Save your workbook as: **E1-D2-Invoices**
2. Press Home followed by ↓ to move the active cell to **cell A4**.
3. Enter this data for Eric Snow in **row 4** and press Tab to complete the entry in each cell:

3	First Nam	Last Name	Provider	Destinatic	# of Guest
4	Eric	Snow	Sunwind	Jamaica	

4. Type **2** in **cell E4** and tap Enter to complete the entry.

   The active cell moves to A5, the beginning of a new row. Excel presumes you are finished entering data in the row and wish to start a new row. This is one of Excel's built-in data entry features that make it faster to enter data into a worksheet or database. As long as you enter data using the Tab key continuously from left to right, the Enter key will bring you back to the first column of data to begin the next row. If the active cell does not move from E4 to A5, it is likely because you used the mouse to select a cell rather than Tab.

5. Type **`Alison`** in **cell A5**, **`Lobosco`** in **cell B5**, and only the letter **`S`** in **cell C5**.

   In cell C5, Excel's AutoComplete feature prompts you with the name Sunwind.

3	First Nam	Last Name	Provider	Destinatic	# of Guests
4	Eric	Snow	Sunwind	Jamaica	2
5	Alison	Lobosco	Sunwind		

6. Tap Tab to accept the suggestion, then continue entering the rest of the customer information as shown below, starting from **cell D5**.

   As you type the data, use Tab *to accept the AutoComplete suggestions for the Provider and Destination columns when possible; the goal is to enter the data quickly and efficiently. Tap* Enter *at the end of each row to finish one customer's information and begin entering it for the next. Be aware that long entries won't fully display until the column is widened.*

	A	B	C	D	E
3	First Name	Last Name	Provider	Destination	# of Guests
4	Eric	Snow	Sunwind	Jamaica	2
5	Alison	Lobosco	Sunwind	Mexico	2
6	Lacy	Henrich	TrueBlue	Dominican Republic	4
7	Will	Johns	Eastjet	Cuba	3
8	Nicki	Hollinger	Sunwind	Mexico	1
9	Lennard	Williams	TrueBlue	Brazil	6
10	Kerri	Knechtel	TrueBlue	Columbia	4
11	Karynn	Alida	Sunwind	Bahamas	2
12	David	Monton	Eastjet	Dominican Republic	2
13	Amanda	Campbell	Sunwind	Jamaica	7

7. Save the workbook.

Adjusting Column Width and Row Height

To create enough space to properly see your text, you may need to adjust the column width and row height. A key step is to select the desired row(s) or column(s) before adjusting the size. Column width and row height can be set precisely using Ribbon commands or adjusted manually by dragging with the mouse. Even better, AutoFit can adjust the size to accommodate the largest entry in the column or row.

In a new workbook, column width is 8.43 and row height is 15.00; however, you might notice that cells are wider than they are tall. This is because column width is measured in characters and row height is measured in points, similar to font size. One character is bigger than one point.

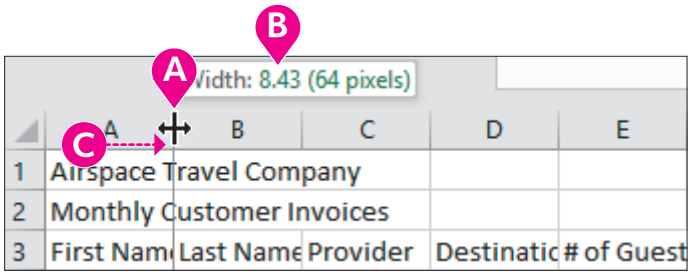
Home→Cells→Format→Column Width *or* Row Height | Right-click column/row heading→Column Width *or* Row Height

Home→Cells→Format→AutoFit | Double-click column/row heading borders

DEVELOP YOUR SKILLS: E1-D3

In this exercise, you will adjust the column widths using various methods to properly display the text in the cells.

1. Save your workbook as: **`E1-D3-Invoices`**
2. Follow these steps to manually adjust the width of **column A**:



   A. Move the mouse pointer over the line between the column A and B headings to display the adjust pointer.

   B. Press and hold the left mouse button, and notice the ScreenTip displays the current width of column A (the default width is 8.43).

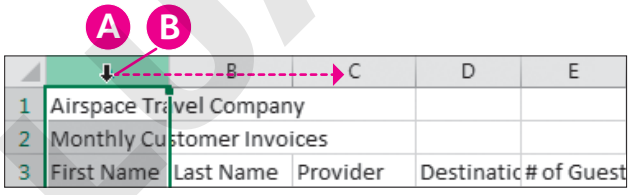
   C. Continue holding the left mouse button and drag right slightly, then release the mouse button. The text *First Name* should now be fully visible in cell A3; if not, keep trying until you get it.

   As you drag, the column width is displayed as it changes. You can set column width to an exact amount this way, but it's difficult to be precise. You'll set precise widths later in this exercise.

3. Widen **column B** until *Last Name* is visible in **cell B3** or try to set the width to 10.00.
4. Widen **column C** slightly or try to set the width to 10.00.

   Now you will use the Ribbon to ensure that columns A, B, and C are all set to exactly 10.00.

5. Follow these steps to select **columns A–C**:



   A. Position the mouse pointer on the **column A** heading and then press and hold the left mouse button.

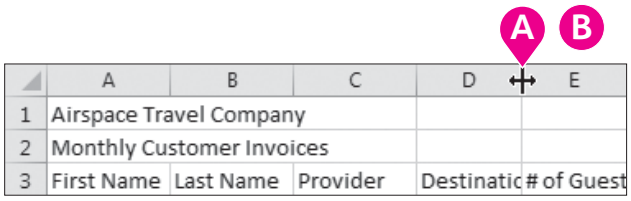
   B. Drag right until **columns A–C** are selected and then release the mouse button.

6. Choose **Home→Cells→Format→Column Width** to display the Column Width dialog box.

Tip! *You will only see a number in the box if all three columns have the same width; otherwise, the box will be blank.*

7. Type **`10`** in the box and click **OK**, which will set the widths of **columns A–C** to 10.

8. Follow these steps to use AutoFit to adjust the width of **column D**:



A. Point between the column D and E headings to display the adjust pointer.

B. Double-click to AutoFit **column D** to accommodate the widest entry.

Column D is now wide enough so the text Dominican Republic *is fully visible in cells D6 and D12.*

9. Save the workbook.

Formatting Cells

You may notice that unformatted data does not look very pleasing. The columns are too narrow, and the black-and-white color is plain and boring. Formatting is important not simply to make worksheets more appealing, but also to make it easier to read and interpret the data they contain. A textbook would be very hard to read if all the text were the same font, size, and color on a white page. Likewise, it is much easier to understand a worksheet if it is properly formatted.

Borders and Fill

Adding some color to your worksheet can accentuate the column headings and helps the data stand out. In addition to changing the font, style, and color of the text, you can use Fill Color to add color or shading inside a cell and use Borders to add lines around the cells. The drop-down menu buttons (▾) give you more choices for lines and colors.

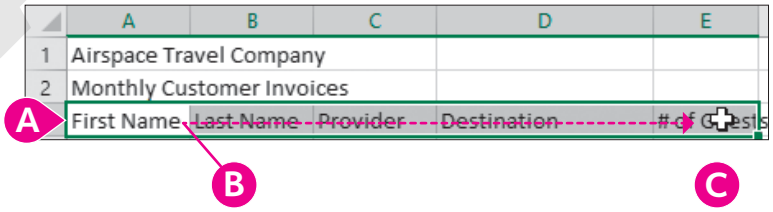
Home→Font→Borders | Right-click→Format Cells→Borders

Home→Font→Fill Color | Right-click→Format Cells→Fill

DEVELOP YOUR SKILLS: E1-D4

In this exercise, you will add color to your worksheet using fill colors, borders, and font colors.

1. Save your workbook as: **`E1-D4-Invoices`**
2. Follow these steps to select the column headings in the **range A3:E3**:

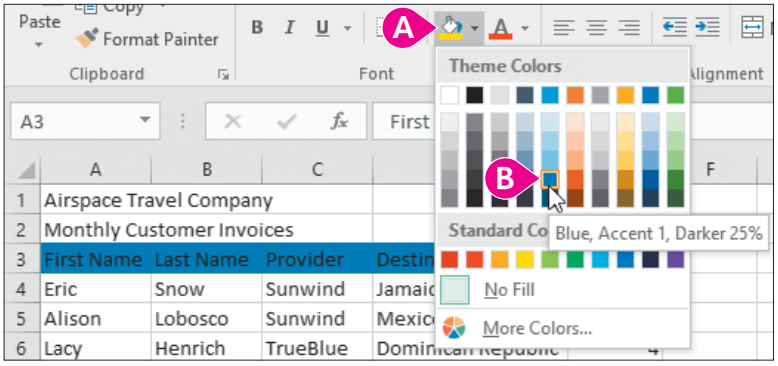


A. Point to the middle of **cell A3** and then press and hold the left mouse button.

B. Continue to hold the left mouse button as you drag right, along row 3, until the **range A3:E3** is selected.

C. Release the mouse button to complete the selection.

3. Follow these steps to explore the Fill Color palette and apply a color:



A Click the **Fill Color menu** button ▾ to display the palette and slowly move the mouse pointer around the various colors, pausing on a few.

When the mouse stops moving, a ScreenTip indicates the name of the color you are pointing at. The top row under Theme Colors gives you ten color options, with different shades for each in the column below.

B Choose **Blue, Accent 1, Darker 25%** (fifth column, fifth row).

4. With the range A3:E3 still selected, choose **Home→Font→Border menu button** ▾.
5. Choose **Thick Outside Borders** to apply a thick border around the selected range.
6. For the same range choose **Home→Font→Font Color menu button** ▾ and choose **White, Background 1** (first column, first row).
7. Use the keyboard shortcut Ctrl+B to apply bold formatting.

Now that you have modified the headings, it's time to work on the titles.

8. Select **cell A1** and choose **Home→Font→Font Size menu button** ▾ and choose **18**.
9. Now select **cell A2** and choose **Home→Font→Increase Font Size** two times to increase the font size to **14**.
10. Select the **range A1:A2** and then apply the **Blue, Accent 1, Darker 50%** (fifth column, sixth row) font color and **Bold** B formatting.
11. Select the **range A4:B13** and apply **Bold** B.
12. Click anywhere outside your data to deselect it.

	A	B	C	D	E
1	**Airspace Travel Company**				
2	**Monthly Customer Invoices**				
3	**First Name**	**Last Name**	**Provider**	**Destination**	**# of Guest**
4	**Eric**	**Snow**	Sunwind	Jamaica	2
5	**Alison**	**Lobosco**	Sunwind	Mexico	2

13. Save the workbook.

Cell Alignment

Excel's alignment tools let you adjust the arrangement of entries within cells. The default alignment for text data is left-aligned inside the cell, and the default for numerical data is right-aligned, as you can see in column E of your working file. The Alignment group on the Home tab provides you with the following options:

ALIGNMENT BUTTONS

Button	What It Does
	Aligns entries vertically at the top, middle, or bottom of cells
	Aligns entries horizontally at the left, center, or right of cells
	Decreases or increases the indent
	Wrap Text; splits long text entries into multiple lines
	Merge & Center; combines cells and centers content
	Adjusts the angle or rotation of your text

Merge & Center is a one-step method for simultaneously merging multiple cells into one cell and centering the content. This is often used for worksheet titles at the top of your sheet. You can also add an indent to the contents of a cell, which increases the distance of the text from the cell border. This adds more space, making it easier to read the data.

Before merging, with three cells selected

After Merge & Center is applied, one cell spans the three columns.

Home→Alignment | Right-click→Format Cells→Alignment

Clear Formatting and Clear All

You may want to keep the text in a cell or range but clear all formatting. This is easy to do with the Clear Formatting feature. You can also remove text and formatting at the same time with Clear All.

Home→Editing→Clear 

DEVELOP YOUR SKILLS: E1-D5

In this exercise, you will adjust the alignment for your headings and data, and use Merge & Center for your titles.

1. Save your workbook as: **`E1-D5-Invoices`**
2. Select the **range A3:E3** and choose **Home→Alignment→Wrap Text**.

   Wrap Text takes a long entry and splits it into multiple lines, increasing row height at the same time.
3. With the range A3:E3 still selected, choose **Home→Alignment→Middle Align**.
4. With the headings still selected, choose **Home→Alignment→Center**.
5. Select the **range E4:E13** (the number of guests data) and apply **Center** alignment.
6. Select the **range A1:E1**.
7. Choose **Home→Alignment→Merge & Center** (do not click the menu button ▾) to center the company name over the data below.
8. **Merge & Center** the **range A2:E2** to center the Monthly Customer Invoices subtitle.
9. Select the **range A4:A13** and choose **Home→Alignment→Increase Indent**.
10. Save the workbook.

Working with Numbers and Dates

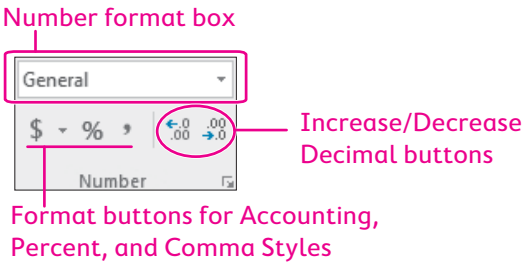
Because Excel is often used to perform calculations, it's important to know how to enter numerical data properly. A number entered into Excel can be formatted in many ways—with a dollar sign, percent symbol, decimals, or no decimals—but the numerical entry in the cell does not change. Typically, to enter a numerical value into a cell, you simply type in the digits and adjust formatting after.

The default number format is General, which has no specific format. When a number format is applied to a cell, it remains with the cell even if the contents are changed or deleted. Here are some basic number format examples:

Number	Format	Result
2317.25	General	2317.25
2317.25	Comma Style	2,317.25
2317.25	Currency	$2,317.25
2317.25	Accounting	$ 2,317.25
0.25	Percent	25%

Tip! *The differences between Currency and Accounting are the position of the $ sign and the indent from the right side of the cell.*

The number format for the current cell is visible in the Number Format box on the Ribbon.



Be aware that the numerical entry in the cell does not change when you increase or decrease the decimal (or when you change the number format). Doing so changes only the *appearance* of that number. Numbers with decimals can still have the decimals removed (decreased), but the number would then appear rounded up or rounded down from the actual entry, as shown in the following example. If the cell is used in a formula, the formula will use the actual numerical entry in the cell, *not the rounded number displayed on the screen*.

Number	Decimal Places	Result	
23.64	3	23.640	(extra zero)
23.64	2	23.64	(no change)
23.64	1	23.6	(rounded down)
23.64	0	24	(rounded up)

Home→Number | Right-click→Format Cells→Number

Negative Numbers

Working with negative numbers is no different from working with other numbers, except that there are more options for displaying the negative values. Negative numbers have the currency, comma, and decimal options, but they can also be represented by a – (minus) symbol, red digits, parentheses, or both red digits and parentheses.

-12	12	(12)	(12)

Formatting examples for negative twelve

Date Entries

Date formatting is another kind of number formatting. After a cell has a date entered into it, you can change the display without changing the actual cell entry. Excel can also use dates to perform calculations in a formula.

A date can be entered many ways, though the best way is to enter it in the format MM/DD for the current year or MM/DD/YY for any other year. For example, 10/15 would be entered for October 15 of the current year, and 10/15/18 would be entered for October 15, 2018.

DEVELOP YOUR SKILLS: E1-D6

In this exercise, you will enter two new columns of information using currency and date formatting.

1. Save your workbook as: **`E1-D6-Invoices`**
2. In **cell F3**, enter the heading **`Price Per Person`** and tap Tab.

   Notice the font, fill, and wrap text formatting are copied from the previous headings, but the border style is not.
3. Enter the heading **`Invoice Date`** in **cell G3**.
4. Select the **range F3:G3** and apply **Thick Outside Borders**.
5. In **cell F4**, type the digits **`899`** and tap Tab.
6. In **cell G4**, type **`9/8`** and then click **Enter** ✓ on the Formula Bar.

   The digits 9/8 are automatically converted to display 8-Sep. *In the Home→Number→Number Format box you can see the number format for cell G4 has changed to a Custom format.*
7. Continue entering data in **columns F** and **G** as shown, starting in **cell F5**.

   The number format of the Invoice Date column is adjusted for you as you enter the data, as it was in cell G4. You will adjust the number format for the Price Per Person column after you have entered all the data.

	F	G
5	770	9/7
6	1200	9/1
7	950	9/9
8	875	9/8
9	800	9/8
10	560	9/5
11	870	9/8
12	650	9/6
13	900	9/9

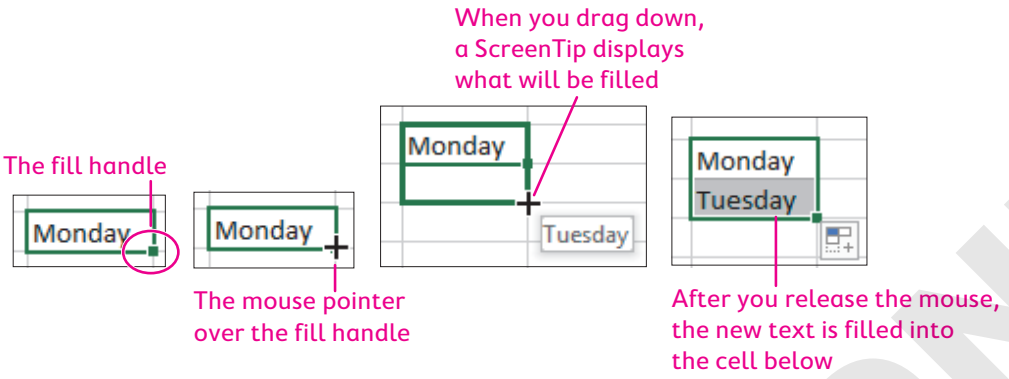
8. Select the **range F4:F13** (the cells with the prices you just entered).
9. Choose **Home→Number→Accounting** $ (not the menu button ▾) to apply the Accounting format to the selection.

   The prices now have a dollar sign, comma separator, and two decimal places. All the prices are even dollar amounts, so you can now eliminate the unnecessary decimals.
10. With the range F4:F13 still selected, choose **Home→Number→Decrease Decimal** twice.
11. Save the workbook.

Entering a Series Using AutoFill

When entering data into a worksheet, it is common to enter a series of data, which is a sequence of text, numbers, or dates. For example, you can enter a series of weekdays from Monday to Friday, a series of months from January to December, a series of numbers from 1 to 100, or a series of dates for the next two weeks.

Rather than type each item line by line, you only need to enter the first cell and then use AutoFill to quickly enter an entire column or row of data. To use AutoFill, you can drag the fill handle or double-click it (if there's adjacent data).



Depending on the type of information in the selected cell(s), the fill handle performs different actions, such as copying, creating a series, or filling in a list. These figures show examples of series created with the AutoFill tool, which you can also try to create on your own in a blank Excel workbook.

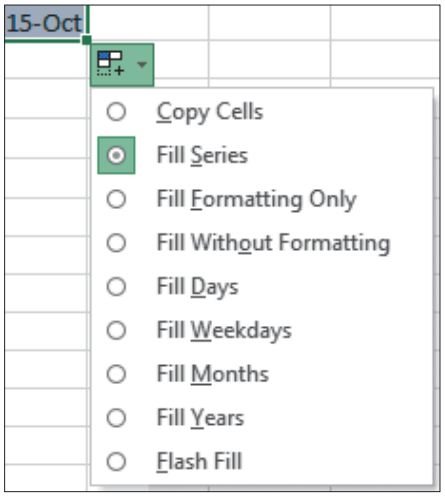
Starting cell	Monday	Wed	March	Jan	Invoice 200	1st Day	10-Oct
AutoFill Results	Tuesday	Thu	April	Feb	Invoice 201	2nd Day	11-Oct
	Wednesday	Fri	May	Mar	Invoice 202	3rd Day	12-Oct
	Thursday	Sat	June	Apr	Invoice 203	4th Day	13-Oct
	Friday	Sun	July	May	Invoice 204	5th Day	14-Oct
	Saturday	Mon	August	Jun	Invoice 205	6th Day	15-Oct

When more than one cell is selected, the AutoFill tool will copy the pattern Excel finds in the selected data.

Starting cells	Monday	Jan	1	100	01-Jun
	Wednesday	Apr	2	120	01-Jul
AutoFill Results	Friday	Jul	3	140	01-Aug
	Sunday	Oct	4	160	01-Sep
	Tuesday	Jan	5	180	01-Oct
	Thursday	Apr	6	200	01-Nov
	Saturday	Jul	7	220	01-Dec

After you use AutoFill, the AutoFill Options button appears below the filled cells. The AutoFill Options button allows you to modify the way the data was filled, and the options change depending

on the type of data that was filled. For example, after filling in a series of dates, the option allows you to choose either days, weekdays, months, or years.



View the video "Using AutoFill to Fill a Series."

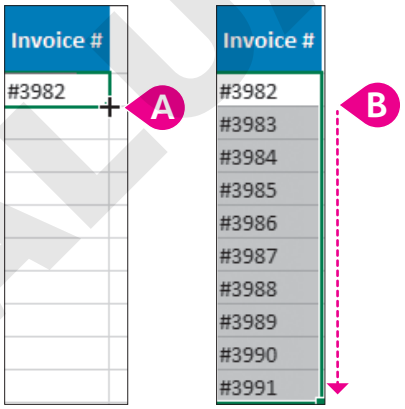
View the video "Using AutoFill Options."

DEVELOP YOUR SKILLS: E1-D7

In this exercise, you will enter invoice numbers for each customer using AutoFill.

1. Save your workbook as: **`E1-D7-Invoices`**
2. Type the column heading **`Invoice #`** in **cell H3** and tap Enter.
3. In **cell H4**, type **`#3982`** and then click **Enter** on the Formula Bar so cell H4 remains active.

   The invoice number for Eric's trip is #3982. Invoice numbers will continue in sequence counting up by one, so the next invoice will be #3983 and so on.
4. Follow these steps to use AutoFill to enter the rest of the invoice numbers:



   A. In the active cell, place the mouse over the fill handle so the mouse pointer changes to the black cross.

   B. Drag down to **cell H13** to fill in the rest of the series.

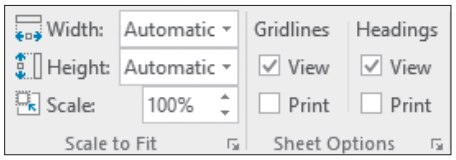
   The invoice numbers have now been entered for all customers, ending with #3991 in cell H13.
5. Save the workbook.

Printing Worksheets

Now that you've entered all the required information into the worksheet, you may want to print your data. Although printing is becoming less common in the digital age, there will certainly be times when you need a paper copy.

Printing a worksheet is simple, although sometimes adjustments need to be made so the cells, columns, and rows fit nicely on the page. To adjust the way your worksheet prints, you can use the Scale to Fit feature. This automatically resizes your content to print the desired number of pages.

Excel will not normally print the gridlines around the cells or the row and column headings, though you can change this setting in the Sheet Options group on the Page Layout tab of the Ribbon.



Because your workbook can contain multiple worksheets, there are three options for printing. In Backstage View you can choose from Print Active Sheets, which is the default option, Print Entire Workbook, which prints all worksheets in the workbook, or Print Selection, which will print only the currently selected cell(s).

File→Print→Settings

Page Layout→Scale to Fit

Page Layout→Sheet Options

DEVELOP YOUR SKILLS: E1-D8

In this exercise, you will put the finishing touches on your worksheet. Then you will access the print preview and prepare your worksheet for printing.

1. Save your workbook as: **`E1-D8-Invoices`**
2. Select the **range A3:H3** and choose **Home→Font→Border menu button →No Border**.
   This removes all borders from the column headings so you can apply a border around all headings.
3. With the range A3:H3 still selected, choose **Home→Font→Border menu button → Thick Outside Borders**.
   Now you need to center the titles over the data, including the newly added columns.
4. In **row 1** select the **range A1:H1** and choose **Home→Alignment→Merge & Center** twice.
   The first click of Merge & Center removes the merge formatting from the first five columns; the second click applies the merge formatting across all eight columns.
5. Select the **range A2:H2** and, again, choose **Home→Alignment→Merge & Center** twice.
   Both titles should now be centered over your data.

Change Print Options

6. Choose **File→Print** to access the print preview.

   Notice the document will print on one page, with the Invoice # column appearing at the right side of the page. If more columns of data were added they would print on a separate page. Also notice that the gridlines, which are the lines around the individual cells on the worksheet, do not print, nor do the row or column headings (A, B, C, 1, 2, 3, etc.).

7. Click **Back** to return to your worksheet.

   You will now see a dashed line between column H and column I, which indicates the print area for your worksheet. Next you will select an area of the sheet to print.

8. Select the **range A1:H8** (the titles, headings, and data for the first five customers) and then choose **File→Print** to access print preview again.

9. In the Settings section, choose **Print Active Sheets→Print Selection**.

   The print preview changes to show that the print area will include only the first five customers now.

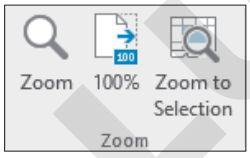
10. In the Settings section, choose **Portrait Orientation→Landscape Orientation**.

    The printout will be much easier to read now, with the page turned to Landscape. Do not print at this time.

11. Save the workbook.

Zoom Tools

You may want to adjust the view to focus on one area of your worksheet, or you may want to get a broad view of the entire worksheet. The Zoom tools allow you to increase or decrease the magnification of your worksheet so you can see more or less of the worksheet at one time. Changing the view does not change how the worksheet will print. You can select a range of cells and click Zoom to Selection to focus on just that area of the worksheet, or you can jump back to 100% view to see your work in "real" size.



The Zoom tools on the Ribbon allow you to customize magnification settings.

The Zoom slider on the status bar allows you to make quick adjustments by clicking + or –.

View→Zoom

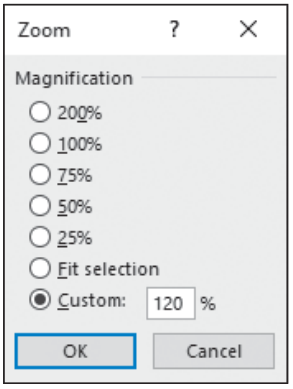
DEVELOP YOUR SKILLS: E1-D9

In this exercise, you will use the Zoom tools to focus on different areas of the worksheet.

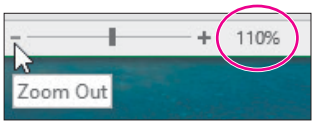
1. Save your workbook as: **`E1-D9-Invoices`**
2. Select the customer invoice data in the **range A3:H13**.
3. Choose **View→Zoom→Zoom to Selection**.

   Your screen view will magnify so the range fills the entire screen; the exact zoom level will depend on your screen size.
4. Choose **View→Zoom→100%**.

   This returns the worksheet to its actual size.
5. Choose **View→Zoom→Zoom**.
6. In the Zoom dialog box, choose **Custom**, type **`120`** in the % box, and click **OK**.



   Another option for quickly adjusting Zoom level is to use the Zoom slider on the status bar on the bottom-right side of the Excel window.
7. On the Zoom slider, click **Zoom Out** to reduce the magnification to 110%.



   When you save a file, it also saves the zoom settings so it will display the same the next time the file is opened.
8. Save the workbook.

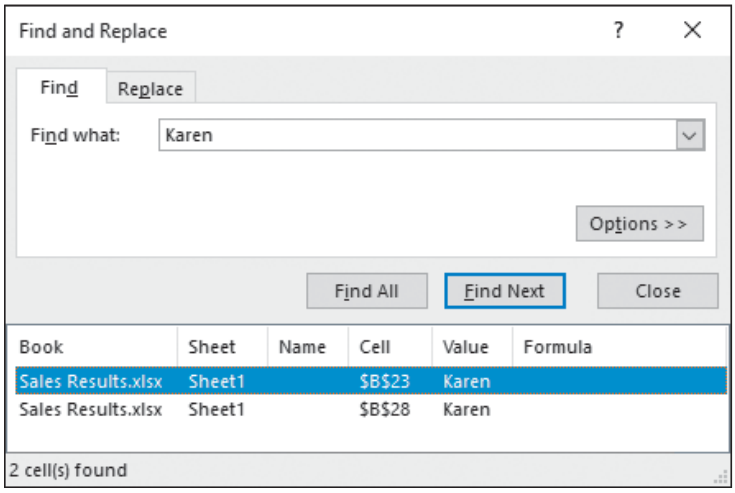
Other Navigation Methods

Navigating a worksheet is simple using the mouse, scroll bar, and keyboard keys. However, as your workbook becomes larger and more complex, you may want other, faster methods of finding information.

Find

If you are looking for specific text or values, you can use the Find feature. Find searches within the worksheet to find the text or number provided, and the results show the exact cell location where the item is found. The results also show the entire cell value where the search string was found and can

be used to navigate to that cell. Other options include searching for formatting; searching the entire workbook; and searching formulas, values, or comments.



In this example, to find Karen's sales, searching for *Karen* shows two results in the Sales Results workbook on Sheet 1, in cells B23 and B28.

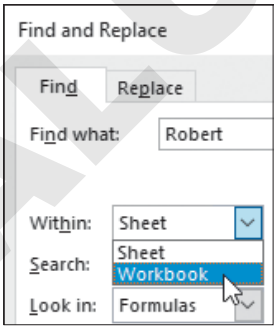
Home→Editing→Find & Select

DEVELOP YOUR SKILLS: E1-D10

In this exercise, you will use Find to search through the workbook.

1. Save your workbook as: **`E1-D10-Invoices`**
2. Choose **Home→Editing→Find & Select→Find**.
3. Type **`David`** in the Find What box and then click **Find All**.

   The result shows one cell found and the active cell jumps to cell A12, which contains David.
4. Click **Options >>** in the Find and Replace dialog box.
5. Beside the word *Within*, click **Sheet** to expand the options and select **Workbook**.

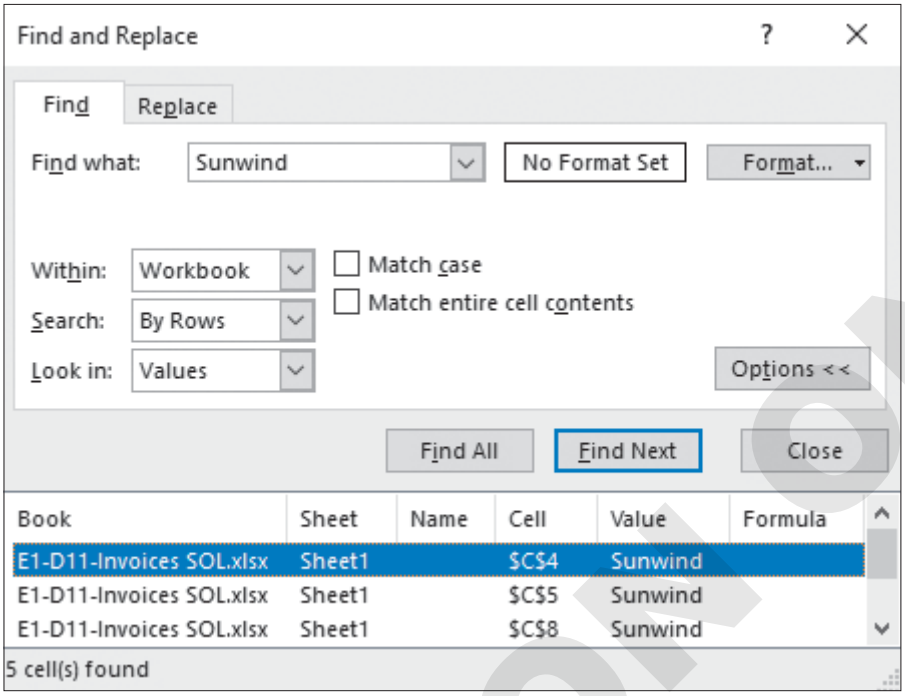


6. Click **Find All**.

   The result still shows just one cell found with David's name, since there are no other sheets in the workbook.

7. To start a new search, type **Sunwind** in the Find What box and click **Find All**.

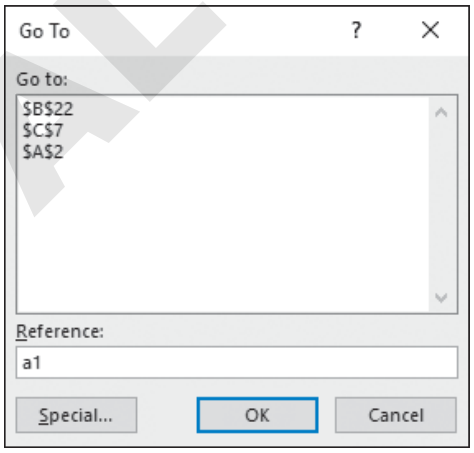
   The results now show all cells that contain Sunwind *to help you find the customers who are using that provider. For this search, five applicable cells are found.*



8. Scroll to the bottom of the results and click the last one; this takes you to **cell C13**, beside *Amanda Campbell*.
9. Close the Find and Replace dialog box.
10. Save the file.

Go To or the Name Box

The Go To command can be useful if you know the cell location you want to move to. Rather than scrolling, you can jump directly to that cell. The Go To dialog box will also show as many as four recently used cell locations should you need to go back to that spot again. If the workbook contains cells with defined names, you will see them listed in the Go To dialog box, which you can use to jump to that cell.



Here you can enter your desired cell location into the Reference box. Keep in mind cell references are not case-sensitive, so you can use either upper- or lowercase letters.

The Name box can also be used like the Go To command. Simply type the cell you want to jump to in the Name box and tap Enter to move to that cell.

DEVELOP YOUR SKILLS: E1-D11

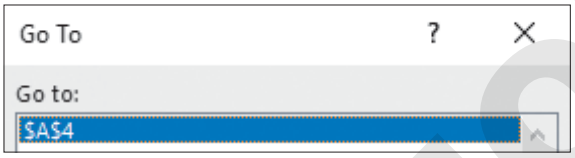
In this exercise, you will use Go To to navigate the workbook.

1. Save your workbook as: **`E1-D11-Invoices`**
2. Choose **Home**→**Editing**→**Find & Select**→**Go To**.
3. In the Go To dialog box, type **`a4`** in the Reference box and click **OK**.

   The selected cell is now cell A4, where the customer data begins below the headings.
4. Choose **Home**→**Editing**→**Find & Select**→**Go To** again.
5. This time, below Reference type **`as700`** and then click **OK** or tap Enter.

   Now you have the cell selected in column AS, row 700! As you can see, you can jump to any cell in the entire workbook, even cells that contain no data.
6. Choose **Home**→**Editing**→**Find & Select**→**Go To** once more.

   You will see a list including some of the recent cell locations you have searched for.



7. Click the cell reference **$A$4** in the **Go To** list and then click **OK**.
8. Save your work and close Excel.

Self-Assessment

Check your knowledge of this chapter's key concepts and skills using the Self-Assessment in your ebook or online (eLab course or Student Resource Center).

Reinforce Your Skills

REINFORCE YOUR SKILLS: E1-R1

Enter Data and Format a Worksheet

Kids for Change is a nonprofit organization that helps minors participate in and organize community service, fundraisers, and social events. In this exercise, you will create a worksheet that will allow Kids for Change to list the items required for purchase for an upcoming charity event.

1. Start Excel, open a new Blank Workbook, and save it in your **Excel Chapter 1** folder as: **`E1-R1-Purchases`**
2. In **cell A1**, type **`Kids for Change`** and tap Enter.
3. In **cell A2**, type **`Items for Purchase`** and tap Enter.
4. Enter these headings across the **range A3:D3**:

3	Item Name	Order By	Quantity	Price

5. In **rows 4–8**, enter these items for purchase:

4	T-shirts	5/12/2020	200	12.99
5	Buttons	5/20/2020	100	6.50
6	Hamburgers	5/30/2020	45	9.29
7	Buns	5/30/2020	45	2.19
8	Water	5/30/2020	12	1.99

Remember, number formatting affects the appearance of some numbers; for example, 6.50 will display as 6.5 with the General number formatting applied to the cell (that is, until the number formatting is changed in a later step).

Format the Worksheet

6. Select **column A**, choose **Home→Cells→Format→Column Width**, and set the width to: **`12`**
7. Select the **range A1:A2** and then choose **Home→Font→Font Color menu button → Standard Purple**.
8. With the titles still selected, choose **Home→Font→Increase Font Size** two times so it is set to 14 points and then press Ctrl+B to apply bold formatting.
9. Select the **range A3:D3** and then choose **Home→Font→Fill Color menu button → Blue, Accent 5, Lighter 60%** (ninth column, third row).
10. With the same range selected, apply the Standard Purple font color and bold formatting.
11. With the headings still selected, choose **Home→Alignment→Center** to center the headings.
12. Select the **range B4:B8** and choose **Home→Number→Number Format→Long Date**.

    The day of the week is important, so now you can see the day displayed in the cells.
13. Select the **range D4:D8** and apply the Accounting number format.
14. Save the workbook.

REINFORCE YOUR SKILLS: E1-R2

Fill a Series of Purchase Numbers

In this exercise, you will fill in purchase order numbers using a series and adjust print settings.

1. Save your workbook as: **`E1-R2-Purchases`**
2. In **cell E3**, enter the heading **`Purchase #`** and tap Enter.
3. In **cell E4**, type **`#335`** and click **Enter** ✓.
4. Use the **fill handle** in **cell E4** to fill the series of purchase numbers down the column.
5. Use AutoFit to adjust the width of **column E** so the column heading is fully visible.
6. Select the **range E4:E8** and change the cell alignment to Align Right.
7. Go to the print preview and, under Settings, adjust the page orientation to Landscape, but do not print at this time.
8. Save and close the workbook.

REINFORCE YOUR SKILLS: E1-R3

Create and Format a Worksheet

In this exercise, you will help Kids for Change track the funds raised during one of its charity events.

1. Open a new Blank Workbook and save it in your **Excel Chapter 1** folder as: **`E1-R3-Pledges`**
2. Beginning in **cell A1**, enter this data:

	A	B	C	D
1	Kids for Change			
2	Summer Charity Race			
3	Participant	Sign-up Date	Pledges	Miles Run
4	Shelly Mundt	4/23	5	25
5	Pauline Alvarado	4/25	12	15
6	Chris Driedger	4/2	14	10
7	Korey Rhynold	3/29	19	15
8	Kimberly Ayres	4/17	23	5
9	Glenn Edwards	4/3	17	25
10	Inga Maier	4/12	12	10

3. Use AutoFit to resize **columns A–B**.
4. In **cell E3**, enter the heading **`Bib #`** and tap Enter.
5. In **cell E4**, type **`KCSCR410`** and then use **AutoFill** to complete the series of bib numbers.
6. In **cell F3**, enter the heading: **`Total Raised`**

   Each participant gathers pledges from donors, so you will enter the total raised by each participant in column F.

7. Starting in **cell F4**, enter this data in the **range F4:F10**:

	F
4	125
5	180
6	140
7	285
8	115
9	425
10	120

8. Select the total raised figures in the **range F4:F10** and apply the Currency number format.
9. Resize **column F** to make it wide enough to fit the column heading.
10. Select the **range B4:B10** and apply the Short Date format.
11. Select the **range C4:D10** (the data for Pledges and Miles Run) and center-align the data.
12. Select the **range A1:F1** and apply Merge & Center.
13. Merge and center the **range A2:F2**.
14. Select the **range A1:F3** (titles and headings) and apply the **Standard Dark Blue** fill color.
15. With the same range selected, apply the **White, Background 1** font color.
16. Save the workbook and close Excel.

Apply Your Skills

APPLY YOUR SKILLS: E1-A1

Enter Data and Format a Worksheet

You work for Universal Corporate Events, a meeting and event planning service that hosts and organizes company meetings, retreats, and parties. The company is expanding! In this exercise, you will prepare a spreadsheet to compare available office space for a second office.

1. Start Excel, open a new Blank Workbook, and save it in your **Excel Chapter 1** folder as: **`E1-A1-Listings`**
2. Beginning in **cell A1**, enter this data:

	A	B	C	D	E
1	Universal Corporate Events				
2	Potential Office Space				
3	Address	Building Class	List Date	Square Ft	Monthly Rent
4	3100 Sycamore Lane	A	7/21	1200	2500
5	1812 Broadway	A	3/17	1050	2250
6	21 King Street	B	5/22	1450	1875
7	6801 Delamere Way	C	7/16	1700	2150
8	48 Franklin Blvd.	B	5/30	920	1500

3. Select the **range A3:E3** and apply Wrap Text format.
4. With the headings still selected, apply Middle Align and Center.
5. Adjust the column width for **column A** to exactly **18.00**.
6. Select the **range B4:B8** and apply Center alignment.
7. Select the **range E4:E8** and apply the Accounting number format; then remove both decimal places.
8. Select **cell A1** and increase the font size to **18**.
9. Select **cell A2** and increase the font size to **14**.
10. Select the **range A3:E3** and increase the font size to **12**.
11. With the headings still selected, apply the **Gold, Accent 4** fill color.
12. Select the **range A1:E3** and apply bold formatting.
13. Save the workbook.

APPLY YOUR SKILLS: E1-A2

Create a Schedule Using AutoFill

In this exercise, you will enter more data and create a schedule of days for Universal Corporate Events to view the new office space.

1. Save your workbook as: **`E1-A2-Listings`**
2. In **cell F3**, enter the heading: **`Maint. Fees`**

3. Starting in **cell F4**, enter this data for the maintenance fees:

	F
4	100
5	90
6	75
7	86
8	60

4. In **cell G3**, enter **`View On:`** as the heading.

   Each day next week you will view a different property, so you will enter the day of the week for each viewing in column G.

5. In **cell G4**, enter **`Monday`** and then use the fill handle to fill in the days of the week from Tuesday to Friday in the **range G5:G8**.
6. Select the **range F4:F8** and apply the Accounting number format; then remove both decimal places.
7. Adjust the column width for **column G** to AutoFit the contents.
8. Select the **range A3:G3** and apply a Top and Bottom border.
9. Save and close the workbook.

APPLY YOUR SKILLS: E1-A3

Create a Financial Report

In this exercise, you will enter data for clients who have booked events with Universal Corporate Events and then format the information appropriately.

1. Open a new Blank Workbook and save it in your **Excel Chapter 1** folder as: **`E1-A3-Income`**
2. Beginning in **cell A1**, enter this data:

	A	B	C	D
1	Universal Corporate Events			
2	June Income Forecast			
3	Client	Event	Event Date	Fee
4	Green Clean	Staff Party	6/13	480
5	Kids for Change	Training	6/18	325
6	Blue Jean Landscaping	Training	6/14	550
7	Stormy BBQ	Team Building	6/23	750
8	Winchester Web Design	Staff Party	6/17	300
9	iJams	Training	6/21	450

Format the Worksheet

3. Use AutoFit to adjust all four **columns A–D**.
4. Select the **range A3:D3** and apply Center alignment; then apply the Fill Color **Gold, Accent 4**.

5. Increase the font size of **cell A1** to **18** and the font size of **cell A2** to **14**.
6. Select the **range A1:D3** and apply Bold format.
7. Select the **range D4:D9** and apply Accounting number format.
8. Select the **range A3:D3** and apply a Top and Bottom Border.
9. Change the page layout orientation to Landscape.
10. Save the workbook and close Excel.

Project Grader

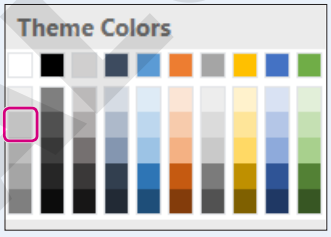
If your class is using eLab (labyrinthelab.com), you may upload your completed Project Grader assignments for automatic grading. You may complete these projects even if your class doesn't use eLab, though you will not be able to upload your work.

PROJECT GRADER: E1-P1

Creating an Inventory Tracking Spreadsheet

Taylor Games creates replacement parts for many different games as well as various types of dice. In this exercise, you will prepare a spreadsheet to manage inventory for various items.

1. Download and open your Project Grader starting file.
   - *Using eLab:* Download **E1_P1_eStart** from the Assignments page. You *must* start with this file or your work cannot be automatically graded.
   - *Not using eLab:* Open **E1_P1_Start** from your **Excel Chapter 1** folder.
2. Use AutoFit to adjust the width of **column A** so that all text is visible within the column.
3. In **cell A1**, enter the text: **`Inventory`**
4. Apply 14 pt and Bold text formatting to **cell A1**.
5. Enter today's date in **cell A2** using the MM/DD/YY format.
6. Clear formatting from the **range A5:C5**.
7. Use Autofill to create a sequential list of SKUs in column B starting with **cells B5** and **B6** and continuing down to **cell B19**.
8. Apply the Accounting number format to the **range D5:D19**.
9. Apply Align Left cell alignment to **cells A2** and **A4**.
10. Apply Align Right cell alignment to the **range B4:D4**.
11. Apply Bold text formatting to **cell A2** and to the **range A4:D4**.
12. Apply a thick bottom border to the **range A4:D4**.
13. Apply the Fill Color **White, Background 1, Darker 15%** to the **range A4:D4**.



14. Set the widths of **columns B**, **C**, and **D** to: **`10`**
15. Save your workbook.
    - *Using eLab:* Save it to your **Excel Chapter 1** folder as **`E1_P1_eSubmission`** and attach the file to your eLab assignment for grading.
    - *Not using eLab:* Save it to your **Excel Chapter 1** folder as: **`E1_P1_Submission`**

PROJECT GRADER: E1-P2

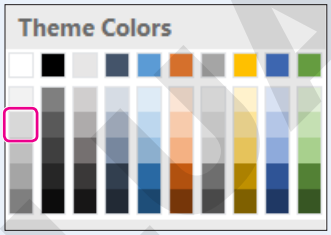
Classic Cars Club New Members List

In this exercise, you will update and format a spreadsheet with recently added New Members.

1. Download and open your Project Grader starting file.
   - *Using eLab:* Download **E1_P2_eStart** from the Assignments page. You *must* start with this file or your work cannot be automatically graded.
   - *Not using eLab:* Open **E1_P2_Start** from your **Excel Chapter 1** folder.
2. In **cell A1**, change the word *Car* to: **`Cars`**
3. In **cell A2**, insert the text: **`New Members`**
4. Apply these text formats:

Location	Format
Cell A1	Font Size 14, Bold
Cell A2	Font Size 12, Bold
Range A4 I4	Bold

5. Apply Short Date number formatting to the **range H5:H34**.
6. Apply the Accounting number format to the **range I5:I34**, and then decrease the decimals until no decimals are displayed.
7. Set the widths of **columns A**, **H**, and **I** to: **`16`**
8. Apply Align Right cell alignment to **cells F4** and **I4**.
9. Apply the following formats to the **range A4:I4**:
   - Thick bottom border
   - Fill Color: White, **Background 1, Darker 15%**



10. Save your workbook.
    - *Using eLab:* Save it to your **Excel Chapter 1** folder as **`E1_P2_eSubmission`** and attach the file to your eLab assignment for grading.
    - *Not using eLab:* Save it to your **Excel Chapter 1** folder as: **`E1_P2_Submission`**

Extend Your Skills

These exercises challenge you to think critically and apply your new skills in a real-world setting. You will be evaluated on your ability to follow directions, completeness, creativity, and the use of proper grammar and mechanics. Save files to your chapter folder. Submit assignments as directed.

E1-E1 That's the Way I See It

You would like to take control of your personal finances, and with your newly learned Excel skills you are going to make yourself a monthly budget. Start a new workbook and save it as: **E1-E1-Budget**

Create a title with your name at the top of your worksheet. Below the title, insert **Monthly Budget** and then next to that cell enter the total amount of money you have to spend each month for items like food, rent, and entertainment. Leave one blank row, then in row 4 create three column headings: **Expense**, **Budget Amount**, and **Actual Amount**. Leave two blank cells in row 5 below Expense and Budget Amount. Below Actual Amount, enter the months of the year across 12 columns so you can track expenses for the whole year. In the next row, begin entering labels for your expenses and how much you might spend on that item. Leave the Actual Amount columns blank; you can enter that at the end of each month to compare to your budget amount. Include at least five expenses, such as rent, groceries, and transportation. Adjust the column widths as necessary and apply appropriate formatting of your choice.

E1-E2 Be Your Own Boss

As the owner of Blue Jean Landscaping, a landscaping business that saves its customers money by having them help with the physical labor, you need to create an inventory list of equipment you own for your insurance company. Your insurance company has asked that specific information be included, specifically the item name, value, and number of each item.

Create a new blank workbook named **E1-E2-Equipment** and set up your worksheet with the company name and the title *Equipment Inventory*, followed by the column headings. Fill in the list with eight to ten items that are standard equipment for a landscape company, such as rakes, wheelbarrows, and shovels (do an online search if necessary). List their approximate value and how many you own. Format the value with dollar signs and apply other formatting as you see fit. Make the worksheet look professional, as you will be submitting this to the insurance company, and your Excel worksheet will represent your company.

E1-E3 Demonstrate Proficiency

Stormy BBQ is a restaurant known for its high-quality, locally grown and sourced ingredients. The owner of the company wants you to create an Excel spreadsheet that can be used to track customer information.

Start a new workbook named **E1-E3-Customers** that uses the company name as the title at the top of your worksheet and the subtitle **Customer Database** below the title. Create column headings such as First Name, Last Name, Email, and Phone Number. Be sure to also include columns to record the dates of the first and last order for each customer so customer loyalty can be tracked. Make formatting changes as you see fit.

EXCEL

2 Calculating Student Grades Using Formulas

In this chapter, you will use Excel to work with multiple worksheets created to record student grades. You will start by using formulas to calculate grade totals and grade percentages. You will also learn about managing and organizing worksheets to insert, delete, and even hide data, and also to make your data easier to find.

LEARNING OBJECTIVES

- Use formulas to perform calculations
- Rearrange data on a worksheet
- Manage multiple worksheets

Project: Tracking Student Grades

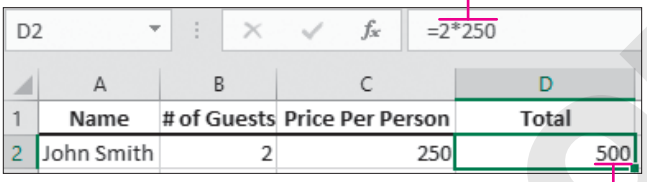
LearnFast College is a school that provides fast-paced learning programs for college students. As an instructor there, you need to keep track of your students' grades for an Introduction to Business course. Excel will help you record marks and quickly calculate final grades for the course using a variety of formulas.

Creating Formulas

Excel uses formulas to perform calculations, which are written as mathematical problems. To create a formula, you should always begin by typing the equals (=) sign in the cell. Then you list the numbers or cells to use in the formula, along with the operation to be performed.

The Formula Bar always displays the formula while the cell displays the results.

The formula =2*250 is entered in cell D2 and is displayed in the Formula Bar.



The result of the formula, 500, is displayed in cell D2.

Mathematical Operators

Addition, subtraction, multiplication, and division are frequently used to perform calculations in Excel. Knowing the correct keystroke for each operation is important to ensure the correct result for your formulas.

KEYSTROKES FOR USING OPERATIONS IN FORMULAS

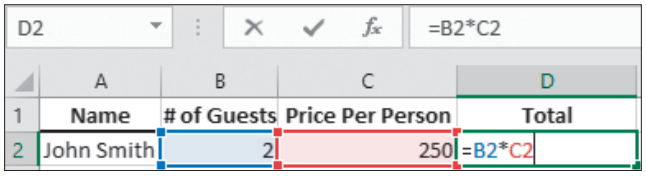
Operation	Keystroke	Example	Result
Addition	+	=3+2	5
Subtraction	-	=3-2	1
Multiplication	*	=3*2	6
Division	/	=3/2	1.5
Exponent	^	=3^2	9

Cell References

Rather than typing numbers into your formulas, it is best to use cell references whenever possible. A cell reference takes the place of a number in a formula and makes it easier to copy formulas down a

column or across a row. So, instead of =2*250, you could use =B2*C2 with the value *2* in cell B2, and the value *250* in cell C2.

View the video "Using Simple Formulas."

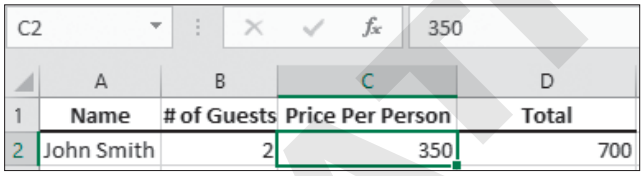


The formula in cell D2 references cells B2 and C2.

The formula result is 500.

Cell references can be typed using upper- or lowercase letters, or you can simply click with the mouse on the cell you want to use.

Another advantage of cell references is that Excel automatically recalculates the formula if the value in the cell reference changes. In the preceding example, if the value in cell C2 is changed to 350, the formula in cell D2 would automatically update to show the new result, 700, without any effort required.



The formula result in cell D2 is updated immediately when cell C2 is changed.

Order of Operations

When there is more than one operation in a formula, Excel must decide which operation to perform first. Excel follows the standard mathematical order of operations, commonly known by the acronym PEMDAS. That is, *Parentheses come first (also called brackets or round brackets), then Exponents, Multiplication, Division, Addition, and Subtraction.* PEMDAS is often remembered with the phrase "Please Excuse My Dear Aunt Sally."

View the video "Understanding Order of Operations."

It's important to understand the order of operations because it can significantly change the outcome of your formula. The formula =2+3*5 would result in 17 because 3*5 is the first operation and then 2+15 is 17. The formula =(2+3)*5, on the other hand, results in 25, because (2+3) is the first operation and then 5*5 is 25.

DEVELOP YOUR SKILLS: E2-D1

In this exercise, you will create formulas to calculate the students' grades.

1. Start Excel, open **E2-D1-Grades** from your **Excel Chapter 2** folder, and save it as: **`E2-D1-NewGrades`**

   The Security Warning bar may display the first time you open this or another file. In this course, you can safely click Enable Content to continue opening the file.

2. Select **cell F6**, type **`=D6+E6`**, and then tap Enter.

   As you type each cell reference, Excel adds color to both the cell reference and the cell being referenced. The text D6 turns blue, and the cell has a border and light shading of the same color around it. As you continue typing the formula, the text E6 turns red. The color changes each time you add a new cell reference, which helps you visualize the cell references while entering or editing the formula.

   You entered a formula that added the two quiz scores, and cell F6 should now show the total of 172. Now you will enter the next formula using the mouse instead of typing the cell references.

3. Type **=** in **cell F7**, click **cell D7**, type **+** and click **cell E7**, and finally click **Enter** ✓.

   The formula is similar, but this time the cell references refer to the information in row 7 and the result is 199. Notice that the formula is visible in the Formula Bar and the result is visible in the worksheet cell. Cell F6 uses cell references to cells D6 and E6, and cell F7 refers to cells D7 and E7, which means the relative position is the same and you can therefore use AutoFill to copy the formula down the column instead of manually entering it for each student.

4. Point to the fill handle in **cell F7** and drag down to **cell F17**.

   The quiz totals are calculated for all students. Now you will calculate project totals for the class.

5. Select **cell J6** and then type **`=H6+I6`** and click **Enter** ✓.

6. Point to the fill handle in **cell J6** and, this time, double-click it.

   Double-clicking automatically fills the cells down the column according to the rows used in adjacent columns.

   Next you will create a formula to calculate the percentage grade for projects by dividing the project total by 200.

7. Select **cell K6**, type **=** and click **cell J6** to select it, and then type **`/200`** and click **Enter** ✓.

   The mark has been calculated for the first student as 0.945, so next you will display it as a percentage. Then you will copy the formula down the column.

8. With cell K6 still selected, choose **Home→Number→Percent Style** %.

9. Point to the fill handle in **cell K6** and double-click it to fill the formula down **column K**.

10. Save the workbook.

Rearranging Data

When using a worksheet there may be times when you need to do more than simply enter data row by row. You may need to insert more information in the middle of existing data, remove chunks of data already entered, or move cells or entire sections of data around. You can also sort your data to put it into a more usable arrangement.

Insert and Delete Rows, Columns, and Cells

To add more data into your existing data, it might make sense to insert a new cell, column, or row. You can add one cell, row, or column, at a time, or several at once. Columns are inserted to the left of your selected column, and rows are inserted above your selected row. Inserting a cell or cells allows you to shift the existing data either right or down.

Home→Cells→Insert | Right-click column/row heading→Insert

Home→Cells→Delete | Right-click column/row heading→Delete

DEVELOP YOUR SKILLS: E2-D2

In this exercise, you will insert and delete both rows and columns, and insert cells to enter additional student data into the gradebook.

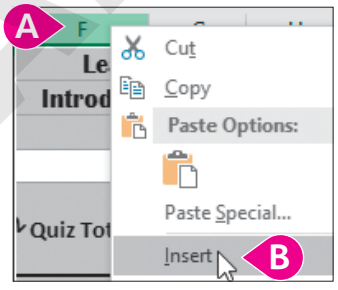
1. Save your workbook as: **`E2-D2-NewGrades`**
2. Select the cell with Sarah's name, **cell A16**, and choose **Home→Cells→Insert menu button →Insert Sheet Rows**.

   The data for rows 16:17 is shifted down to rows 17:18, and a blank row is inserted in row 16, the currently selected row.
3. Enter the following data for a new student in **row 16**:

First	Last	Student ID#	Quiz 1	Quiz 2	Quiz Total	Quiz %	Project 1	Project 2	Project Total	Project %
Robert	Moreira	53846	96	88	184		90	95	185	93%

   As you type in data, Excel automatically copies adjacent formulas. After entering the data for Quiz 1 and Quiz 2, the Quiz Total column should show 184 automatically; it's the result of the formula that adds the two quiz scores. After entering the two project marks, the total and percentage should also automatically calculate.
4. Select the cell with Todd's name, **cell A18**, and then choose **Home→Cells→Delete menu button →Delete Sheet Rows**.

   All of Todd's information is removed from row 18. Now you need to add a third quiz score between columns E and F.
5. Follow these steps to insert a new column between **columns E** and **F**:



   A Right-click the **column F** heading.

   B Choose **Insert** from the menu.

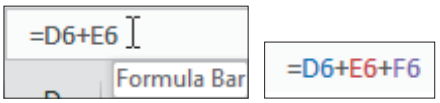
   A new column is entered where column F was, and column F is shifted right to become column G.

6. Select the cell with the *Quiz 2* heading, **cell E5**, and use the **fill handle** to drag one cell to the right, inserting the heading name **`Quiz 3`** into **cell F5**.

   Because there are three quizzes now, the Quiz Total column formula needs to be updated to include the new quiz.

7. Select **cell G6**, which contains the total formula for Quiz 1 and Quiz 2.

8. To edit the formula, point to the Formula Bar and click to the right of the **cell E6** reference. Then type **`+F6`** and click **Enter** ✓.



9. Point to the fill handle in **cell G6** and double-click to copy the new formula down **column G**.

   Even though the Quiz 3 grades in column F are blank, the formulas in column G will include those results once they are entered. Now you will insert a single cell for a new column heading.

10. Select the cell with the *Exam* heading, **cell M5**, and then choose **Home→Cells→Insert menu button ▾→Insert Cells**.

11. In the Insert dialog box, choose **Shift Cells Right** and click **OK**.

    The Exam *heading is shifted to the right into cell N5.*

12. With cell M5 still selected, type **`Participation`** as the new heading and then complete the entry.

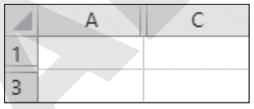
13. Select the **range M5:O5** and adjust the column width to **`11.5`** so the headings fit properly.

14. Save the workbook.

Hide and Unhide Rows and Columns

Sometimes you may want to save data in your worksheet but have the information in certain rows or columns hidden from view. For example, a retailer might use an item's cost in one column to calculate the sale price in another. The cost column can be hidden from view to prevent customers from seeing how much profit the retailer is making, but the information is still saved and can still be used in a formula. Hidden rows and columns will not print, and a hidden row or column can easily be made visible using Unhide.

Hidden rows and columns can be identified by the gap in the column or row headings, as shown in the figure below:



Row 2 and column B are hidden.

Home→Cells→Format →Hide & Unhide | Right-click column/row heading→Hide/Unhide

Sort Data by Column

Excel can easily sort data in either alphabetic or numeric order, using any column of data. For example, you might want to sort by name, date, item number, or dollar amount. A sort keeps any adjacent data in the same row, so sorting by name, for example, means that data, such as addresses or phone numbers, stays with the correct name.

Sorting options depend on the type of data selected. For example, if numerical data is selected, the options are Smallest to Largest or Largest to Smallest. If text is selected, the options are either A to Z or Z to A.

Home→Editing→Sort & Filter

DEVELOP YOUR SKILLS: E2-D3

In this exercise, you will hide and unhide a column and then sort the students first by grade and then by first name.

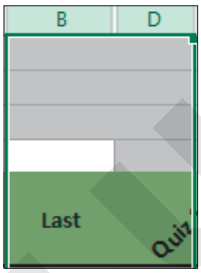
1. Save your workbook as: **`E2-D3-NewGrades`**
2. Point to the **column C** heading, right-click, and choose **Hide**.

   The Student ID# column is hidden from view, and now columns B and D are side by side.
3. Select **cell L6** and then choose **Home→Editing→Sort & Filter→Sort Largest to Smallest**.

   The students are now listed from highest to lowest according to the Project % column, so John is now the first student listed, Pamela is listed last, and all of the corresponding grades for each student are sorted along with the student names.
4. Select **cell A6** and choose **Home→Editing→Sort & Filter→Sort A to Z**.

   Ashley is now at the top of the list, and Sarah is at the bottom.
5. Point to the **column B** heading, press and hold the left mouse button, and then drag to the right to select **columns B–D**.

   To unhide columns or rows, you must select a continuous *range surrounding the hidden column or row, so be sure to drag rather than selecting each column separately.*



   After columns B–D are selected, there is no line separating the selected range.
6. Choose **Home→Cells→Format→Hide & Unhide→Unhide Columns**.

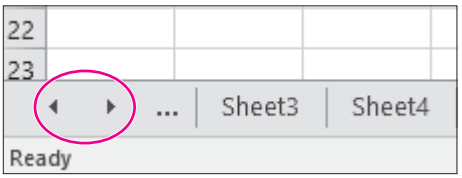
   Column C is once again displayed between columns B and D.
7. Save the workbook.

Managing Multiple Worksheets

By default, an Excel workbook contains one worksheet. You can, however, add multiple worksheets to be saved in the same workbook. This can make it easier to access different worksheets that are related to the same topic. You can also organize a workbook by deleting worksheets you don't need anymore, renaming the worksheets and changing the color of the sheet tab, and moving worksheets.

Insert and Delete Worksheets

Adding a new worksheet is as simple as clicking on the New Sheet button at the bottom of a workbook. When a workbook contains many worksheets, you may need to scroll through the worksheets using the left and right arrows located to the left of the sheet tabs at the bottom of the screen.



To delete a worksheet, you have to be more careful because, once deleted, you can't recover any of the data. Even the Undo button can't recover a deleted worksheet. For protection, Excel does ask you to confirm the action before you delete a worksheet.

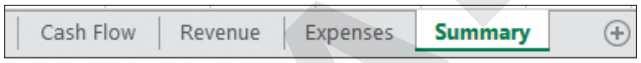
Home→Cells→Insert menu button →Insert Sheet | Right-click sheet tab→Insert...

Home→Cells→Delete menu button →Delete Sheet | Right-click sheet tab→Delete

Rename Worksheets

The default names for worksheets don't really help someone understand what data is on the worksheet or what it is being used for. When you start adding more worksheets and need to quickly find the sheet with the information you need, it becomes important to name your sheets.

Names should be short and describe the purpose of the worksheet as clearly as possible. Certain characters, such as ? and /, are restricted, so it is best to stick to text and numbers. To rename a sheet, simply double-click the sheet tab and type the new name.



Examples of good worksheet names that are short, simple, and descriptive

Home→Cells→Format→Rename Sheet | Double-click the sheet tab

DEVELOP YOUR SKILLS: E2-D4

In this exercise, you will insert a new sheet, delete a sheet, and rename a sheet.

1. Save your workbook as: **`E2-D4-NewGrades`**
2. Click the **New Sheet** button:

Notice there is a new worksheet inserted to the right of the active sheet, New. *The default worksheet name is* Sheet *with a number, which increases each time you add a new sheet.*

3. Click the **old** worksheet tab to activate the sheet.

4. Choose **Home→Cells→Delete menu button →Delete Sheet** and click **Delete** or tap Enter when prompted in the dialog box.

   Because there is data on the old *worksheet, Excel asks you to confirm before it will delete and permanently remove the sheet. This step cannot be undone.*

5. To change the sheet name, double-click the **Sheet1** worksheet tab you just created; type **`Participation`** and tap Enter.
6. Repeat step 5 to change the name of the **New** worksheet to: **`Final Grades`**
7. On the **Final Grades** worksheet, select the title in the merged **cell A2** and press Ctrl+C to copy the text *Introduction to Business*.
8. Click the **Participation** worksheet tab, ensure **cell A1** is the selected cell, and press Ctrl+V to paste the text.
9. In **cell A2**, below the class title, type **`Participation Grades`** and tap Enter.
10. Select **cell A1**, choose **Home→Clipboard→Format Painter**, and then click **cell A2** to apply the formatting from cell A1.

    Clicking Format Painter once allows you to apply the formatting once, and then it is turned off. If you wanted to continue applying the same formatting to more cells or ranges, you would double-click the Format Painter instead.

    The range A2:O2 is merged and centered, and the text now has the same formatting as the title.

11. Save the workbook.

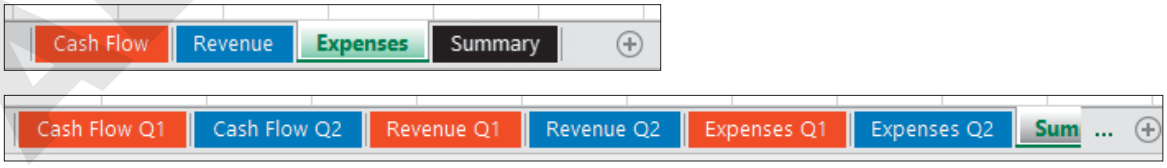
Move Worksheets

You may want to rearrange the order of the sheets at the bottom of the workbook. Excel doesn't have a feature for sorting worksheets, but you can drag worksheet tabs left or right to rearrange the order. You can also rearrange or duplicate the sheets using the Move or Copy dialog box.

Home→Cells→Format→Move or Copy Sheet | Right-click worksheet tab→Move or Copy

Change Worksheet Tab Colors

Finding the right worksheet can be a lot quicker if you use a system of colors for different worksheets. Colors could be assigned based on department, function, importance, or any method you choose. Adding a color to a worksheet tab can be done via the Ribbon or by right-clicking the tab.



These are some examples of using tab colors to organize worksheets; notice the selected worksheet appears only lightly shaded.

Home→Cells→Format→Tab Color | Right-click worksheet tab→Tab Color

Hide Worksheets

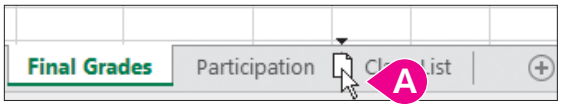
Similar to hiding rows and columns, you may want to save a worksheet's information but have it hidden from view. Hiding a worksheet can also help organize your workbook if you have a lot of tabs or if the end-user will use only some of the worksheets. In this case, hiding the unused worksheets makes it a more user-friendly workbook. Once hidden, it is easy enough to unhide a worksheet when you need to use it again.

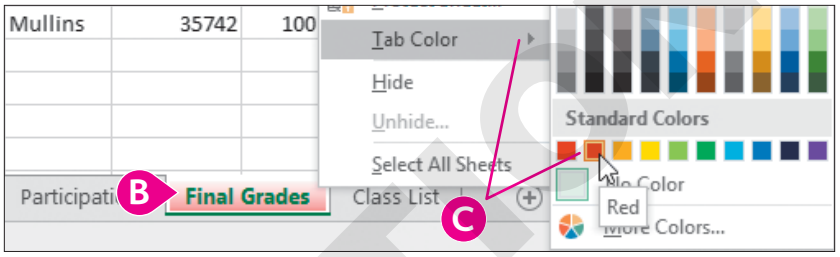
Home→Cells→Format→Hide & Unhide | Right-click worksheet tab→Hide/Unhide

DEVELOP YOUR SKILLS: E2-D5

In this exercise, you will reorganize and color the worksheet tabs.

1. Save your workbook as: **E2-D5-NewGrades**
2. Follow these steps to move the Final Grades worksheet and add a tab color:





   A. Drag the **Final Grades** worksheet tab to the right side past the Participation sheet, as shown.

      Notice the small black arrow that follows your mouse pointer to indicate the new position of the sheet you are moving.

   B. Right-click the **Final Grades** worksheet tab.

   C. Choose **Tab Color→Standard Color Red**.

3. Change the color of the **Participation** sheet tab to **Standard Color Blue**.

   The Class List worksheet is not needed at this time, so you will hide it.

4. Right-click the **Class List** worksheet tab and choose **Hide**.
5. Save the workbook.

Create Cell References to Other Worksheets

When using multiple worksheets, you can use common information across different sheets. Excel allows you to link cells from different worksheets in the same workbook or in other workbooks. Linking inserts values from a source worksheet into a destination worksheet. For example, you may want to have a revenue worksheet and a profit worksheet; the profit worksheet can use the values from the revenue worksheet. If the revenue worksheet values ever change, the profit worksheet values will update automatically.

Referencing another worksheet requires the actual cell reference as well as the worksheet name and an exclamation point. Cell references to other workbooks require the workbook name, sheet name, and cell reference. Cell references to other worksheets or workbooks can be used to simply link the data or can be used in a formula.

Revenue is the name of the worksheet in the current workbook, followed by an exclamation point.

=Revenue!A3

A3 is the cell reference on the Revenue worksheet.

In this example, the Revenue worksheet is in a different workbook, and the name of the workbook, *2015Financial.xlsx*, is placed inside square brackets.

=[2015Financial.xlsx]Revenue!A3

It is possible to manually type a cell reference to another worksheet or workbook; however, it is simpler and much more accurate to use the point-and-click method. If you point and click, Excel inserts all the necessary formatting, such as brackets and exclamation points.

DEVELOP YOUR SKILLS: E2-D6

In this exercise, you will use linking formulas to add student names to a worksheet.

1. Save your workbook as: **`E2-D6-NewGrades`**
2. Click the **Participation** worksheet tab to activate that worksheet, and then select **cell A4**.
3. Enter the heading **`First`** in **cell A4**, tap Tab, enter the heading **`Last`** in **cell B4**, and tap Enter.
4. In **cell A5**, type **=** and then click the **Final Grades** worksheet tab.

   You are now looking at the Final Grades worksheet but notice that the Formula Bar shows the beginning of the formula you are entering on the Participation worksheet, including the Final Grades worksheet name.

   ='Final Grades'!

   Excel adds single quotes around any worksheet name that contains a space.
5. Select **cell A6** and then click **Enter** on the Formula Bar.

Warning! *Completing the entry this way and* not *clicking the Participation worksheet tab is* very important, *because doing so would change your formula. Completing the entry instantly brings you back to the Participation worksheet. You will now see the name* Ashley *in cell A5 and the formula* ='Final Grades'!A6 *in the Formula Bar.*

6. With cell A5 still selected, use the **fill handle** to drag one cell to the right, inserting the last name for Ashley into **cell B5**.
7. With the range A5:B5 selected (the cells with Ashley's first and last name), drag the **fill handle** down to **row 16**.

   The names for all twelve students are now added to the Participation worksheet, and if the names are edited on the Final Grades worksheet, changes will automatically be updated on the Participation worksheet. Felecia has informed the school the correct spelling of her name is "Felicia," so you will update this now.

8. Go to the **Final Grades** sheet and select **Felecia** in **cell A10**.
9. Edit the name by double-clicking, deleting the second *e*, and typing an **i**, and then complete the entry.
10. Go back to the **Participation** worksheet and notice Felicia's name has now been updated in **cell A9**.

4	First	Last
5	Ashley	Ronayne
6	Atif	Khalil
7	Austin	Farrell
8	Crystal	Robinson
9	Felicia	Murray
10	Jessica	McInnis

11. Save the workbook.

Create a Copy of a Worksheet

Rather than starting with a new, blank worksheet, you can save a lot of time by using an existing worksheet that already has some of the information you need or has the structure and formatting you want. Creating a copy of a worksheet does not affect the original worksheet. The new worksheet will have the same name but with *(2)* added to the end to indicate it is a second version.

Home→Cells→Format→Move or Copy Sheet | Right-click worksheet tab→Move or Copy

Edit Multiple Sheets at One Time

It is also possible to select several worksheets at the same time. With multiple sheets selected you can modify all of the selected sheets simultaneously by making changes on just one sheet. When you edit one, the others update automatically. You can enter text or formulas, or change cell format in the same cell in all of the selected sheets simultaneously. You need to be very careful with this feature, however, to ensure you are not replacing existing data in one of the worksheets you can't see!

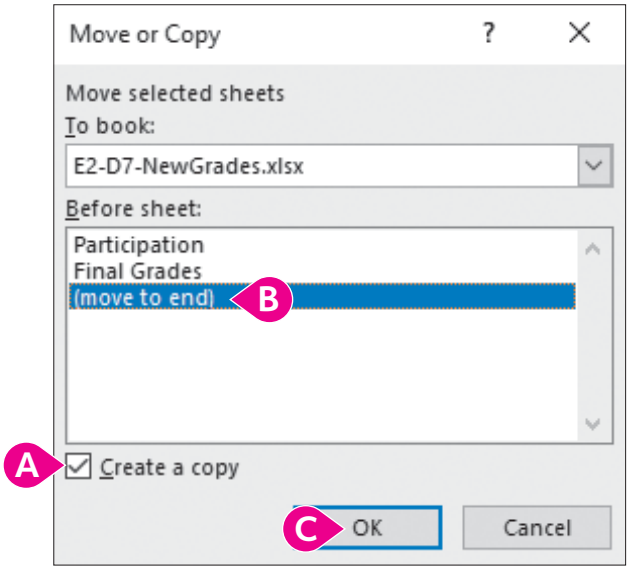
Multiple sheets can be selected (or grouped) by holding the Ctrl key while clicking additional sheet tabs. For consecutive sheets, you can also hold the Shift key and click the last sheet you wish to select. To deselect (or ungroup) the multiple worksheets, either select a different sheet or right-click one of the sheet tabs and choose Ungroup Sheets.

DEVELOP YOUR SKILLS: E2-D7

In this exercise, you will create a new worksheet by copying the Participation sheet and make changes to both at once.

1. Save your workbook as: **E2-D7-NewGrades**
2. Right-click the **Participation** worksheet tab and choose **Move or Copy**.

3. Follow these steps to copy the sheet and position it at the end of the workbook:



   A Click the checkbox to select **Create a Copy**.

   B In the Before Sheet box choose **(move to end)**.

   C Click **OK**.

   The new worksheet is created to the right of the Final Grades sheet; it is identical to Participation and named Participation (2).

4. Right-click the **Participation** sheet tab again and choose **Move or Copy**.

5. This time *do not* click the Create a Copy box. In the Before Sheet box choose **Participation (2)** and **OK**.

   The original Participation sheet is now positioned to the right of the Final Grades sheet and before the Participation (2) sheet.

6. Double-click the **Participation (2)** sheet tab; rename it **`Exam`** and tap Enter.

   Your sheet tabs should now look like this:

7. With the Exam sheet still active, select the merged **cell A2** and double-click the word **Participation** in the Formula Bar.

   This method of editing cell contents allows you to replace part of the cell without retyping the whole thing.

8. Type **`Exam`** and complete the entry, so the subtitle in **cell A2** now reads *Exam Grades*.

Edit Multiple Sheets at Once

Now you will select both the Participation and Exam worksheets to edit them both at once because you want the same changes applied to both.

9. With the Exam worksheet still active, press and hold the Ctrl key and click the **Participation** worksheet tab.

   Both worksheets are now selected, their names are both bold, and there is a thick line below both sheet tabs. The Final Grades worksheet is not selected.

10. With both sheets selected, select the **range A4:B4**.
11. Apply bold formatting, increase the font size to 12 points, and center-align the content.
12. Add a **Thick Bottom Border** and the fill color **Green, Accent 6, Lighter 40%** (last column, fourth row).
13. Click the **Participation** worksheet tab to confirm your changes were made to both sheets and then click the **Final Grades** worksheet tab to deselect the other two sheets.
14. Save the workbook and close Excel.

Self-Assessment

Check your knowledge of this chapter's key concepts and skills using the Self-Assessment in your ebook or online (eLab course or Student Resource Center).

Reinforce Your Skills

REINFORCE YOUR SKILLS: E2-R1

Use Formulas to Calculate Reimbursement

In this exercise, you will create a copy of a worksheet that Kids for Change used to calculate expense reimbursements paid out to volunteers in 2019 and update the sheet for 2020.

1. Start Excel, open **E2-R1-Volunteers** from your **Excel Chapter 2** folder, and save it as: **`E2-R1-Volunteers2020`**

   Because many of the volunteers are the same each year, and you want to use the same basic structure for the worksheet, it is easier to create a copy than to start all over.

2. Create a copy of the 2019 sheet and rename it as: **`2020`**

   The 2019 sheet did not use formulas for the calculations, so the data can be deleted. However, after your sheet contains the proper formulas, you can delete the input data only, leaving the formulas under Mileage Paid and Total for the next year's calculations.

3. On the **2020** sheet, delete all data from 2019 for Miles Driven, Mileage Paid, Other Expenses, and Total in the **range B5:E10**.

4. Cheryl did not volunteer this year, so delete **row 7** from the worksheet.

5. There is a new volunteer in 2020, so enter the name **`Jessica Banderas`** in **cell A10**.

6. Enter the mileage data shown for the corresponding volunteers:

4	Name	Miles Driven
5	Dave Lozano	80
6	Sharon Foster	173
7	Brad Bird	96
8	Michelle Smith	164
9	Stewart Schott	205
10	Jessica Banderas	104

7. Sort the volunteers on the Miles Driven column, from smallest to largest.

8. Select **cell C5** to enter the formula to calculate the mileage paid for Dave.

9. Type **`=B5*0.2`** and click **Enter** ✓.

10. Click the **fill handle** in **cell C5** and drag down to **cell C10**.

    The data for the Other Expenses column has not been entered yet, but the formula to calculate the total can be created and the expenses entered later.

11. Select **cell E5** and then enter the formula **`=C5+D5`** and click **Enter** ✓.

12. Double-click the **fill handle** in **cell E5** to fill the formula down to **cell E10**.

13. Point to the column heading for **column B**, right-click, and choose **Hide**.

14. Save the workbook.

REINFORCE YOUR SKILLS: E2-R2

Edit Multiple Sheets and Insert Formulas

In this exercise, you will edit both sheets and then use a formula to update the Mileage Rate column from last year to this year.

1. Save your workbook as: **`E2-R2-Volunteers2020`**

   You want the mileage rate to be listed at the bottom of each worksheet, so you will edit both sheets at once.

2. Make sure the 2020 worksheet is active and then press and hold Ctrl while clicking the **2019** worksheet tab.
3. In **cell C14**, type **`Mileage Rate:`** and tap Tab.
4. In **cell D14**, type **`0.2`** and tap Enter.
5. Select the **range C14:D14** and apply bold, italics, and Wrap Text formatting.
6. Right-click the **2020** worksheet tab and select **Ungroup Sheets** to stop editing both sheets at once.

   You have been informed that the rate will be increased by 10% from last year, so you will use a formula to calculate the new rate. The cell contents do not have to be deleted first; simply start typing the new information to replace the existing information in any cell.

7. Select cell **D14**, type **=** to begin the formula, select the **2019** sheet, select **cell D14**, type **+** and then select **cell D14** again. Finally, type **`*10%`** and complete the entry. (The entire formula should be ='2019'!D14+'2019'!D14*10% and the result should be 0.22.)
8. Change the **2020** sheet tab color to red.
9. Hide the **2019** sheet now that you are finished with it.
10. Save and close the workbook.

REINFORCE YOUR SKILLS: E2-R3

Format Worksheets and Create Formulas with Functions

In this exercise, you will calculate the Kids for Change employee contributions to an employee retirement savings fund, setting up the appropriate functions, and copy the worksheet to use again the following year.

1. Open **E2-R3-Savings** from your **Excel Chapter 2** folder and save it as: **`E2-R3-Savings2020`**
2. On the **2019** sheet, begin calculating the total annual contributions for each employee by adding the amount for Jan–Jun and the amount for Jul–Dec.
3. Apply bold and the Currency number format to the totals, and click the **Decrease Decimal** button enough times to entirely remove the decimal places.
4. Select the **2018** and the **2019** sheets to edit both at once.
5. Insert a new row above *Shannon* and then enter the name **`Ruth Bowers`** on the new blank row, in **cell A9**.
6. Ungroup the sheets and choose the **2019** worksheet.

7. Enter Ruth's contributions: **0** under Jan-Jun and **150** under Jul-Dec.

   Notice Excel enters the formula under Annual Total for you.

8. Enter the column heading **Running Total** in **cell E4** and enter a formula in **cell E5** to find the annual total for Craig from 2019 plus the amount from 2018.
9. Copy the formula down **column E** for the rest of the employees.
10. Use **Autofit** in **column E** to widen the column enough to fit the heading.
11. Hide the row with Shannon's information, **row 10**.
12. Insert a new column to the left of **column E**, and in **cell E4** type **Percent** and center-align the headings in the **range A4:F4**.
13. In **cell E5**, enter a formula that divides the annual total by the running total.
14. Apply the Percentage number format to **cell E5** and copy the formula down the column.
15. Create a copy of the **2019** worksheet and rename the new worksheet: **2020**
16. If necessary, move the **2020** worksheet to the right of the 2019 worksheet.
17. On the **2020** sheet, delete all the data from the **range B5:C11**.
18. Edit the running total formula in **cell F5** so that on this sheet it adds the annual total in **cell D5** and the 2019 running total.
19. Copy the new running total formula down the column to **cell F11**.

    The 2020 sheet is now ready to use. Once data is added for Jan-Jun and Jul-Dec, the formulas will update in columns D, E, and F.

20. Save the workbook and close Excel.

Apply Your Skills

APPLY YOUR SKILLS: E2-A1

Create Formulas to Calculate Prices

In this exercise, you will use an existing set of prices for Universal Corporate Events services to create an updated price list.

1. Start Excel, open **E2-A1-Prices** from your **Excel Chapter 2** folder, and save it as: **`E2-A1-NewPrices`**

   You will begin by creating a copy of the Price List sheet to be saved and hidden for future reference, and then editing the original sheet.
2. Create a copy of the **Price List** sheet and rename it: **`Old Price List`**
3. Hide the **Old Price List** sheet.
4. On the **Price List** sheet, insert a row above **row 3**.

   Inserting a blank row separates the data from the titles and allows the data to be sorted more easily.
5. Sort the Service Price List by price, from largest to smallest.
6. Insert a column to the left of the Deposit column.
7. In **column C**, enter the heading **`Increase`** and in **cell C5** enter the number: **`5`**
8. Insert another blank column to the left of the Deposit column.
9. In **column D**, enter the heading **`New Price`** and in **cell D5** enter a formula that adds the Increase column amount to the Price column amount.
10. Select **cell C5** and **cell D5** and drag the **fill handle** down to **row 12**.
11. Use the AutoFill Options Copy Cells command to copy the number 5, as well as the formula, all the way down both columns.
12. Hide **columns B** and **C** so they are hidden from customers, leaving only the New Price and Deposit columns visible for each service.
13. Save the workbook.

APPLY YOUR SKILLS: E2-A2

Use Formulas to Calculate a Discount

In this exercise, you will add formulas to the Universal Corporate Events price sheet to calculate the new prices for your important customers.

1. Save your workbook as: **`E2-A2-NewPrices`**

   There is a hidden sheet that does not use formulas, so it needs to be updated.
2. Unhide the existing **VIP Price List** worksheet.
3. Change the tab color of the **VIP Price List** worksheet to red.
4. Edit the Price List and VIP Price List at the same time to hide Venue selection from the Services list.
5. Ungroup the sheets. On the **VIP Price List** sheet, delete the list of prices in **column B**.
6. Edit **cell B4** to: **`VIP Price`**

7. In **cell B5** enter a formula that subtracts a VIP discount of 10% from the New Price column on the **Price List** worksheet.

   There are different methods to mathematically subtract 10% and achieve the correct result of 356 in cell B5. One method is to use ='Price List'!D5*(100%-10%), *which multiplies the New Price listed on the Price List sheet by 100%, the full amount, less 10%, the discount amount.*

8. Copy the VIP Price formula down to **row 12**. Apply the Currency number format and bold to the **range B5:B12**.
9. Hide the **VIP Price List** worksheet so it can only be shown to VIP customers.
10. On the **Price List** worksheet, apply bold and the Currency number format to the **range D5:D12**.
11. Save and close the workbook.

APPLY YOUR SKILLS: E2-A3

Create Financial Projections Using Formulas

In this exercise, you will calculate the profit or loss for the first six months of the year for Universal Corporate Events, and then create projections for the next six months on a new sheet.

1. Start Excel, open **E2-A3-Profit** from your **Excel Chapter 2** folder, and save it as: **`E2-A3-ProfitProjections`**
2. Create a copy of **Sheet1** and move it to the end.
3. Rename Sheet1 to **`Q1&Q2 Results`** and then rename the copy to: **`Q3&Q4 Projections`**
4. On the **Q3&Q4 Projections** sheet, delete all data in the **range B7:G14**.
5. In **cell A2**, add the word **`Projections`** to the end of the existing text.
6. Edit **cell A3** to: **`Q3 & Q4`**
7. Enter the proper headings for **`Q3`** and **`Q4`** in **row 5** and the months **`Jul`** to **`Dec`** in **row 6** (use AutoFill to do it faster).

   You are projecting revenue to increase by 5% and to cut expenses by 2%, so you will use formulas to determine the projections for Q3 and Q4.

8. In **cell B7**, use a formula that multiplies the amount of Revenue from Jan on the **Q1&Q2 Results** sheet by 105% (this represents an increase of 5% over the amount from January).
9. Copy the formula across the row for the other five months.
10. In **cell B10**, enter a formula that multiplies the amount of Employee Wages from Jan on the **Q1&Q2 Results** sheet by 98% (this represents a decrease of 2% from the amount in January).
11. Copy the formula down to **row 14** for the three other expenses as well as the total, use Auto Fill Options to Fill Without Formatting to keep a line above Total Expenses, and then copy across all six months.
12. Select the **Q1&Q2 Results** and **Q3&Q4 Projections** sheets and use a formula in **row 16** to find the profit or loss for each month on both sheets at once. (Hint: Use Revenue-Total Expenses, starting in **cell B16** and copy across to **cell G16**.)
13. With both sheets still selected, apply bold and the Accounting number formatting to all numbers in **row 16** and then just the Accounting number format in **row 7**.
14. Apply Comma Style number format to the **range B10:G14** and then ungroup the worksheets.
15. Save the workbook and close Excel.

Project Grader

If your class is using eLab (labyrinthelab.com), you may upload your completed Project Grader assignments for automatic grading. You may complete these projects even if your class doesn't use eLab, though you will not be able to upload your work.

PROJECT GRADER: E2-P1

Adding Inventory for Other Locations

You've been asked to enhance an inventory spreadsheet for Taylor Games. In this exercise, you will make various enhancements to allow the worksheet to track a specific group of SKUs at two locations.

1. Download and open your Project Grader starting file.
   - *Using eLab:* Download **E2_P1_eStart** from the Assignments page. You *must* start with this file or your work cannot be automatically graded.
   - *Not using eLab:* Open **E2_P1_Start** from your **Excel Chapter 2** folder.
2. Delete **Sheet3**.
3. In **Sheet 1**, remove **rows 2** through **6**.
4. Hide **column B** in both **Sheet1** and **Sheet2**.
5. Rename the worksheets as follows:

Sheet1	**`Seattle Store`**
Sheet2	**`Warehouse`**

6. Change the worksheet order by moving the **Warehouse** worksheet to the left of the Seattle Store worksheet.
7. Change the tab colors of both worksheet tabs as follows:

Warehouse tab	**Orange, Accent 2** (6th color in the top row of Theme colors)
Seattle Store tab	**Blue, Accent 1** (5th color in the top row of Theme colors)

8. Sort both worksheets on the **SKU #** field in smallest to largest order.
9. In both worksheets, insert a column to the left of the Markup % column.
10. Make these changes in both of the new columns (**column F**):
    - Enter the heading **`Inventory Value`** in **cell F3**.
    - Set the column widths to: **`15`**
11. In **cell F4** of both worksheets, use cell references to create a formula that multiplies the Quantity by the Unit Cost (Quantity * Unit Cost).
12. In both worksheets, copy the formula in **cell F4** down the column to the **range F5:F18**.
13. Make the following changes in both worksheets:
    - In **cell H3**, enter the heading text: **`Markup Amount`**
    - In **cell I3**, enter the heading text: **`Retail Value`**
    - Set the widths of **columns H** and **I** to: **`15`**
    - Apply the same formatting that is used in **cell G3** to **cells H3** and **I3**.

14. In **cell H4** of both worksheets, use cell references to create a formula that multiplies the Inventory Value by the Markup % (Inventory Value * Markup %).
15. In both worksheets, copy the formula in **cell H4** down the column to the **range H5:H18**.
16. In **cell I4** of both worksheets, use cell references to create a formula that adds the Inventory Value to the Markup Amount (Inventory Value + Markup Amount).
17. In both worksheets, copy the formula in **cell I4** down the column to the **range I5:I18**.
18. In the **range H4:I18**, in both worksheets, format the cells with the Accounting number format.
19. Make a copy of the **Warehouse** sheet using these guidelines:
    - Choose **(move to end)** on the Before Sheet list.
    - Change the sheet name of the new sheet to: **`Warehouse (Backup)`**
20. Make a copy of the **Seattle Store** sheet using these guidelines:
    - Choose **(move to end)** on the Before Sheet list.
    - Change the sheet name of the new sheet to: **`Seattle Store (Backup)`**
21. Hide both the **Warehouse (Backup)** and **Seattle Store (Backup)** sheets.
22. Save your workbook.
    - *Using eLab:* Save it to your **Excel Chapter 2** folder as **`E2_P1_eSubmission`** and attach the file to your eLab assignment for grading.
    - *Not using eLab:* Save it to your **Excel Chapter 2** folder as: **`E2_P1_Submission`**

PROJECT GRADER: E2-P2

Classic Cars Appreciation in Car Value

You've been asked to modify an existing worksheet to determine how much members' cars have appreciated in value since their original sales price. In this exercise, you will add a new worksheet in which you will focus on the task at hand.

1. Download and open your Project Grader starting file.
    - *Using eLab:* Download **E2_P2_eStart** from the Assignments page. You *must* start with this file or your work cannot be automatically graded.
    - *Not using eLab:* Open **E2_P2_Start** from your **Excel Chapter 2** folder.
2. Make a copy of the **Sheet1** worksheet, moving the copy to the end of the worksheet order.
3. Change the worksheet names as follows:
    - Change the new sheet's name to: **`Car Values`**
    - Change the Sheet1 name to: **`New Members`**
4. Make these settings in the **Car Values** sheet:
    - Hide **columns G** and **H**.
    - Unhide **columns J** and **K**.
5. In **cell L4**, enter the heading: **`Appreciation`**
6. Apply the cell formatting from **cell K4** to **cell L4**.
7. Set the width of **column L** to: **16**
8. In **cell L5**, use cell references to create a formula that calculates the Appreciation (Current Value – Original Value).

9. Format **cell L5** with the Currency number format and then decrease the decimals so that no decimals are displaying.
10. Copy the formula in **cell L5** down the column to the range **L6:L34**.
11. Sort the worksheet on the Appreciation field in largest to smallest order.
12. In the **New Members** sheet, insert a row above **row 4**.
13. In **cell A3**, enter the text: **`Greatest Appreciation`**
14. In **cell C3** of the **New Members** sheet, create a link to **cell L5** in the **Car Values** sheet. **Cell C3** should now display the value from **cell L5** in the Car Values sheet.
15. Format **cell C3** with the Currency number format and then decrease the decimals so that no decimals are displaying.
16. Apply bold formatting to **cells A3** and **C3**.
17. Save your workbook.
    - *Using eLab:* Save it to your **Excel Chapter 2** folder as **`E2_P2_eSubmission`** and attach the file to your eLab assignment for grading.
    - *Not using eLab:* Save it to your **Excel Chapter 2** folder as: **`E2_P2_Submission`**

Extend Your Skills

These exercises challenge you to think critically and apply your new skills in a real-world setting. You will be evaluated on your ability to follow directions, completeness, creativity, and the use of proper grammar and mechanics. Save files to your chapter folder. Submit assignments as directed.

E2-E1 That's the Way I See It

Open **E2-E1-HousePurchase** and save it as: **E2-E1-HousePurchase2**

You are a real estate agent, and you want to create a list of potential real estate purchase costs for your clients. The types of purchasing costs and the current rate for each are listed, and you need to enter the appropriate formulas. Enter the price for a house you might wish to buy, using the Internet as necessary to research housing prices in your area. Then create formulas in all of the cells with gray shading to find total Mortgage Plus Fees. Start with the Rate times the Price in column C, then take Price minus Down Payment to get the Mortgage Amount. Then add the two Variable Fees together, add that result plus the Flat Fees to get Total Fees, and add Total Fees to Mortgage Amount in cell D19. When you are done, apply appropriate cell and number formatting as desired. Rename the sheet **Customer 1** and make a copy of it named **Customer 2**. On the Customer 2 sheet, delete the price but leave all formulas in place.

E2-E2 Be Your Own Boss

Information has been gathered from the Blue Jean Landscaping corporate customer invoices for Quarter 1 (Q1), and you need to calculate total Q1 revenue and make revenue projections for Q2. One of your employees has started the file but needs your expertise in creating the formulas. Open **E2-E2-Revenue** and save it as: **E2-E2-Projections**. You are required to enter appropriate formulas to calculate total labor (hours times labor rate) and the total invoice (materials plus total labor). Some of the columns are hidden, so you must unhide them first. Then calculate Q2 projections by multiplying the total invoice by the expected Q2 growth rate. Last, clean up your worksheet by deleting the companies with zero material and hours, hide the Labor Rate and Q2 Growth Rate columns again, and sort the companies by the Total Invoice column from smallest to largest.

E2-E3 Demonstrate Proficiency

Stormy BBQ is known for its delicious, world-famous BBQ sauce. In addition to its restaurant business, the company started selling its sauce by the bottle last year and want to know how profitable it was. Open **E2-E3-SauceSales** and save it as: **E2-E3-SauceProfit**. The first step is to calculate Revenue in the appropriate column by multiplying the number of bottles by the price per bottle. Then for expenses, use number of bottles times the expense per bottle. Last, find the profit by subtracting expenses from revenue. Once you have the profit calculated, you can hide the two columns with price and expense per bottle. Make a copy of the sheet and rename the two sheets with an appropriate year; the current sheet should be this year and the copy should be next year. On next year's worksheet, clear the sales entered under Number of Bottles Sold, so the sales can be entered in after each month of the following year. Make any other formatting changes you see fit.

EXCEL

3 Performing Calculations Using Functions

In this chapter, you will begin using functions in your formulas to make complex calculations quicker and easier. You will also learn about the difference between a relative and an absolute reference and practice using both in your formulas.

LEARNING OBJECTIVES

- Create formulas with functions
- Use AutoSum
- Use relative and absolute cell references in formulas
- Define names for cells and ranges
- Use names in formulas

Project: Tracking Progress

As an instructor at LearnFast College, you have already recorded the student grades for your Introduction to Business course. Now you will use functions to perform a variety of calculations that will help you analyze the students' performance.

Using Functions in Formulas

Functions are an important part of Excel. They allow you to do much more than simple mathematical operations. For example, adding two or three cells together is not a problem; however, if you needed to add up hundreds or even thousands of cells, it would be quite the tedious task! You would need a formula such as: =A1+A2+A3+A4... and so on.

The SUM function, in this case, is easier because it allows you to specify a range instead of individual cells. The function then tells Excel what operation to perform on the range, in this case addition. This is one of the reasons Excel is much more efficient than using a calculator!

Formulas with functions are inserted into a cell starting with the equals (=) sign, just like other formulas. This is followed by the function name and one or more arguments inside parentheses. An argument is the name for the numbers, cells, or ranges used in the function.

The function name SUM follows the = sign.

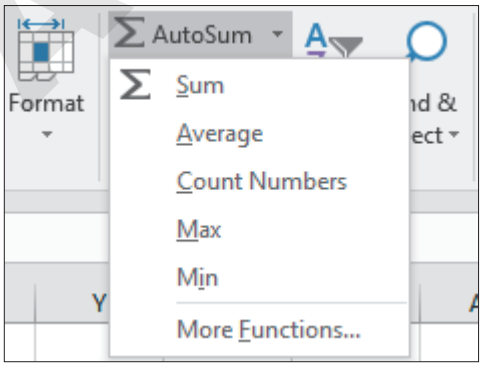
=SUM(A1:A12)

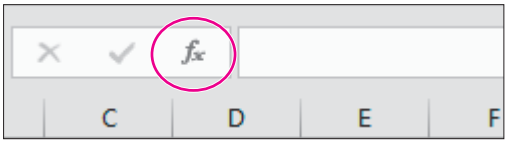
The function arguments must be placed inside parentheses. The argument is the range A1:A12, so Excel will add all of the values contained in that range.

This function has three arguments; two individual cells, A1 and A4, as well as the range A7:A12, separated by commas.

=SUM(A1,A4,A7:A12)

Functions can be typed directly into a cell, if you know the name of the function you wish to use, or inserted a number of other ways. Functions are available from the Formulas tab on the Ribbon, by using AutoSum, or by using the Insert Function button on the Formula Bar. The most common functions can be inserted quickly and easily from the AutoSum drop-down menu on the Home tab of the Ribbon.





When you insert a function by typing, Excel will suggest names for functions as you type. For example, typing *=s* will generate a list of functions that start with the letter *S*; you can ignore the prompt and type the full function name or double-click one of the suggestions that appears.

DEVELOP YOUR SKILLS: E3-D1

In this exercise, you will create a formula using the SUM function to calculate the final grade for each student.

1. Start Excel; open **E3-D1-SummerGrades** from your **Excel Chapter 3** folder and save it as: **`E3-D1-FallGrades`**
2. On the **Final Grades** worksheet select **cell G6**, and then type **`=SUM(C6:F6)`** and click **Enter** ✓.

   The formula in the Formula Bar shows the SUM function, and the total of cells C6:F6 is displayed in cell G6. The final grade for the first student, Ashley, is 37%.

   Currently there are only two grades being added (28% and 9%). The other grades will be added to the total once they are calculated on the Quizzes and Exam worksheets.
3. In **cell G7**, type **`=SUM(`** and use the mouse to select the **range C7:F7**; then click **Enter** ✓.

   It's good practice to type the closing parenthesis after the function arguments, but notice in the Formula Bar that Excel automatically inserts it for you. The sum for the second student, Atif, now shows 36%.
4. Point to the fill handle in **cell G7** and double-click to fill the formula down **column G**.
5. Save the workbook.

The AutoSum Feature

The AutoSum feature not only makes it easy to find some of the simplest functions, it also helps identify and enter the range of cells you are most likely to use in your function. Often when you have a column of numbers, you want to add a total at the bottom of the column. In a row, the total would be placed on the right side of the row.

AutoSum will automatically search for adjacent data, either directly above or to the left of the selected cell. Therefore, selecting the cell at the bottom of a column or the right side of a row and clicking AutoSum will very quickly enter the SUM function, as well as the range of cells necessary to add all the numbers in that column or row. If necessary, you can alter the range Excel selects by dragging to select the desired cells before completing the entry.

Another option is to select the data in the row or column first and then click AutoSum.

SUM, AVERAGE, COUNT, MAX, and MIN

The SUM function is just one of the AutoSum options; other frequently used functions can be found via the AutoSum drop-down menu. These functions take a set of numbers identified in the arguments and can be used to find the average, count how many numbers are in the set, or locate the highest or lowest value. Similar to AutoSum, these functions automatically search for adjacent data, either directly above or to the left of the selected cell.

AUTOSUM FUNCTIONS

Function Name	Description
SUM	Adds the values in the cells
AVERAGE	Calculates the average of the values in the cells
COUNT	Counts the number of cells that contain numerical values; cells containing text and blank cells are ignored
MAX	Returns the highest value
MIN	Returns the lowest value

Home→Editing→AutoSum Σ menu button ▾

Insert Function

For more complex functions, the Insert Function button opens a dialog box that allows you to search for functions and enter function arguments. In the Insert Function dialog box you can search for your desired function by keyword or browse by category. After choosing the function, the Function Arguments dialog box opens, from which you enter the numbers, cell references, or criteria to use in the function.

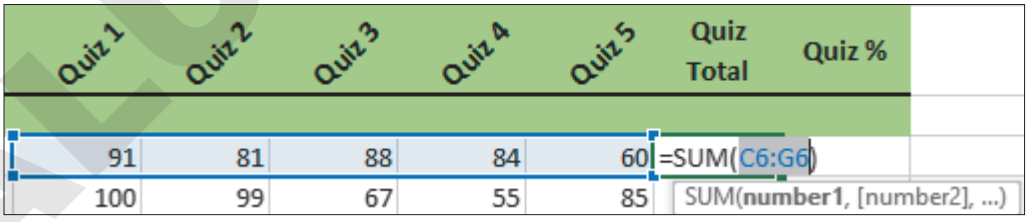
View the video "Entering a Formula Using Insert Function."

DEVELOP YOUR SKILLS: E3-D2

In this exercise, you will use AutoSum to calculate the total each student earned on their quizzes, as well as to calculate the class average for each quiz.

1. Save your workbook as: **`E3-D2-FallGrades`**
2. Click the **Quizzes** worksheet tab and select the empty cell under *Quiz Total* for Ashley, **cell H6**.
3. Choose **Home→Editing→AutoSum** Σ.

   The SUM function is entered into cell H6 with the range C6:G6. Excel finds five adjacent cells to the left of cell H6 containing numerical data, so the range C6:G6 is automatically entered into the function arguments within parentheses.



4. Click **Enter** ✓ to finish the entry and show the result of the formula, 404, in **cell H6**.
5. Use the **fill handle** to copy the formula in **cell H6** down the column for the rest of the students.

   Next you will calculate the class average for each quiz.
6. In **cell A18**, enter: **`Class Average`**
7. Format **cell A18** with bold and italic formatting, and then merge and center **cells A18** and **B18**.
8. Select **cell C18** and choose **Home→Editing→AutoSum Σ menu button ▾→Average**.
9. Complete the entry in **cell C18** and then use the **fill handle** to copy the average formula from **cell C18** to the right, into the **range D18:G18** below all five quizzes.

10. Decrease the decimal in the range of selected cells so only one decimal place is displayed and then apply bold formatting and a top cell border.

    Now you want to find the average for each student.

11. Insert a new column to the left of **column I**.
12. Enter **`Student Average`** into **cell I4**.
13. Select **cell I6** and choose **Home→Editing→AutoSum Σ menu button ▾→Average** but do not complete the entry.

    This time AutoSum selects the range C6:H6, which is incorrect because the average for the five quizzes should not include the total. Now you will select the correct range.

14. Use the mouse to drag and select the correct **range C6:G6** and then complete the entry.
15. Use the **fill handle** in **cell I6** to copy the formula down the column for the rest of the students.

    Next you need to calculate the exam grades for each student.

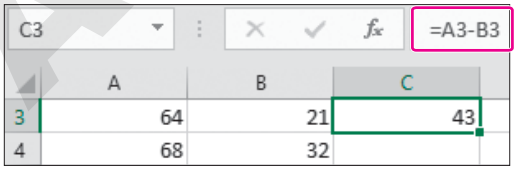
16. Click the **Exam** worksheet tab and select the empty cell under *Exam Total* for Ashley, **cell H6**.
17. Use AutoSum to add the Section 1 to Section 5 exam marks for Ashley, and then copy the formula down **column H** for the other students.
18. Save your work.

Using Relative and Absolute Cell References

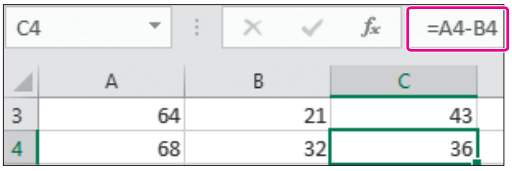
Cell references make it easier to copy formulas when you want to perform the same calculation with new numbers each time. Without cell references, each calculation would need to be typed individually, like with a calculator—slowly and tediously. A *relative* cell reference, which is the default in Excel, is one in which the location of the cell remains relative to the cell that contains the formula. This makes repeating the same calculation many times quick and easy!

For example, if the formula =A3-B3 is in cell C3, the relative position of A3 is two cells to the left of C3, and B3 is one cell to the left of C3. When you copy the formula to another cell, the cell references change to be in the same relative position. So, if you copy the formula =A3-B3 from cell C3 down to cell C4, the formula there will be =A4-B4. Excel updates the new cell references to be in the same relative position to cell C4; that is, two cells to the left and one cell to the left.

Tip! *Remember that a relative cell reference changes when it is copied.*



The original formula is seen in the Formula Bar, with relative references to both cells A3 and B3.



The copied formula is displayed with the new cell references A4 and B4.

Absolute Cell References

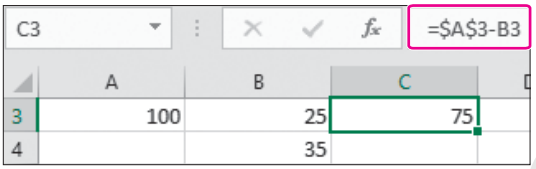
In some situations, you do not want the cell reference to change when you move or copy the formula. To ensure the cell reference does not change, use an *absolute* cell reference. You can think of an absolute cell reference as being locked in place; that is, the cell reference will not change when copied to other cells.

To make a cell reference absolute, start with a relative cell reference such as A1 and add a dollar sign in front of the column and row components, like this: $A$1.

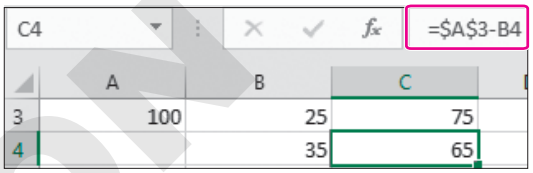
There are two ways to create an absolute cell reference:

1. Type the cell reference and include dollar signs in front of the column and row references.
2. Use the mouse pointer to select the cell and then tap F4 on the keyboard, which inserts both dollar signs into the cell reference at once.

Example: If the formula =$A$3-B3 is entered in cell C3 and then copied to cell C4, the formula in cell C4 would be =$A$3-B4. $A$3 is an absolute reference, so it does not change; B3 is a relative reference, so it changes to B4.



The original formula shows in the Formula Bar and contains an absolute reference to cell $A$3.



After the formula is copied, the absolute reference $A$3 does not change.

View the Video "Relative and Absolute Cell References."

Mixed Cell References

It's also possible to create a mix between a relative and an absolute reference in a cell reference. For example, $A3 is a reference to cell A3 where the column reference is absolute (column A will not change when copied) and the row reference is relative (row 3 will change when copied). This can be useful when copying a formula both across a row and down a column.

After you have tapped the F4 key once, tapping it a second time changes the absolute reference to a mixed reference with only a dollar $ sign in front of the row reference. A third tap of F4 places the dollar $ sign in front of only the column reference, and a fourth tap removes all dollar $ signs so it is once again a relative cell reference.

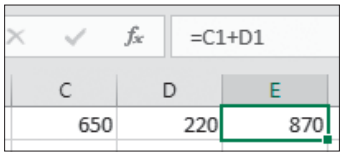
Display and Print Formulas

To see a formula you have entered, you must first select the cell and then check the Formula Bar because it is the result of the formula that is displayed in the worksheet cell. This means that to check your formulas, you have to click each cell and review them one at a time. When you have many cells with formulas, this is very hard and time-consuming to do.

An easier way is to display all formulas within their cells. The Show Formulas button is a toggle that can be turned on and off as necessary.

Tip! *You can still edit the formulas and print the worksheet while Show Formulas is turned on.*

When Show Formulas is turned on, Excel automatically widens columns to show more of the cell contents.



Normally the cell must be selected for you to see the formula.

C	D	E
650	220	=C3+D3
480	195	=C4+D4
300	217	=C5+D5

After turning on Show Formulas, the formulas display in the worksheet without selecting the cell (but you can't see the results).

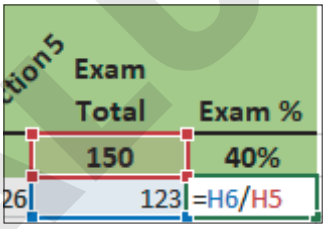
Formulas→Formula Auditing→Show Formulas

DEVELOP YOUR SKILLS: E3-D3

In this exercise, you will use formulas with absolute references to find the percentage grades for the class's exams and quizzes.

1. Save your workbook as: **`E3-D3-FallGrades`**
2. On the **Exam** worksheet, enter **`150`** in **cell H5** and **`40%`** in **cell I5**.

   To get a grade out of 40% for each student, you need to divide their exam score by 150 then multiply by 40%. You will use the values in cells H5 and I5 to do this.
3. In **cell I6**, type **`=H6/H5`** but do not complete the entry.

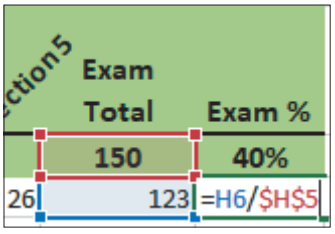


   Cell H6 shows Ashley's total exam grade. This will change for each student when we copy the formula. Cell H5 is the number of total points the exam is worth, in this case 150, which should not change for each student; therefore, cell H5 needs to be an absolute reference.

   While using F4 to edit a formula as we will, the insertion point must be immediately before or after the reference to cell H5 or the correct cell reference won't be converted.

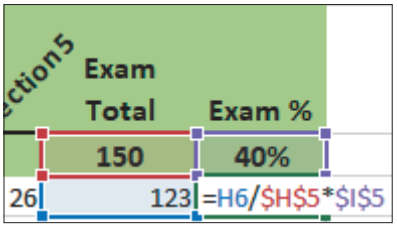
4. While still in edit mode in **cell I6**, tap F4 on the keyboard to make the reference for **cell H5** absolute (dollar $ signs are placed in front of the column and row).

Note! *On some keyboards, including most laptops, you must press Fn (usually beside Ctrl near the bottom of the keyboard) before using the function F keys at the top of the keyboard because these may also be used for adjusting volume or other system controls.*



The last step is to multiply each mark by 40%, which also does not change for each student.

5. Continuing in edit mode in **cell I6**, type **`*I5`** and tap F4, and then click **Enter** ✓.



Cell I5 is now an absolute cell reference. Ashley's total exam grade is calculated as 33%.

6. Copy the formula down **column I** for the other students.
7. Select **cell I7** and ensure the formula copied correctly. The formula should be =H7/$H$5*$I$5 and the result for Atif is 32%.

   Now you will use absolute cell references to calculate the students' quiz grades.

8. Click the **Quizzes** worksheet tab and enter **`500`** in **cell H5** and **`20%`** in **cell J5**.
9. Enter this formula in **cell J6** to calculate the quiz percentage: **`=H6/$H$5*$J$5`**

   You can decide for yourself if you would prefer to type in the dollar signs individually or use the F4 key!

10. Copy the formula down **column J** to calculate the grades for the other students.
11. Click the **Final Grades** worksheet tab and notice the Final Grade now includes grades for the quizzes and exams, along with the grades for projects and participation.
12. Save your work.

Creating Names for Cells and Ranges

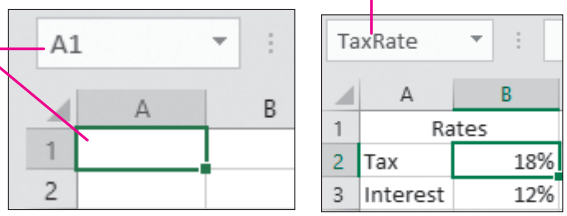
When you need to refer to the same cell or range of cells repeatedly in your formulas, consider creating a name for that cell or range. It's easier to remember a name than to scroll or click around your workbook looking for the cells you want to use. This is especially true if you are using a cell or range from another worksheet or even another workbook.

Note! *Cell names cannot contain spaces.*

You can create names directly in the Name Box or via the Formulas tab on the Ribbon. You can also create, edit, or delete cell names using the Name Manager. Name references are automatically absolute cell references; that is, the reference will not change when moved or copied.

The cell name in the Name Box, *TaxRate* (does not contain a space), refers to cell B2.

The default name for the selected cell, A1, is displayed in the Name Box.



Formulas→Defined Names

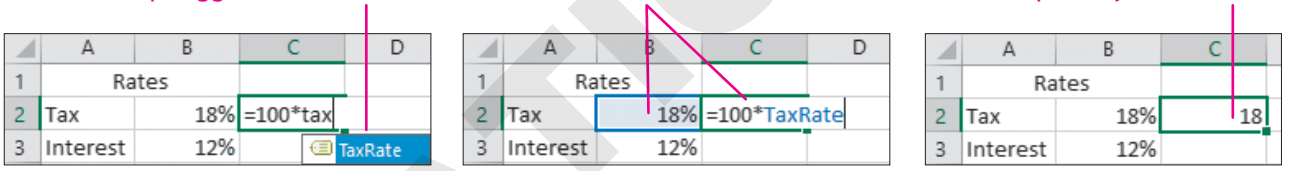
Using Cell Names in Formulas

You use a cell name in a formula just as you would any other cell reference. The cell name can be typed, or the cell can be selected with the mouse. You can also begin to type the first few letters of the name and then double-click the name from the AutoComplete list that appears.

Typing the beginning of the cell name will bring up suggested names.

The formula, after the cell name has been inserted, highlights the cell named *TaxRate*.

The formula's result is displayed; 100 multiplied by 18% is *18*.

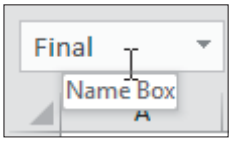


DEVELOP YOUR SKILLS: E3-D4

In this exercise, you will define names for ranges and cells, and then enter formulas to analyze and update the grades using those names for the cell references.

1. Save your workbook as: **`E3-D4-FallGrades`**
2. On the **Final Grades** worksheet, select the **range G6:G17**.
3. Click inside the **Name Box**, which currently displays *G6*, and then type **`Final`** and tap Enter.

   Final *is now the name that refers to the range G6:G17. The name* Final *can now be used in formulas to analyze the grades.*

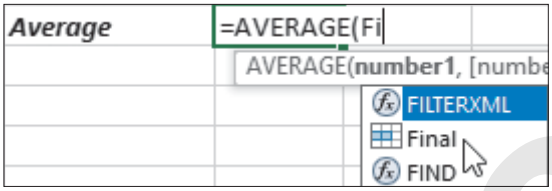


4. Beginning in **cell I5**, enter the following:

	I
5	Grade Analysis
6	Highest
7	Lowest
8	Average

5. Add bold and italic formatting to the **range I5:I8** and AutoFit the column width to fit the text you just entered.
6. In **cell J6**, type the formula **`=MAX(Final)`** and tap Enter.
7. In **cell J7**, type **`=MIN(`** and then use the mouse to select the **range G6:G17**.

   Excel automatically uses the name Final *inside the formula for the range you just selected.*
8. Type **`)`** to complete the formula and then tap Enter.
9. Now type **`=AVERAGE(Fi`** in **cell J8** and then use the mouse to double-click the name **Final** from the suggested list.



10. Type**`)`** to complete the formula and then tap Enter.
11. Apply bold formatting and the **Percent Style** number format to the **range J6:J8**.

    The highest, lowest, and average grades for the class are now displayed.

    Next you will create names for the values of each part of the students' grades. This way, if the values change later you can easily update the grade formulas with the new values.
12. Enter this data in the **range A21:B25**:

	A	B
21	Values	
22	Quizzes	20%
23	Projects	30%
24	Participation	10%
25	Exam	40%

13. AutoFit the width of **column A** to fit the word *Participation* in **cell A24**.
14. Select **cell B22** and choose **Formulas→Defined Names→Define Name**.

    Excel adds the name Quizzes *into the Name field based on the adjacent cell.*
15. Ensure that *Quizzes* is inserted in the Name field and click **OK**.
16. Repeat step 14 but select **cell B23** and use the proposed cell name *Projects*.
17. Repeat for **cell B24** and **cell B25**, using the proposed cell names *Participation* and *Exam*, respectively.
18. Choose **Formulas→Defined Names→Name Manager** and make sure all four names, as well as the name *Final* (five total names) have been added to the list, then close the Name Manager.

19. Click the **Quizzes** worksheet tab, select **cell J5**, and enter: **`=Quizzes`**

    The formula enters the value from the cell named Quizzes *(20%) in cell J5. If the value needs to be changed, it can be updated on the Final Grades sheet, and then the Quizzes sheet and all necessary formulas will instantly update, too.*

20. Click the **Exam** worksheet tab, select **cell I5**, and enter: **`=Exam`**

21. Switch back to the **Final Grades** sheet and change the values in **cell B22** and **cell B25** to **`10%`** and **`50%`**, respectively.

    The quiz grades now reflect a grade out of 10 in column C, and the exam grades reflect a grade out of 50 in column E. Review the Quizzes and Exam sheets to see the changes there.

22. Save the workbook and close Excel.

Self-Assessment

Check your knowledge of this chapter's key concepts and skills using the Self-Assessment in your ebook or online (eLab course or Student Resource Center).

Reinforce Your Skills

REINFORCE YOUR SKILLS: E3-R1

Use Functions to Calculate Total and Average

In this exercise, you will update a worksheet to calculate totals for each student who volunteered at Kids for Change, and totals for each month of the year. You'll find the average volunteer hours per month as well.

1. Start Excel; open **E3-R1-VolunteerHours** from your **Excel Chapter 3** folder and save it as: **`E3-R1-VolunteerTotals`**
2. Select **cell H5** and choose **Home→Editing→AutoSum** Σ.

   AutoSum finds the sum of the range D5:G5.
3. Click **Enter** ✓ to finish the entry.

   The result of the formula displayed in cell H5 is 137.
4. Use the **fill handle** to copy the formula in **cell H5** down the column for the rest of the students.
5. Enter the text **`Total`** in **cell C28** and the text **`Average`** in **cell C29**.
6. Apply bold and italic formatting to the **range C28:C29**, and then right-align the cell contents.
7. Select the **range D28:H28** and choose **Home→Editing→AutoSum** Σ.

   This time, rather than inserting the sum and copying the formula across, all five cells are filled with the formula instantly. If you are certain the AutoSum formula does not need to be edited, you can use this method.
8. Select **cell D29**.

   Next you will find the average. Because the average function in cell D29 will require editing, you will enter the first function in cell D29 and then copy across.
9. Choose **Home→Editing→AutoSum** Σ **menu button** ▾ **→Average**.

   Notice the AVERAGE function selects the range D5:D28; this is incorrect because the average should not include the total in cell D28.
10. Select **cell D5** and hold down the mouse button while dragging down to **cell D27** to modify the range.
11. Once the formula displays the correct range, =AVERAGE(D5:D27), click **Enter** ✓ to complete the formula.
12. Copy the formula in **cell D29** across the row for the months of February, March, and April.
13. Save the workbook.

REINFORCE YOUR SKILLS: E3-R2

Use Absolute References and Named Ranges in Formulas

In this exercise, you will calculate a tuition payment for each of the Kids for Change student volunteers. You will then calculate the highest and lowest total hours volunteered.

1. Save your workbook as: **`E3-R2-VolunteerTotals`**
2. Enter **`Tuition`** in **cell I4**.

3. Use the Format Painter to apply the formatting from **cell H4** to **cell I4**.

   Kids for Change offers high school volunteers reimbursement for volunteer hours that they can save up for college tuition. First you will enter the rate and then you will multiply each student's hours by the rate.

4. In **cell J5**, type **`Rate`** and then use the Format Painter to apply the formatting from **cell C29** to **cell J5**.
5. Enter the number **`3.75`** in **cell K5**.
6. Select **cell I5** and enter a formula that multiplies **cell H5** by **cell K5**. Be sure to use an absolute cell reference for **cell K5** so it stays the same for each student when you copy the formula.

   The result for the first student, Ashley, should be 513.75.

7. Copy the formula down **column I** for the other students.

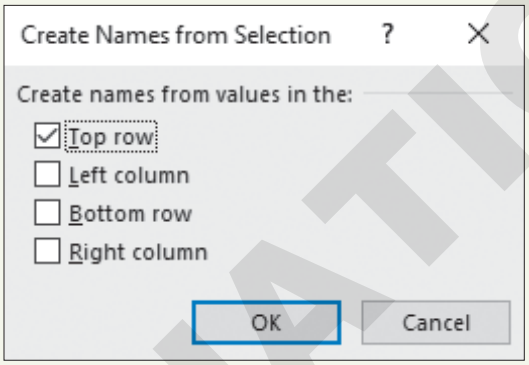
   Be sure to stop at cell I27 (do not copy the formula to cell I28 in the total row). The result for the last student, William, should be 487.5.

   The next step is to define names for the data in the Total and Tuition columns.

8. Select the **range H4:I27** and choose **Formulas→Defined Names→Create from Selection**.

   The Create from Selection button uses the text from the selected range to define names for multiple columns or rows simultaneously. In this case, the text is located at the top, so the top row text values can be used as names for each column; for example, the name Total *will refer to the range H5:H27.*

9. Ensure the **Top Row** box is checked and click **OK**.



10. In **cell I28**, use the SUM function to find the tuition total, taking care to use the name *Tuition* for the range.
11. Apply a bottom border to the **range D27:I27** and then apply the Accounting number format to **cell I28**.
12. Adjust the rate in **cell K5** to **`4.25`** and notice the increase in the total in **cell I28**.
13. Enter the text **`Highest`** in **cell G30** and the text **`Lowest`** in **cell G31**.
14. Use the **Format Painter** to apply the formatting from **cell C29** to the **range G30:G31**.
15. In **cell H30**, enter a formula using the MAX function to find the highest value for the total hours, and be sure to use the name *Total* for the range.
16. Enter a formula in **cell H31** using the MIN function to find the lowest value and, again, use the name *Total* for the range.
17. Repeat steps 15–16 in **cells I30** and **I31** to find the highest and lowest values in the Tuition column.
18. Save and close the workbook.

REINFORCE YOUR SKILLS: E3-R3

Calculate Funds Raised with Formulas and Functions

In this exercise, you will calculate the funds raised at the Kids for Change Summer Charity Race using the appropriate formulas and functions.

1. Open **E3-R3-Pledges** from your **Excel Chapter 3** folder and save it as: **`E3-R3-TotalRaised`**

   Each participant has obtained pledges from donors at a rate of $2.50 for each mile run. The first step is to calculate the subtotal, which is the number of pledges multiplied by the pledge rate, then multiply by the number of miles each participant ran.

2. In **cell F7**, insert a formula that multiplies **cell D7** by **cell E3** and then multiples that amount by **cell E7**.

   Be sure to use an absolute cell reference to cell E3 since the pledge rate is the same for all runners.

3. Copy the formula in **cell F7** down **column F** for all participants.

   Each participant also pays an entry fee of $25, so the fee is added to the subtotal to calculate the total raised.

4. Insert a formula in **cell G7** that adds **cell F7** to **cell E4**—and remember that you don't want the reference to cell E4 to change when you copy it!

5. Copy the formula down **column G**.

6. Enter the text in the cells specified:

Cell F29	**`Grand Total`**
Cell F30	**`Average`**
Cell F31	**`Most Raised`**

7. Copy the format from **cell A6** to the **range F29:F31**.

8. Select the **range G7:G28** and name it: **`Total`**

9. Use the name *Total* in functions to find the sum, average, and maximum in the appropriate cells in **column G**.

10. Apply a bottom border to **cell G28** and bold format to the **range G29:G31**.

11. Save the workbook and close Excel.

Apply Your Skills

APPLY YOUR SKILLS: E3-A1

Create an Invoice Using Formulas

In this exercise, you will create an invoice for Universal Corporate Events services using formulas with functions and absolute cell references. Once the appropriate formulas are entered, the invoice can be modified for each customer simply by changing the name, date, and number of guests at the top.

1. Start Excel; open **E3-A1-Bill** from your **Excel Chapter 3** folder and save it as: **`E3-A1-Invoice`**

   There are two sections to the invoice, the flat rate fees and per person fees. For flat rate fees the customer pays the price plus the deposit.

2. Use the SUM function in **cell D7** to add the price plus deposit for the first item and then copy the formula down to **cell D10**.

   The per-person fees must multiply the price by the number of guests, so you will do that next.

3. In **cell D14**, multiply the price for meals in **cell B14** by the number of guests in **cell D3**. Use an absolute reference for the cell that does not change.
4. Copy the formula from **cell D14** down to **cell D17**.
5. Enter a function in **cell D20** to find the subtotal, which is the sum of all item totals in **column D**.

   Be sure to include all flat-rate fees plus all per-person fees in the subtotal. You may need to manually change the range since there are blank cells between the two sections.

6. Test your formulas by changing the number of guests in **cell D3** to: **`150`**

   Your subtotal should increase from $3,840 to $5,165.

7. Save the workbook.

APPLY YOUR SKILLS: E3-A2

Calculate Tax and Discount Amount

In this exercise, you will take the Universal Corporate Events invoice and enter formulas for tax and discount using named cells.

1. Save your workbook as: **`E3-A2-Invoice`**
2. Select **cell C26** and define the name **`TaxRate`** to refer to that cell.

   Remember: Cell names cannot contain spaces!

3. Use the name you just created in a formula to calculate the tax in **cell D21**; that is, multiply the subtotal by the tax rate.

   Universal Corporate Events offers terms of 2/10, n/30 to their customers, which means customers get a 2% discount if they pay the invoice within 10 days or the net amount is due in 30 days.

4. Create a name for **cell C25** and use the name: **`Discount`**
5. In **cell D22**, calculate the discount if the customer pays early using the name **`Discount`** in your formula.
6. In **cell D23**, calculate the total due, which is the subtotal plus the tax, minus the discount.

7. Test your formulas again by changing the tax and discount rates: Change the discount to zero (if the customer does not pay within ten days) and adjust the tax rate to 8%.
8. Save and close the workbook.

APPLY YOUR SKILLS: E3-A3

Create Formulas Using Names

Universal Corporate Events has started a customer loyalty program. In this exercise, you will use formulas to calculate customer loyalty points.

1. Open **E3-A3-Customers** from your **Excel Chapter 3** folder and save it as: **`E3-A3-Points`**
2. Begin by entering **`Points Earned`** in **cell C5** and **`Total Points`** in **cell D5**.
3. Copy the formatting from **cell B5** to the **range C5:D5**.
4. Enter the text **`Points Per Dollar`** in **cell A25** and **`15`** in **cell B25**.
5. Apply bold and italic formatting to the **range A25:B25**.
6. In **cell C6**, insert a formula to calculate points for the first customer, Green Clean, by multiplying the total spent by the Points Per Dollar amount.
7. Change the number format in **cell C6** to Number with no decimal places.
8. Copy the formula down the column for all customers.

   All customers should show points. If any customers show 0 (zero), modify your formula to use an absolute cell reference.

   You also want to give all of your customers a welcome bonus, which you will now add to their points earned.
9. Enter the text **`Welcome Bonus`** in **cell A26** and **`250`** in **cell B26**.
10. Copy the formatting from **cell A25** to the **range A26:B26**.
11. Name **cell B26**: **`Welcome`**
12. Enter a formula in **cell D6** to add the welcome bonus amount to the points earned for Green Clean, and then copy the formula down the column for all customers.
13. Enter the text **`Average Points Per Customer`** in **cell A20** and then use the Average function in **cell D20** to calculate the average points per customer.
14. Copy the formatting from **cell A25** to the **range A20:D20**.
15. Apply Number formatting with no decimal places to **cell D20**.
16. Save the workbook and close Excel.

Project Grader

If your class is using eLab (labyrinthelab.com), you may upload your completed Project Grader assignments for automatic grading. You may complete these projects even if your class doesn't use eLab, though you will not be able to upload your work.

PROJECT GRADER: E3-P1

Taylor Games Financial Modeling

The Taylor Games management team wants to do some what-if analysis to help them price items for retail sale and for sales promotions. In this exercise, you will build a model in which they can enter key values, and your worksheet will then automatically recalculate based upon their inputs.

1. Download and open your Project Grader starting file.
   - *Using eLab:* Download **E3_P1_eStart** from the Assignments page. You *must* start with this file or your work cannot be automatically graded.
   - *Not using eLab:* Open **E3_P1_Start** from your **Excel Chapter 3** folder.
2. In **cell E8**, use a formula with cell references to multiply the Qty by the Unit Cost: (Qty * Unit Cost).
3. Copy the formula down to the **range E9:E22**.
4. In **cell F8**, use a formula with cell references to multiply the Inventory Value (**cell E8**) by the Markup Percentage (**cell B2**): (Inventory Value * Markup Percentage). Use an absolute cell reference to the Markup Percentage in **cell B2**.
5. Copy the formula down to the **range F9:F22**.
6. In **cell G8**, use a formula with cell references to add the Inventory Value to the Retail Markup: (Inventory Value + Retail Markup).
7. Copy the formula down to the **range G9:G22**.
8. In **cell B3**, create the cell name: **`Markdown`**
9. In **cell H8**, use a formula to multiply the Retail Value (cell G8) by the Markdown % (cell B3): (Retail Value * Markdown %). In your formula, use a cell reference to **cell G8** and the cell name *Markdown* to reference **cell B3**.
10. Copy the formula down to the **range H9:H22**.
11. In **cell I8**, use a formula with cell references to subtract the Sale Markdown from the Retail Value: (Retail Value – Sale Markdown).
12. Copy the formula down to the **range I9:I22**.
13. In the **range E23:I23**, use **AutoSum** to create column totals.
14. In **cell G2**, use the **COUNT** function to count the SKUs in the **range B8:B22**.
15. In **cell G3**, create a link to the Inventory Value total in **cell E23**. The **cell E23** total should now appear in **cell G3**.
16. In **cell G4**, use the **AVERAGE** function to determine the average Retail Value in the **range G8:G22**.
17. In **cell G5**, use the **AVERAGE** function to determine the average Sale Value in the **range I8:I22**.

18. In **cell B2**, enter **80** as the Markup Percentage, and in **cell B3**, enter **10** as the Markdown Percentage. Feel free to enter other numbers in **cells B2** and **B3** if you want to do some what-if analysis. But when you're finished, make sure you have *80* in **cell B2** and *10* in **cell B3** if you want to get credit for this step.
19. Save your workbook.
    - *Using eLab:* Save it to your **Excel Chapter 3** folder as **E3_P1_eSubmission** and attach the file to your eLab assignment for grading.
    - *Not using eLab:* Save it to your **Excel Chapter 3** folder as: **E3_P1_Submission**

PROJECT GRADER: E3-P2

Classic Cars Club Rebates and Rewards Financial Model

The Classic Cars management team is considering a Rewards & Rebates program for members. In this exercise, you will build a financial model with various inputs that will help them make informed decisions.

1. Download and open your Project Grader starting file.
    - *Using eLab:* Download **E3_P2_eStart** from the Assignments page. You *must* start with this file or your work cannot be automatically graded.
    - *Not using eLab:* Open **E3_P2_Start** from your **Excel Chapter 3** folder.
2. In the **Rebates & Rewards** sheet, use Autofill to create a sequential list of Member #s starting with **cells A9** and **A10** and continuing down to **cell A21**.
3. Copy the Member #s in the **range A9:A21** and paste them into the same cells in the **Car Values** sheet.
4. In **cell K9** in the **Car Values** sheet, use a formula with cell references to subtract the Original Value from the Current Value: (Current Value – Original Value).
5. In **cell K9**, apply the Accounting number format and decrease the decimals to zero (no decimals displayed).
6. Copy the formula down to the **range K10:K21**.
7. In **cell C4**, use the **MAX** function to determine the greatest appreciation in the **range K9:K21**.
8. In **cell C5**, use the **MIN** function to determine the least appreciation in the **range K9:K21**.
9. In **cell C6**, use the **AVERAGE** function to determine the average appreciation in the **range K9:K21**.
10. In **cell C4** of the **Rebates & Rewards** sheet, use the **COUNT** function to count the Member #s in the **range A9:A21**.
11. In **cell C5**, create the cell name: **Reward**
12. In **cell I9**, use a formula to multiply the Contract Years (cell H9) by the Reward (Each Year) (cell C5): (Contract Years * Reward (Each Year)). In your formula, use a cell reference to **cell H9** and the cell name *Reward* to reference **cell C5**.
13. Copy the formula down to the **range I10:I21**.
14. In **cell K9**, use a formula with cell references to multiply the Merchandise Purchases (cell J8) by the Merchandise Rebate % (cell C6): (Merchandise Purchases * Merchandise Rebate %). Use an absolute cell reference to the Merchandise Rebate % in **cell C6**.
15. Copy the formula down to the **range K10:K21**.

16. In **cell L9**, use a formula with cell references to add the Contract Reward (I9) to the Merchandise Rebate (K9): (Contract Reward + Merchandise Rebate).
17. Copy the formula down to the **range L10:L21**.
18. In the **range I22:L22**, use **AutoSum** to create column totals.
19. In **cell C5**, enter **`50`** as the Reward (Each Year), and in **cell C6**, enter **`30`** as the Merchandise Rebate %. Feel free to enter other numbers in **cells C5** and **C6** if you want to do some what-if analysis, but when you're finished, make sure you have *50* in **cell C5** and *30* in **cell C6** if you want to get credit for this step.
20. Save your workbook.
    - *Using eLab:* Save it to your **Excel Chapter 3** folder as **`E3_P2_eSubmission`** and attach the file to your eLab assignment for grading.
    - *Not using eLab:* Save it to your **Excel Chapter 3** folder as: **`E3_P2_Submission`**

Extend Your Skills

These exercises challenge you to think critically and apply your new skills in a real-world setting. You will be evaluated on your ability to follow directions, completeness, creativity, and the use of proper grammar and mechanics. Save files to your chapter folder. Submit assignments as directed.

E3-E1 That's the Way I See It

You are house shopping and have started a worksheet (E3-E1-RealEstate) to compare your top-three properties. Open and save **E3-E1-RealEstate** as **`E3-E1-3Houses`** and review the overall structure and content. Then, enter prices for three houses you might wish to buy, using the Internet as necessary to research housing prices in your area. Create formulas in all gray-shaded cells, starting with the Down Payment cells, multiplying the price by the rate for the first house and using an absolute reference so you can copy the formula across each row (subtract down payment from the price to find the mortgage amount). Repeat for the fees, then use the SUM function to find the total fees and add that to the mortgage amount to complete the Total Mortgage Plus Fees rows. Finally, apply appropriate cell and number formatting as desired.

E3-E2 Be Your Own Boss

Open **E3-E2-Revenue** and save it as: **`E3-E2-Projections`**

Blue Jean Landscaping has four divisions, and each division has already reported their customer hours for Q1–Q3. You now need to calculate total invoices and make revenue projections for Q4. Start by calculating total hours and average hours, using the Q1–Q3 hours and the appropriate function. Then create names for the Hourly Rate and Projected Growth cells, to be used in your formulas. In the Total Invoices column, use a formula with the total hours and the hourly rate to calculate the total dollar amount for Q1–Q3. Once that is done you can calculate the Q4 projected hours using the average hours and multiplying by one plus the projected growth rate (in parentheses). Multiply the hours again by the rate to get the Q4 projected invoices. As the last step, find the total for each column in row 10. Format the worksheet appropriately with borders and number formatting so the total in row 10 stands out.

E3-E3 Demonstrate Proficiency

After introducing two new flavors of BBQ sauce last year, Stormy BBQ wants you to do an analysis of its sales for each type of sauce and calculate total revenue for each. Open **E3-E3-Sales**; save the workbook as **`E3-E3-SauceSalesRevised`** and then begin by defining names for each of the columns of sauce data. (Hint: This can be done one column at a time or for all three columns at once using the Create from Selection tool.) Once you have named the three ranges, create row headings and insert the appropriate formulas below December to find the *Total Annual Sales, Average Sales, Highest Sale Amount,* and *Lowest Sale Amount*. Do this for each sauce and use the names you have created in your formulas. Then, create a heading and a formula to find total annual revenue for each sauce. Each bottle sells for $5.99. (Hint: Enter the price somewhere on the worksheet and then either use a name or an absolute cell reference to refer to that cell in your formula.) Apply appropriate formatting to the total annual revenue because this is now a dollar amount, as well as other areas of the worksheet as you see fit.

EXCEL

4 Data Visualization and Images

In this chapter, you will use a variety of ways to create visually interesting worksheets. You will learn when to create charts, which chart types to use for different situations, and how charts are particularly useful in understanding relationships among numbers in a worksheet. In this chapter, you will also learn about formatting data based on desired conditions and inserting pictures and shapes.

LEARNING OBJECTIVES

- Insert charts
- Use chart tools to modify charts
- Move and size charts
- Edit chart data
- Add images to a worksheet
- Apply conditional formatting

Project: Reporting Company Sales Data

Airspace Travel has gathered data from six months of sales, and you need to create charts that will help visualize trends in the data. You have to decide what data to use to create the charts, and the chart types that will best help the company understand how it is performing. You want to show sales comparisons month by month, illustrate the contributions of each travel agent to compare them side by side, and highlight the top and bottom performers throughout the year.

Create Charts to Compare Data

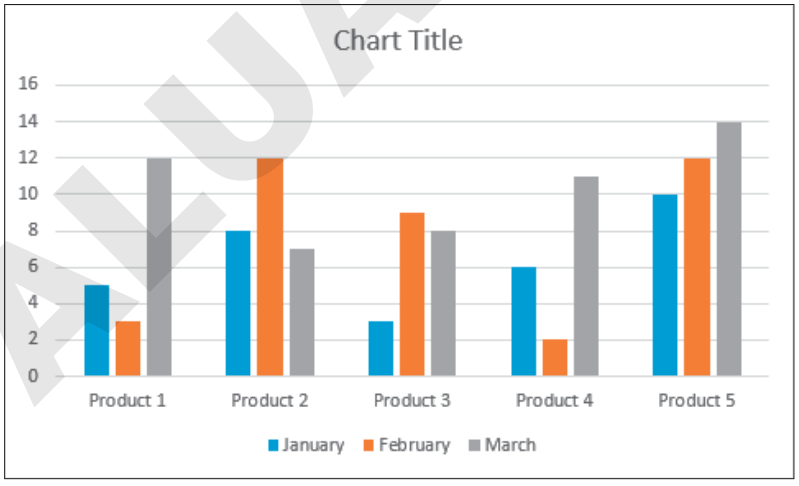
There are many situations in which we are presented with numerical data, and it would be easier to interpret the data if we could visualize it in chart form. Charts are created from worksheet data. Similar to a formula, the data is linked so that if the data changes, the chart changes as well. Creating a chart is as easy as selecting the data and chart type. Excel does the rest! After the chart is created, you can add or modify chart elements to change the way your chart looks.

Chart Types

Excel has more than a dozen different types of charts to choose from, with variations of each chart type as well. However, it is important to remember that the purpose of a chart is to simplify data, not to make it more complicated. The most common options to use are a column or bar chart, a line chart, or a pie chart.

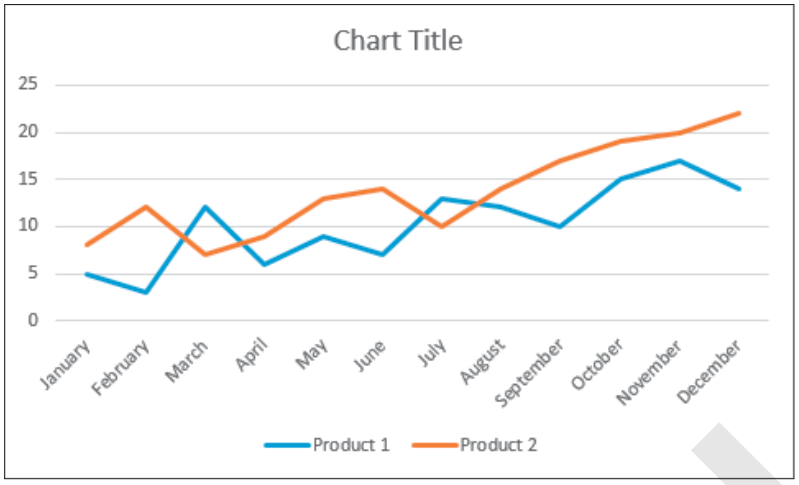
Column Charts and Bar Charts

A column chart displays data in columns across the horizontal axis. A bar chart displays data in bars across the vertical axis. They are basically the same, except one is vertical and the other is horizontal. Column charts and bar charts are useful to compare data across several categories.



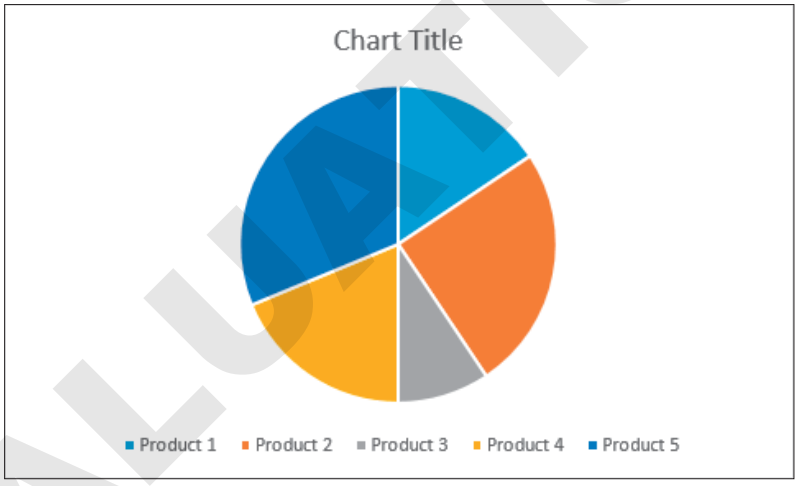
Line Charts

A line chart displays a series of data in a line or several lines and is useful for showing trends in data over time, such as days, months, or years. Line charts are best for a large amount of data and when the order of data—for example, chronological—is important. Line charts are very similar to column charts and have most of the same features.



Pie Charts

A pie chart shows a comparison of data as parts of the whole. Pie charts are best for a small amount of data; too many pieces will be hard to see in a pie chart. Pie charts can contain only one series of data, and they do not have a horizontal or vertical axis like column and line charts.



Excel also has a Recommended Charts option that will list the top chart options for you based on the data you have selected. The Insert Chart window shows a preview of what your chart will look like before you decide which one to use.

Insert→Charts

Insert→Charts→Recommended Charts

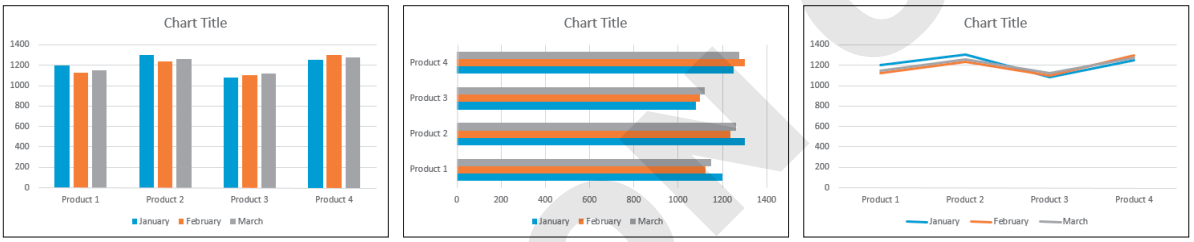
Selecting Chart Data

Choosing the right data is very important to make sure Excel can create the chart correctly. The best method is to select the data and include the appropriate row and column headings. Select an equal number of cells in each row of data, even if some of those cells are empty.

You can create a column, bar, or line chart from the same selected data.

Q1 Revenue			
	January	February	March
Product 1	1200	1123	1150
Product 2	1301	1235	1260
Product 3	1080	1100	1120
Product 4	1250	1300	1275

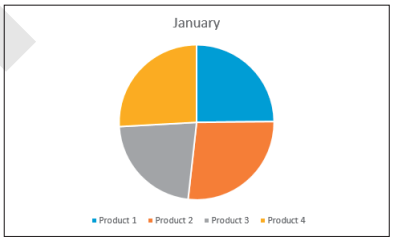
The data, including row and column headings, is selected to create your chart. Note that the blank cell in the top-left corner is also included.



These three charts result from the same selection of data.

To create a pie chart, you can only select one data series.

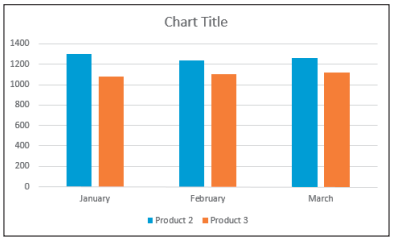
Q1 Revenue			
	January	February	March
Product 1	1200	1123	1150
Product 2	1301	1235	1260
Product 3	1080	1100	1120
Product 4	1250	1300	1275



Only the January data series is selected to create this pie chart.

If you want to create charts showing only some of the data, use the Ctrl key to select the desired data.

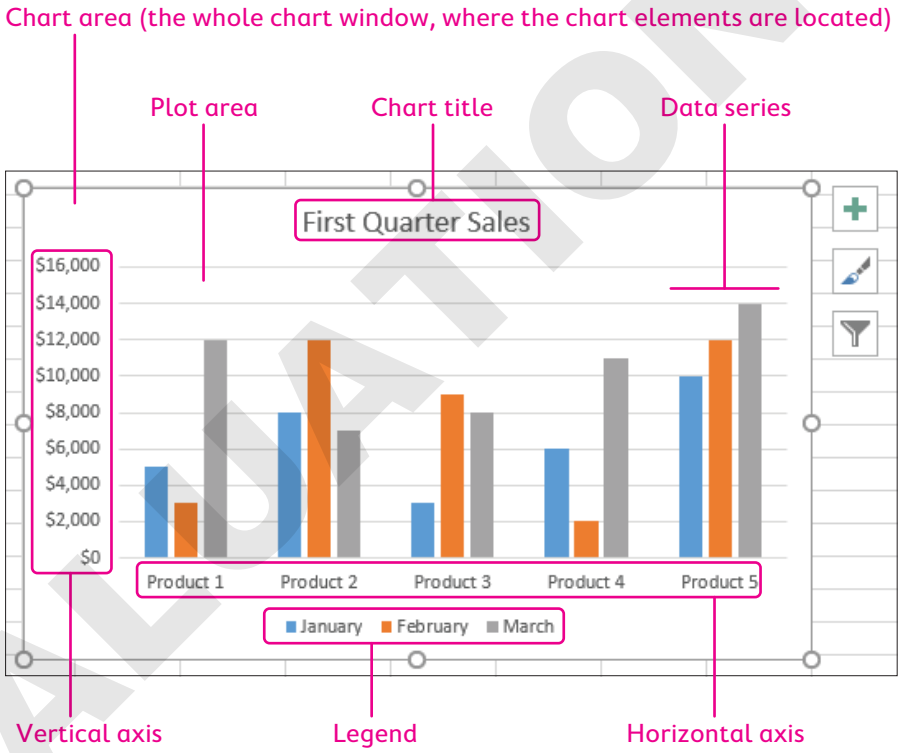
Q1 Revenue			
	January	February	March
Product 1	1200	1123	1150
Product 2	1301	1235	1260
Product 3	1080	1100	1120
Product 4	1250	1300	1275



For a column, bar, or line chart showing only Products 2 and 3, you would select the three rows of data, including the blank cell.

Chart Elements

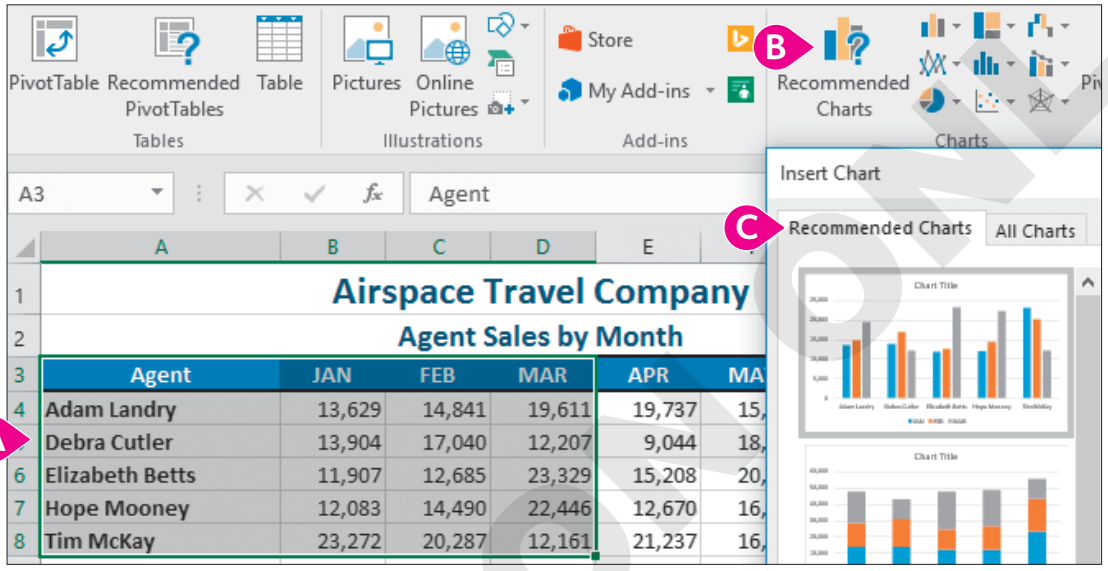
A chart is made up of different elements that can be added, removed, or modified. These elements can help others understand the information on the chart, or accentuate certain aspects of the data. There is a wide range of options for changing the look and style of your chart with each of the chart elements.



DEVELOP YOUR SKILLS: E4-D1

In this exercise, you will select data and use it to create a chart.

1. Start Excel; open **E4-D1-Sales** from the **Excel Chapter 4** folder and save it as: **`E4-D1-SalesCharts`**
2. Follow these steps to insert a column chart:



A. Select the **range A3:D8** to compare the results for all agents for the first three months of the year.

B. Choose **Insert→Charts→Recommended Charts** from the Ribbon.

C. Excel recommends a clustered column chart. Click **OK** to insert the suggested chart.

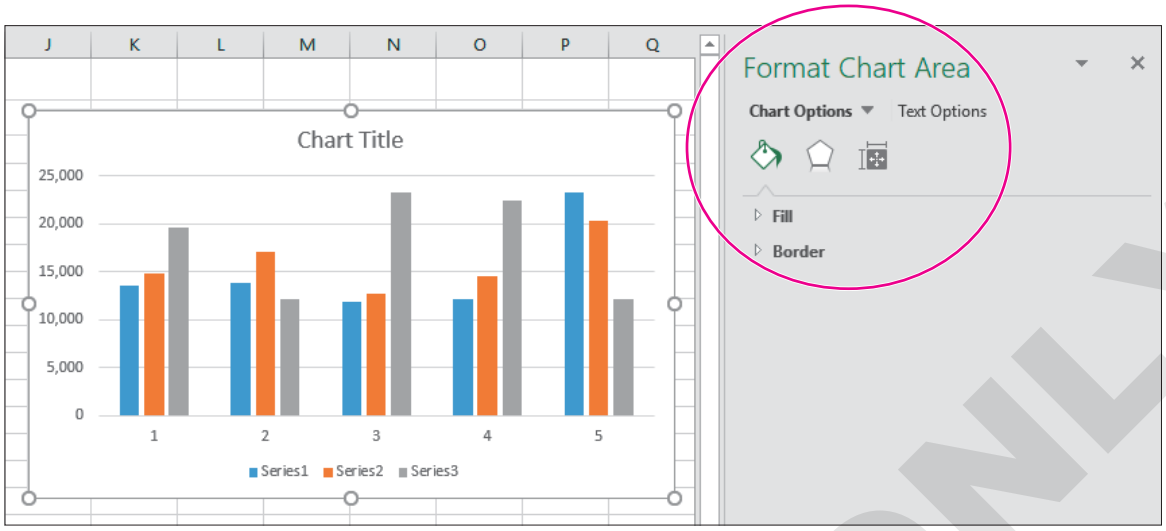
Your chart will be inserted into your worksheet as a floating object, meaning it can be moved easily by dragging.

After creating your chart, notice that resting the mouse pointer over a chart element displays a ScreenTip with the name of that element and that pointing to your data will tell you the data series, point, and value.

3. Save the workbook.

Chart Tools

There are countless ways of formatting a chart; your chart can be as simple or as creative as you like. The way you format it will likely depend on your purpose and how much time you want to spend working on it. The chart tools are found on contextual tabs, meaning they are only available while a chart is selected. You can also use the Format pane on the right side of the screen to format chart elements. The formatting options change for each chart element.



The formatting pane title and menu options change depending on what is selected in the worksheet. In this case, the chart area is selected so the Format Chart Area pane shows.

Chart Design Tools

You can use design tools to quickly and easily change the way your chart looks, using features like Chart Styles and Quick Layout. Styles modify the colors, shading, and layout of the various chart elements in one easy step. To change the appearance of a chart, there are many other design options, including changing the chart type, changing colors, or adding and removing various chart elements like chart titles, axis titles, data labels, and more.

View the Video "Using the Chart Design Tools."

The Chart Formatting Buttons

The chart formatting buttons can add elements to your chart, change the style, or filter the data visible on the chart.

One of the great features of Excel charts is the ability to filter data without changing the data selection or creating a new chart. You can simply filter the data to focus on the sets of data you want to compare and then add or remove the other series or categories as desired.

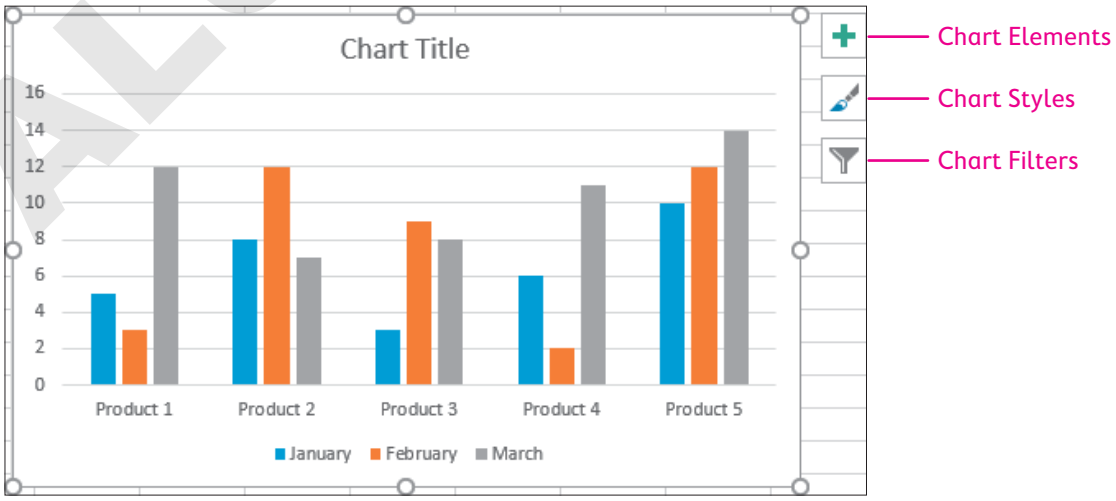
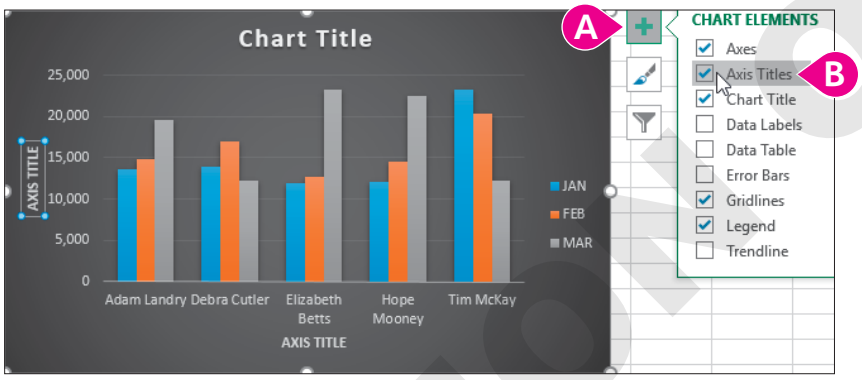


Chart Tools→Design

DEVELOP YOUR SKILLS: E4-D2

In this exercise, you will adjust the appearance of your chart using the style, layout, and other chart design tools.

1. Save your workbook as: **`E4-D2-SalesCharts`**
2. If necessary, click anywhere on the column chart to select it and display the Chart Tools contextual tab on the Ribbon.
3. Choose **Chart Tools→Design→Chart Styles→Style 8** to apply the new style.
4. Choose **Chart Tools→Design→Chart Layouts→Quick Layout→Layout 1** to apply the layout, which moves the legend to the right side of the chart.
5. Follow these steps to add axis titles to your chart:

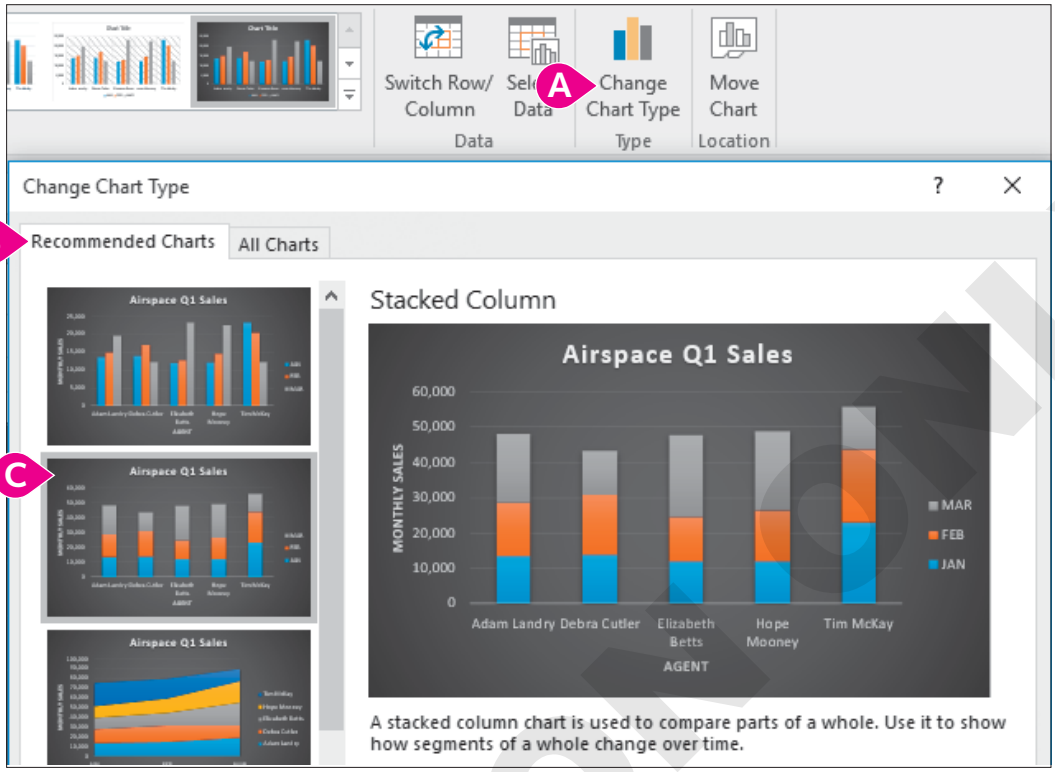


   A. Click the **Chart Elements** ✚ button.
   B. Click the checkbox beside **Axis Titles**.

6. Point to the title on the vertical axis, which you just added, and triple-click to select the entire text.
7. Type **`Monthly Sales`** for the axis title.

   After entering an axis title, or a chart title, do not press Enter. *Simply deselect the object or continue with the next task.*
8. Select the horizontal axis title and replace the text with: **`Agent`**
9. Change the chart title to: **`Airspace Q1 Sales`**

10. Follow these steps to change the chart type:



A Click the **Change Chart Type** button on the Ribbon to open the dialog box.

B Click the **Recommended Charts** tab.

C Choose the second option, **Stacked Column**, and click **OK**.

This chart more clearly shows a comparison of the total for each agent during the three months, as well as the sales for each individual month.

11. Save the workbook.

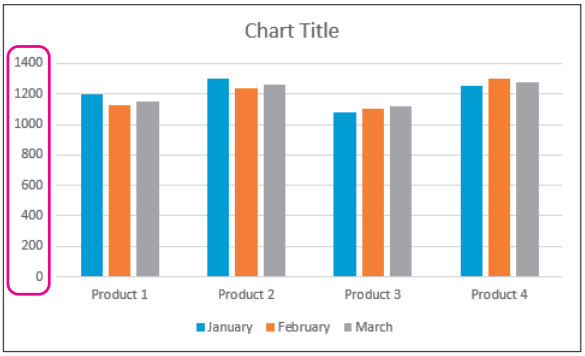
Chart Format Tools

Beyond changing the basic style of a chart, you may want to choose your own colors for the chart area, plot area, or data series. This can be done by modifying the fill or outline of a specific chart element. The fill can be a color, gradient, texture, or even a picture. Other possibilities include adding shapes or WordArt to a chart.

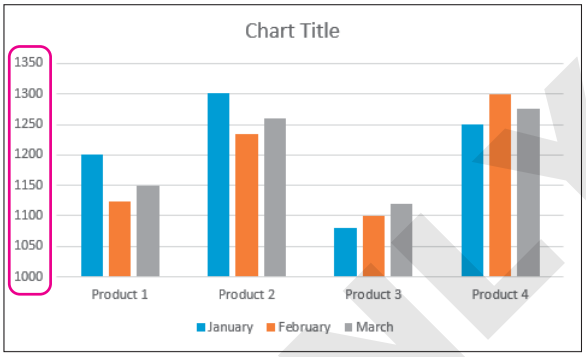
Axis Options

Adjusting the axes can focus the chart on significant differences in the data, or simply change the appearance of the axes using number formatting, such as to display numbers as currency. One of the axis options is the minimum and maximum value displayed on the axis. For example, if the data you

are charting all falls between 1,000 and 1,300, you can set your minimum to 1,000. This highlights the differences, because the first 1,000 units are the same for all the data points.



The data looks very similar with the axis values ranging from 0 to 1400.



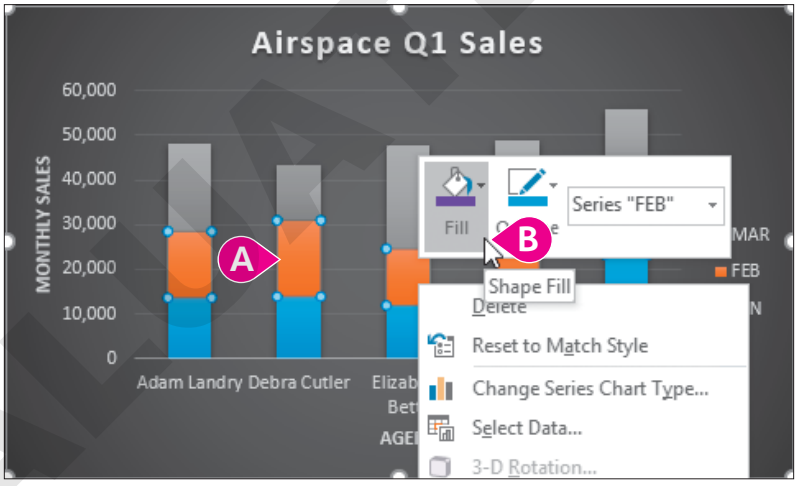
The product differences are much easier to see with the axis values starting at 1000.

Chart Tools→Format→Current Selection→Format Selection | Right-click axis→Format Axis

DEVELOP YOUR SKILLS: E4-D3

In this exercise, you will adjust the chart colors and axis numbering.

1. Save your workbook as: **`E4-D3-SalesCharts`**
2. Continuing with the Airspace Q1 Sales column chart, follow these steps to adjust the color of the FEB series:



A Click once on any orange block to select the FEB data series.

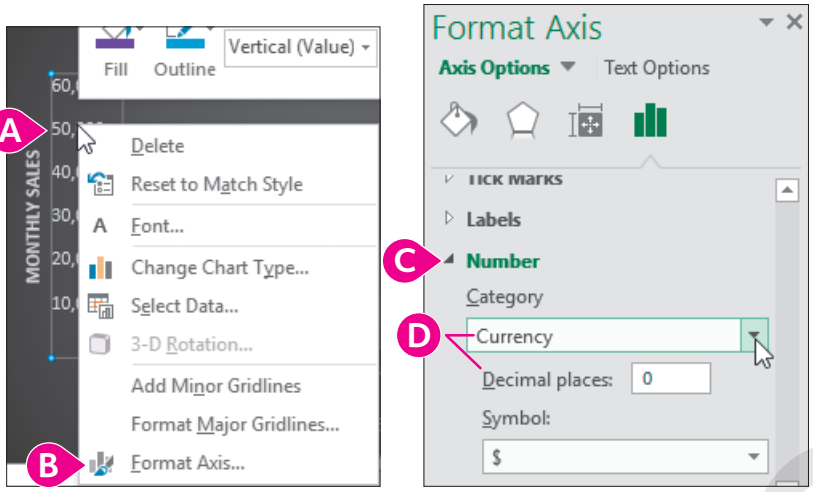
It's important to click only once. One click selects the whole series; clicking a second time would select only one data point from the series to modify.

Note! *You can see what's selected by the four corner circles. If only one data point is selected, deselect the series by clicking anywhere else, and try again to select all five orange columns.*

B Right-click any of the selected orange data points, click **Fill** in the shortcut menu, and choose **Red** from the Standard Colors section.

3. Repeat step 2 to adjust the fill color for the MAR series to **Purple** (under Standard Colors).

4. Follow these steps to adjust the vertical axis:



A. Point to a number on the vertical axis and then right-click to display the shortcut menu.

   It is important to point to a number to get the right menu; if you are between the numbers, the Chart Area shortcut menu will appear, which has different options. Ensure the shortcut menu displays Format Axis at the bottom. If not, keep trying until you get it.

B. Choose the **Format Axis** command.

C. Scroll to the bottom of the Format Axis pane and click **Number** to expand the menu. (Depending on the size of your display, you may need to scroll down again to see the Number options.)

D. Choose **Currency** from the Category list using the menu button ▾ and, if necessary, change the decimal places to **0**.

   The number format is changed for the vertical axis. You can either leave the Format Axis pane open or close it by clicking the "X" in the top-right corner.

5. Save the workbook.

Move and Size Charts

Charts can be moved around on a worksheet or moved to a different worksheet. A chart can be moved on the same sheet by simply dragging. Be sure, however, to click the chart area and not another chart element or you will only move that element and not the whole chart.

Because charts take up a lot of space, and you may want more than one chart in your workbook, it's often a good idea to move a chart onto a new, separate sheet. Charts that are moved onto their own sheet are referred to as chart sheets because they don't contain any rows, columns, or cells—just the chart itself. After moving a chart to a chart sheet, you can continue to work on the chart just like before.

To resize a chart, the chart must first be selected. Then you can drag any of the sizing handles to resize appropriately. You can also resize a chart from the Ribbon to specify the exact height and width. Charts on a chart sheet, however, can't be resized.

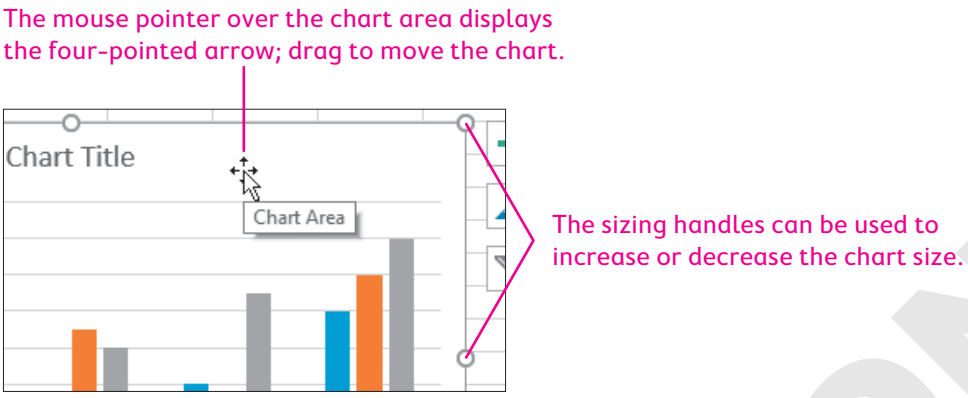


Chart Tools→Design→Location→Move Chart | Right-click chart area→Move Chart

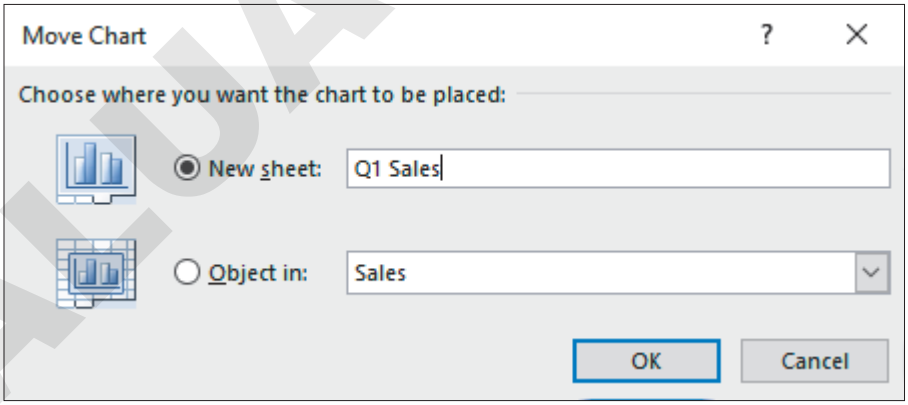
Chart Tools→Format→Size

DEVELOP YOUR SKILLS: E4-D4

In this exercise, you will move the existing chart and then create another chart and resize it.

1. Save your workbook as: **`E4-D4-SalesCharts`**
2. With the Airspace Q1 Sales chart selected, choose **Chart Tools→Design→Location→ Move Chart** to open the Move Chart dialog box.

   Remember, the chart must be selected to display the Chart Tools contextual tabs on the Ribbon.
3. Choose **New Sheet**, type **`Q1 Sales`** for the name of the worksheet, and click **OK**.



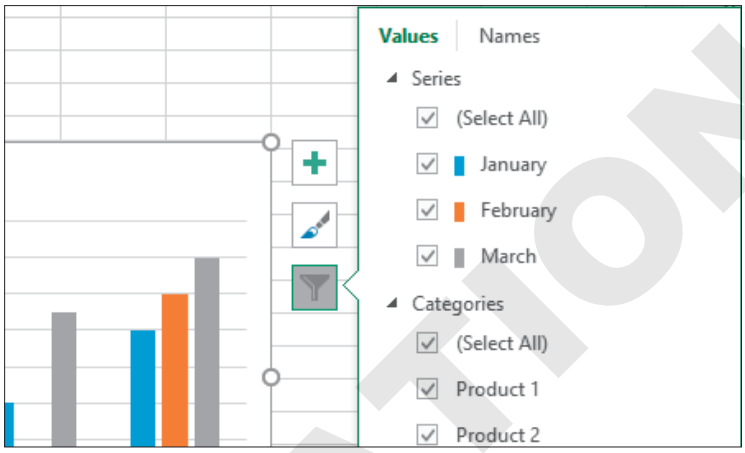
   This moves the chart to a chart sheet, which has no cells, and resizes the chart to fit your screen.
4. Click the **Sales** worksheet tab to create a new chart.
5. Select the **range A3:G6**, which contains the data for Adam, Debra, and Elizabeth.
6. Choose **Insert→Charts→Insert Line or Area Chart** **menu button** →**Line** (the first option in the 2-D Line group).
7. Drag the chart so it is directly below the data.

8. Replace the chart title with the name: **`Semiannual Sales`**
9. Save the workbook.

Edit Chart Data

After a chart has been created, the data is linked, so if you change the data in the worksheet source, the chart is automatically updated. You can also add or remove data from the chart or filter the chart to change the data displayed. The easiest way to change the chart data is to reselect the entire range to be used, but you can also add or remove individual data series, points, or labels.

Rather than adding and removing data, sometimes a better option is to keep all existing data in the chart and use a filter to display only the data you want to see. The Chart Filters feature allows you to quickly filter specific series and category values and then remove the filter later to display all the data again.



With the Chart Filter feature, you check the series and categories to display and uncheck the ones to hide.

Another way to rearrange your chart data is by swapping the Horizontal Axis and the Legend categories using the Switch Row/Column button. This allows different comparisons to be made, such as switching from comparing months side by side to product categories side by side, with one click.

Chart Tools→Design→Data→Select Data

Chart Tools→Design→Data→Switch Row/Column

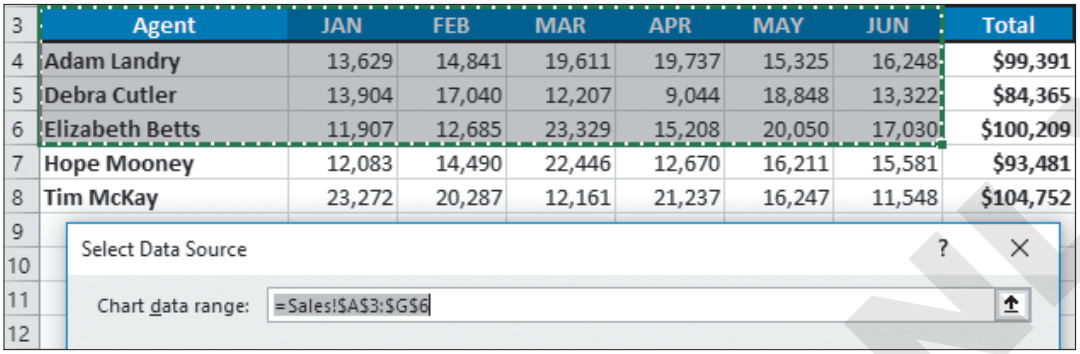
DEVELOP YOUR SKILLS: E4-D5

In this exercise, you will edit the chart to include all five sales agents and then filter the data in the chart.

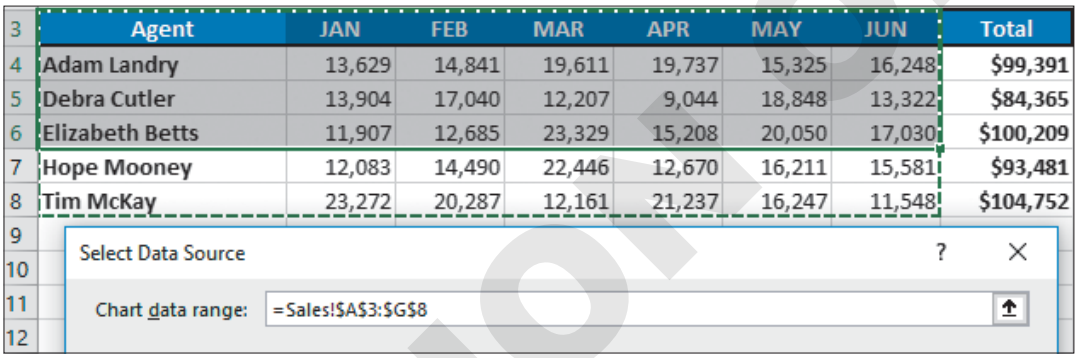
1. Save your workbook as: **`E4-D5-SalesCharts`**
2. Ensure the **Semiannual Sales** chart is still selected on the Sales worksheet.

3. Right-click anywhere in the chart and choose **Select Data** from the shortcut menu.

   The Select Data Source dialog box appears. The current data range is selected and the corresponding cells on the worksheet are surrounded by an animated border.



4. Drag across the worksheet **range A3:G8** to select the new data and click **OK**.



   The new data displays five lines in the chart, one for each of the five agents.

5. Click the **Chart Filters** button and click the checkboxes next to **Adam**, **Elizabeth**, and **Tim** to remove the checks and filter out their data; then click **Apply**.

   You should now see only Debra's and Hope's data on the chart and only their names in the legend.

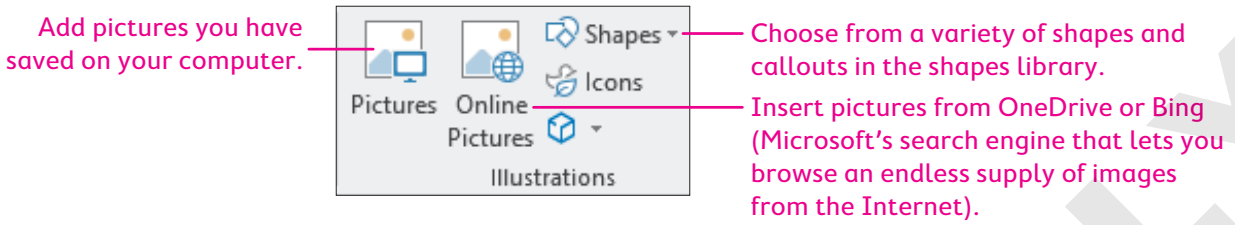
6. Change the number format for the vertical axis to display the **Currency** number format with no decimals.

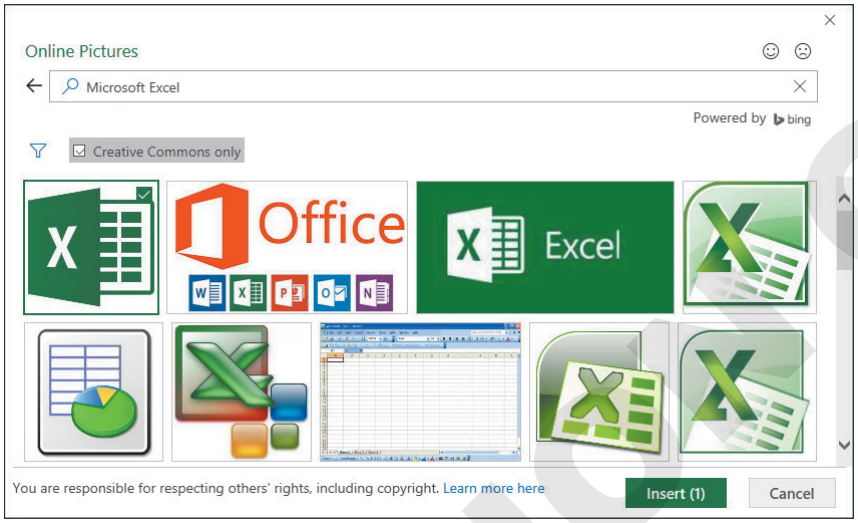
7. Save the workbook.

Adding Images

For the most part, Excel is used for text and numerical data; however, it is also possible to add pictures and shapes to a worksheet. Pictures might be used to display a company logo, add information to a spreadsheet, or simply bring a little excitement to an otherwise plain set of data. Pictures can be added from your computer or from an online search, and many types of shapes can be added via the menu button. Text boxes can be added for easier formatting and positioning of graphical text on a worksheet.

Adding a picture lets you access the Picture Tools tab on the Ribbon, and adding a shape allows you to access the Drawing Tools tab. Both of these contextual tabs give you a great number of options for changing the style, shape, color, and size of the object, and for modifying many other aspects as well.





Using Online Pictures to do a Bing search for *Microsoft Excel* returns many variations of the Excel logo.

When searching online you may find pictures that are protected by copyright. It is important to ensure you respect copyright laws. By default, the online picture search in Excel displays only pictures licensed under Creative Commons, meaning you can use these pictures freely.

Insert→Illustrations→Pictures *or* Online Pictures *or* Shapes

Insert→Text→Text Box

For pictures: Picture Tools→Format | For shapes: Drawing Tools→Format

DEVELOP YOUR SKILLS: E4-D6

In this exercise, you will add a picture to the worksheet and make some modifications to the picture.

1. Save your workbook as: **`E4-D6-SalesCharts`**
2. Select **cell J1** on the **Sales** sheet and then choose **Insert→Illustrations→Online Pictures** to open the dialog box.
3. Search for **`air travel`** in the search box, choose a suitable image (perhaps a plane with a globe), and then click **Insert**.

   Because this is an online search, the results change frequently and you may not see the same images from one search to the next. Some online images are also inserted with licensing information, which refers to the creative commons license to use the image.

4. With the image selected (if your picture includes licensing information, select only the picture), go to **Picture Tools→Format→Size→Height**, type **1** in the box, and tap Enter.
5. Select **cell I1** and choose **Insert→Illustrations→Online Pictures** again.
6. Enter **space** in the search box, choose an appropriate image of a spaceship, and click **Insert**.
7. Resize this image to be **1"** in height to match the first image.
8. Choose **Picture Tools→Format→Adjust→Color→Blue, Accent Color 1 Light** (in the Recolor group).
9. Save the workbook.

Conditional Formatting

Another way to better visualize your data is to use conditional formatting. Conditional formatting takes a set of data, applies a rule or rules, and modifies the formatting of the cells that match the rule. For example, you may have a large set of data containing student grades and want to quickly find the top three marks. Or you may have sales data for a group of products and want to find which product sells the most and which one sells the least. Conditional formatting applies formatting of your choice to the cells that meet these criteria so you can quickly find them.

Rules can be created to draw attention to the top or bottom, or to numbers greater than or less than a specific number. You can also highlight a cell with a number equal to a specific amount or a cell that contains certain text. Other conditional formatting can be applied to all the selected cells, including data bars, color scales, and icon sets, which are useful for visualizing a set of data as a group. There are so many options!

To apply conditional formatting, the first step is always to select the entire range of data to apply the rule to. For conditional formatting, unlike with charts, you do not include any labels and generally don't include any totals unless you set up a separate rule for total rows or columns. Different rule options are available from the Conditional Formatting drop-down menu, but the criteria and formatting can also be modified to suit your needs. After a rule has been created, you can delete the rule using Clear Rules. Select Manage Rules to see all of the existing rules for either the current selection or the entire worksheet.

	A	B	C	D
1		January	February	March
2	Product 1	5	3	12
3	Product 2	8	12	7
4	Product 3	3	9	8
5	Product 4	6	2	11
6	Product 5	10	12	14

The worksheet before creating conditional formatting, with the range selected

	A	B	C	D
1		January	February	March
2	Product 1	5	3	12
3	Product 2	8	12	7
4	Product 3	3	9	8
5	Product 4	6	2	11
6	Product 5	10	12	14

The worksheet after the conditional formatting rule is applied to the range, showing the top five items with a light red fill and dark red text

Note! *When a conditional formatting rule is created for the top five items, if two or more items are tied for fifth highest, six or more items could be included in the conditional formatting.*

View the video "Highlighting Data with Conditional Formatting."

After a conditional formatting rule is created, the formatting is automatically updated to reflect the new data if it changes.

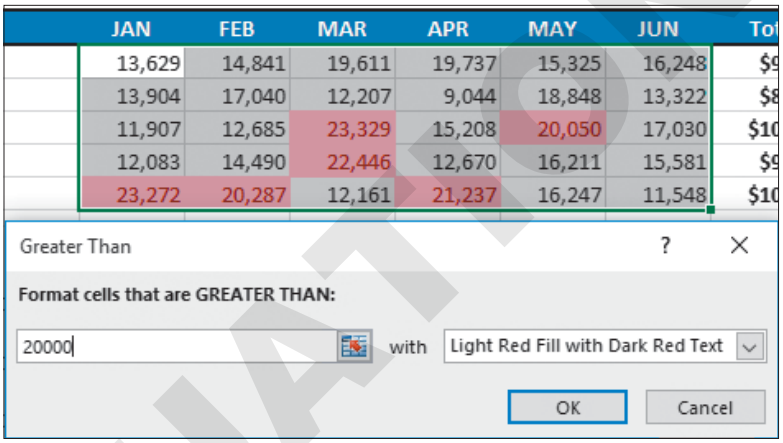
Home→Styles→Conditional Formatting

DEVELOP YOUR SKILLS: E4-D7

In this exercise, you will alter the appearance of the data using conditional formatting to show some of the top and bottom sales numbers for the agents.

1. Save your workbook as: **`E4-D7-SalesCharts`**
2. Select the **range B4:G8** and choose **Home→Styles→Conditional Formatting→ Highlight Cells Rules→Greater Than...**.
3. In the Greater Than dialog box, type **`20000`** in the first box (that's 20,000 with no comma).

   The preview shows which data this will apply to, with the default format.



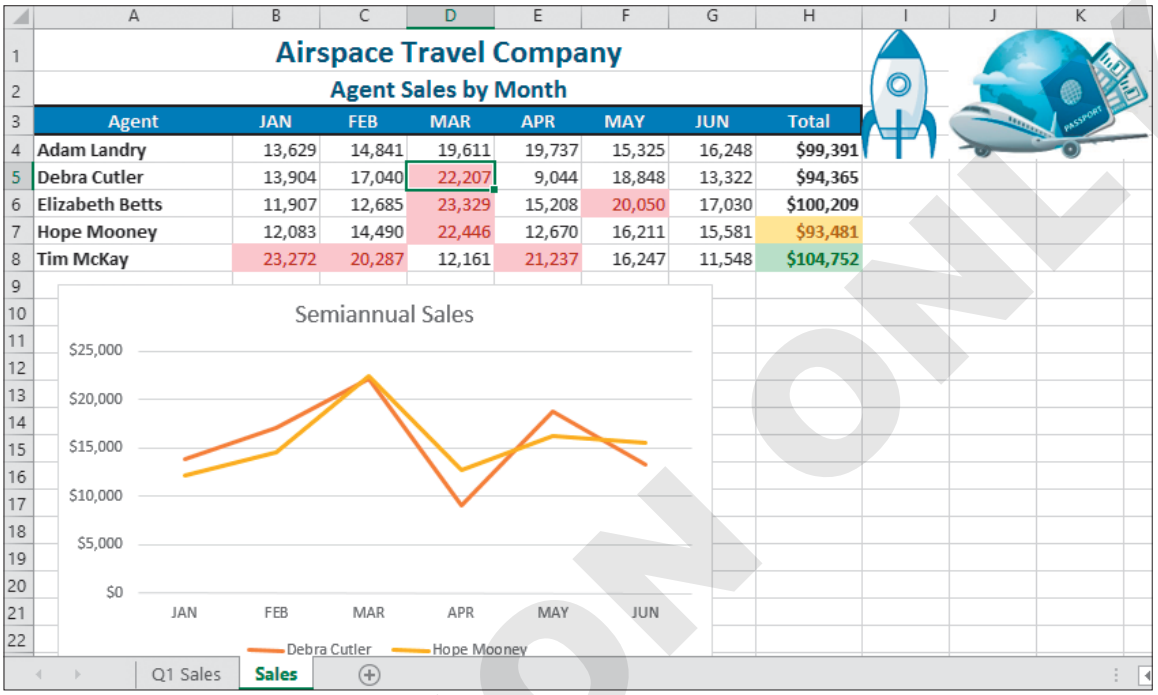
4. Click **OK** to apply the default format and close the dialog box.

   For the six-month total, you want to see the top and bottom agents, so you will apply two new rules to the data in column H under Total.
5. Select the **range H4:H8** and choose **Home→Styles→Conditional Formatting→ Top/Bottom Rules→Top 10 Items...**.
6. In the dialog box change the *10* to **1** and set the format to **Green Fill with Dark Green Text**; click **OK**.
7. With the **range H4:H8** still selected, choose **Home→Styles→Conditional Formatting→ Top/Bottom Rules→Bottom 10 Items...**.
8. Change the *10* to **1** and select the **Yellow Fill with Dark Yellow Text** format; then click **OK**.

   Now the data needs to be updated. A sale was missed for Debra in March, so the number should be higher.

9. Select **cell D5** and increase the number *12,207* by entering: **22207**

The formatting for cell D7 changes to red fill and red text because it is greater than 20,000. The formatting in the Total column also changes because Debra no longer has the lowest total, and your Semiannual Sales chart below the data updates as well.



10. Save the workbook and close Excel.

Self-Assessment

Check your knowledge of this chapter's key concepts and skills using the Self-Assessment in your ebook or online (eLab course or Student Resource Center).

Reinforce Your Skills

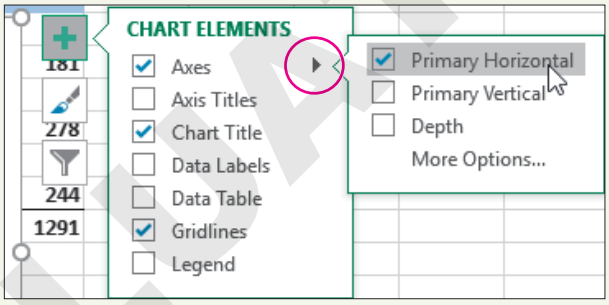
REINFORCE YOUR SKILLS: E4-R1

Create and Modify Charts

In this exercise, you will create several charts to compare volunteer hours for the Kids for Change volunteers and then make some changes to the charts.

1. Start Excel; open **E4-R1-VHours** from your **Excel Chapter 4** folder and save it as: **`E4-R1-VHoursSummary`**
2. Select the **ranges A4:A10** and **N4:N10**.

   Remember to use the Ctrl button to select nonadjacent ranges.
3. Choose **Insert→Charts→Recommended Charts**.
4. Select the third option, the **Pie** chart, and click **OK**.
5. Edit the chart title from *Total* to: **`Annual Total`**
6. Move the chart to its own sheet, naming it: **`Hours by Volunteer`**
7. Return to the **Summary** sheet and select the **ranges A4:M4** and **A11:M11**.
8. Choose **Insert→Charts→Insert Line or Area Chart menu button →3-D Area** (the first option on the bottom row in the 3-D Area group).
9. Edit the chart title from *Total* to: **`Monthly Total`**
10. Click on the chart area and then click the **Chart Elements** + button.
11. Hover the mouse over *Axes*, and you will see a menu button ▸ appear; click it to expand the options.



12. Uncheck the boxes beside **Primary Vertical** and **Depth** to remove those axes from the chart.

    Options for fill, besides simple colors, include picture, gradient, and texture, which you can find in the shortcut menu below the color palette. Now you will apply a texture fill.
13. Right-click the data series and change the fill to **Texture→Purple Mesh**.
14. Modify the chart area to a solid fill color using **Blue-Gray, Text 2, Darker 50%** (under Theme Colors).
15. Move the chart to its own sheet, naming it: **`Hours by Month`**
16. Go to the **Hours by Volunteer** sheet and change the Annual Total chart type from a pie chart to **3-D Clustered Bar**.
17. Change the layout to **Layout 5**, which includes a data table below the chart.
18. Save the workbook.

REINFORCE YOUR SKILLS: E4-R2

Format Charts and Add Conditional Formatting

In this exercise, you will make some further changes to your charts and then add conditional formatting rules to your data.

1. Save your workbook as: **`E4-R2-VHoursSummary`**
2. Go to the **Hours by Month** sheet and select the **Horizontal Axis**.

   Simple formatting changes—such as altering the font size or type, or adding bold formatting—can be done right from the Home tab, which you will use for the following step.
3. Increase the font size of the horizontal axis to **12**, then right-click it and choose **Format Axis**.
4. Click to select **Text Options**. Expand the Text Fill options, if necessary, and change the color to solid fill **White, Background 1**.

   Keep the Format pane open.
5. Select the chart title and change the text fill to **White, Background 1**, and then close the Format pane.
6. Use the **Chart Filters** button to remove the first six months from the chart, leaving only the data for July to December.
7. Go back to the **Summary** worksheet and select the **range B5:M10**.
8. Apply a conditional formatting rule that highlights cells containing a number greater than **29** with **Light Red Fill with Dark Red Text**.
9. Select the **range N5:N10**.
10. Apply a conditional formatting rule to show the top three cells with **Green Fill with Dark Green Text**.
11. Select the **range B11:M11** and apply a conditional formatting rule to show the top three cells with **Green Fill with Dark Green Text**.
12. Save and close the workbook.

REINFORCE YOUR SKILLS: E4-R3

Add Visual Aids for a Financial Summary

In this exercise, you will use data from the Kids for Change summer fundraising campaign results as you create and edit charts, add pictures, and use conditional formatting.

1. Start Excel; open **E4-R3-SummerFunds** from your **Excel Chapter 4** folder and save it as: **`E4-R3-SummerFundsResults`**
2. Select the **range A4:D8** and insert a **2-D Clustered Column** chart.
3. Change the chart style to **Style 8**.
4. Modify the chart area to a **Dark Blue** fill color.
5. Change the June Series fill to **Purple** and the July Series fill to **White, Background 1**.
6. Change the chart title to: **`Results`**
7. Move the chart to a new sheet also named: **`Results`**

8. Go back to the **Summary** sheet and select the **ranges B4:D4** and **B9:D9**.
9. Insert a **3-D Pie** chart and then remove the title and the legend elements.
10. Move the chart as an object into the existing **Results** sheet.
11. Remove the chart area fill from the pie chart you just moved (choose **Fill** and then **No Fill**) and then remove the border in the same way (**No Line**).

    While working on the chart, the chart is outlined, which prevents you from seeing the change; you won't see that the border is removed until the chart is deselected.
12. Change the June Series fill to **Purple** and the July Series fill to **White, Background 1**.
13. Move the pie chart to the top-right corner of the column chart and change the size to **2.5"** tall.

    The pie chart now shows the totals from each of the categories in the column chart below.
14. Edit the vertical axis of the column chart to be Currency format with no decimal places, apply bold formatting, and increase the font size to **10 pt**.
15. Edit the horizontal axis formatting to match the vertical axis (bold text with 10-pt font size).
16. Increase the font size of the title to **20 pt**.
17. Go back to the **Summary** sheet and create a conditional formatting rule that will apply a red fill and font color to the top three numbers in the **range B5:D8**.
18. Insert two online pictures, first searching for pictures of *running* and then for *barbecue*. Choose the ones you like the best and insert the images below the data.
19. Resize both images to **0.75"** tall and reposition as necessary so they are roughly centered below the data (if your inserted images include licensing information, you can safely delete it for the purposes of this exercise).
20. Save the workbook and close Excel.

Apply Your Skills

APPLY YOUR SKILLS: E4-A1

Create Charts and Use Chart Tools

In this exercise, you will use the revenue and expense data for Universal Corporate Events to create two charts, and then edit the charts.

1. Start Excel; open **E4-A1-Profit** from your **Excel Chapter 4** folder and save it as: **`E4-A1-ProfitSummary`**
2. On the **Profit Q1&Q2** sheet, select the **ranges A6:G6** and **A10:G13** and insert a **2-D Clustered Column** chart.
3. Change the chart layout to **Layout 11**.
4. Choose **Chart Tools→Design→Data→Switch Row/Column** to switch the months to the legend and the categories to the horizontal axis.
5. Choose **Chart Tools→Design→Chart Styles→Change Colors→Monochromatic Palette 4** to make all series different shades of blue.
6. Change the chart style to **Style 8**.
7. Move the chart to a new sheet named: **`Expenses`**
8. Go back to the **Profit Q1&Q2** sheet and select the **range A6:G7**.
9. Insert a **2-D Line** chart and adjust the style and colors to **Monochromatic Palette 4** and **Style 7**.
10. Move the chart to a new sheet named: **`Revenue`**
11. Adjust the vertical axis format to display the minimum value as **`15,000`** rather than zero.
12. Remove the chart title from the **Revenue** chart.
13. Save the workbook.

APPLY YOUR SKILLS: E4-A2

Apply Conditional Formatting Rules

In this exercise, you will use conditional formatting rules to identify the month with the highest revenue or expense for each category.

1. Save your workbook as: **`E4-A2-ProfitSummary`**
2. If necessary, go to the **Profit Q1&Q2** sheet.
3. Select the **range B7:G7** (the six months of revenue data in row 7); do not include the total.
4. Create a conditional formatting rule to format the TOP 1 cell with **Red Text**.
5. Select the cells with the six months of employee wage data in row 10 and, again, create a conditional formatting rule to format the TOP 1 cell with **Red Text**.

   Because the numbers are identical, the formatting applies to all of them.
6. Repeat this process five more times, one time for each of the rows of data for capital expenditures, material costs, marketing and sales, total expenses, and profit/loss.

7. Select **cell D17** and insert a picture of an up arrow using an **Online Picture**.
8. Resize the inserted picture to **1"** tall.
9. Save and close the workbook.

APPLY YOUR SKILLS: E4-A3

Create Visual Tools for a Financial Forecast

In this exercise, you will create and modify a chart displaying the long-term financial forecast for Universal Corporate Events.

1. Start Excel; open **E4-A3-LTForecast** from your **Excel Chapter 4** folder and save it as: **`E4-A3-5yrForecast`**
2. Create a **3-D Column** chart using the revenue and expense data for all five years. (Be sure to include the year headings.)
3. Change the fill for Revenue to **Gold, Accent 4** and for Expenses to **Standard Dark Red**.
4. Remove the chart title completely.
5. Move the chart so it is directly below Profit/Loss in **row 8** and roughly centered below the data.
6. Edit the chart data to include the profit/loss data in **row 8**.
7. Change the chart type to a **Clustered Column – Line** combo chart; also ensure that Revenue and Total Expenses are each a **Clustered Column** chart and Profit/Loss is a **Line** chart.
8. Right-click the line for Profit/Loss and change the outline color to **Dark Blue** (under Standard Colors).
9. Edit the number formatting for the vertical axis to Currency format with no decimals.
10. Create a conditional formatting rule to show the Profit/Loss cells that are greater than **`$100,000`** with **Yellow Fill with Dark Yellow Text**.
11. Insert the **UniversalCorporateEvents.jpg** logo file from the **Excel Chapter 4** folder in **cell E1** to the right of the sheet title and resize the logo to **1"** tall.
12. Save the workbook and close Excel.

Project Grader

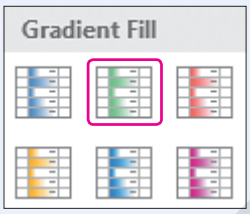
If your class is using eLab (labyrinthelab.com), you may upload your completed Project Grader assignments for automatic grading. You may complete these projects even if your class doesn't use eLab, though you will not be able to upload your work.

PROJECT GRADER: E4-P1

Analyzing Item Sales Performance

Taylor Games is growing fast and adding more items to its inventory. In this exercise, you will use conditional formatting, charts, and other Excel features to help identify the best performing items.

1. Download and open your Project Grader starting file.
   - *Using eLab:* Download **E4_P1_eStart** from the Assignments page. You *must* start with this file or your work cannot be automatically graded.
   - *Not using eLab:* Open **E4_P1_Start** from your **Excel Chapter 4** folder.
2. Insert the **Taylor Games Logo.png** picture from your **Excel Chapter 4** folder.
3. Change the picture's height to **1"**, allowing the width to adjust to the new height. If necessary, move the picture to the top-left corner of the worksheet.
4. For the **range I8:I22**, apply **Green Data Bar (Gradient Fill)** conditional formatting.



5. Use these settings to apply conditional formatting to the **range H8:H22**:
   - Use **Top 10%** from the Top/Bottom rules category.
   - Change the percentage to **25%** in the dialog box that appears.
   - Leave the color option set to **Light Red Fill with Dark Red Text**.
6. Create a 2-D pie chart using the **ranges A8:A22** and **H8:H22**.
7. Move the chart to a new sheet named: **`Replacement Pieces`**
8. Change the chart title to: **`Replacement Pieces Annual Units`**
9. Change the chart style to **Style 3**.
10. Apply a chart filter that only displays items that are **Replacement** pieces.
11. Format the data labels to show only **Category Name** and **Value**.
12. Move the **Replacement Pieces** sheet to the right of the Distributor Sales sheet.
13. In the **Distributor Sales** sheet, create a 2-D clustered bar chart using the ranges **A8:A22** and **I8:I22**.
14. Move the chart to a new sheet named: **`Revenue by Item`**
15. Change the chart title to: **`Revenue by Item`**

16. Move the **Revenue by Item** sheet to the end of the sheet order (to the right of the Replacement Pieces sheet).
17. Save your workbook.
    - *Using eLab:* Save it to your **Excel Chapter 4** folder as **`E4_P1_eSubmission`** and attach the file to your eLab assignment for grading.
    - *Not using eLab:* Save it to your **Excel Chapter 4** folder as: **`E4_P1_Submission`**

PROJECT GRADER: E4-P2

Analyzing Car Brands and Ages

The Classic Cars Club management team wants a chart of the brand and age of the members' cars. In this exercise, you will address their needs by using pie charts to display the needed information.

1. Download and open your Project Grader starting file.
    - *Using eLab:* Download **E4_P2_eStart** from the Assignments page. You *must* start with this file or your work cannot be automatically graded.
    - *Not using eLab:* Open **E4_P2_Start** from your **Excel Chapter 4** folder.
2. In the **Membership List** worksheet, insert the **Classic Cars Logo.png** picture from your **Excel Chapter 4** folder.
3. Change the picture's height to **1"**, allowing the width to adjust to the new height. If necessary, move the picture to the empty cells above the header row and to the right of the title and subtitle.
4. For the **range H7:H36**, apply conditional formatting that highlights all cells in which the term is 5 years with a green fill and dark green text.
5. In the **Brands & Ages** worksheet, create a 3-D pie chart using the ranges **A4:A11** and **C4:C11**.
6. Change the chart style to **Style 3**.
7. Format the data labels to include only the **Category Name** and **Value**.
8. Delete the legend.
9. Move the chart to a new sheet named: **`Older Cars`**
10. Move the **Older Cars** chart sheet to the end of the sheet order (to the right of the Brands & Ages sheet).
11. In the **Brands & Ages** sheet, create a 2-D pie chart using the **range A4:B11**.
12. Add data labels that contain only the value (you may need to remove leader lines even if they don't show).
13. Set the chart's height to **5"** and the width to **6.25"**. If necessary, move the chart up near the top of the sheet.
14. Change the number in **cell B11** to **`10`**. If your chart doesn't change, then you may need to tap F9 or click the **Calculate** button at the bottom-left corner of the worksheet.
15. Save your workbook.
    - *Using eLab:* Save it to your **Excel Chapter 4** folder as **`E4_P2_eSubmission`** and attach the file to your eLab assignment for grading.
    - *Not using eLab:* Save it to your **Excel Chapter 4** folder as: **`E4_P2_Submission`**

Extend Your Skills

These exercises challenge you to think critically and apply your new skills in a real-world setting. You will be evaluated on your ability to follow directions, completeness, creativity, and the use of proper grammar and mechanics. Save files to your chapter folder. Submit assignments as directed.

E4-E1 That's the Way I See It

As a student who prides yourself on achieving top grades, you are creating a chart of your scholastic achievements. Create a new blank worksheet and set up headings so you can list your recent classes in one column and the grades for those classes in the next. List your classes in chronological order, oldest to newest (at least ten classes), and then insert your grades in the next column (if you don't have access to your grades or this is your first class, enter grades you would like to achieve). Create a line chart from the data to show the trend in grades over time. Modify the chart to use your favorite colors, and use conditional formatting to highlight the top three grades and the lowest three grades you received. Save your workbook as: **`E4-E1-ClassGrades`**

E4-E2 Be Your Own Boss

You are looking to acquire more funding to expand Blue Jean Landscaping after a very successful year. You are preparing a report on last year's financial statements, and you want to include a chart to emphasize your revenue growth and the decrease in expenses. Open **E4-E2-RevandExp**, select the data, and then choose the best chart to show this trend. Insert the **BlueJeanLandscaping.jpg** logo and modify the chart as you see fit so that it looks professional and presentable. Apply conditional formatting to highlight the top three Revenue months and the bottom three Expense months. Save your workbook as: **`E4-E2-RevandExpCharts`**

E4-E3 Demonstrate Proficiency

After very encouraging BBQ sauce sales for its two new flavors last year, Stormy BBQ has asked you to create some charts that represent a comparison of its three sauces. Open the file **E4-E3-SauceSales** and use the data to create both a column chart and a line chart for the year. Move both of these charts to new sheets. Then add a total at the bottom for each sauce and create a pie chart comparing the three totals. Be sure to include the Stormy BBQ logo (**StormyBBQ.jpg**) on each chart and adjust the styles, layouts, and formatting in the charts appropriately. Try and use the corporate colors, red and gold, where possible. Save your workbook as: **`E4-E3-SauceSalesCharts`**

EXCEL

5 Organizing Large Worksheets

In this chapter, you will learn how to effectively manage worksheets containing large amounts of data. You will use some exciting Excel tools to organize and view data, perform calculations, and restrict data entry.

LEARNING OBJECTIVES

- Create a template
- Start a workbook from a template
- Change worksheet view options
- Sort and filter data
- Create IF functions
- Apply data validation rules
- Use the Scale to Fit printing options
- Create and modify tables

Project: Preparing Company Payroll Data

Every two weeks, Airspace Travel goes through the process of compiling the data from hours worked and commissions earned to calculate employee paychecks. You have been asked to manage this process, which means taking the data and importing it into a template and then inserting the required formulas into the sheet that will calculate gross pay. You will also need to organize the data so it is presentable, easy to read, and easy to print, if necessary.

Starting with a Template

Using templates in Excel is a way to save yourself a lot of work. Templates allow you to use a preexisting workbook, which usually has the formatting, headings, and formulas already created for you, when creating many similar documents. For example, templates are useful when creating invoices, where the structure and format are the same and only information such as names, dates, and amounts needs to be changed for each new file. Excel offers a large collection of online templates you can search through to find something suitable for your purpose.

Another option is to create your own template. Creating your own template means creating a workbook as usual, inserting text and formulas, and formatting as you desire, but not filling in any actual data. To create the template, you change the type of file to Excel Template when you go to save the workbook.

The default file type when saving your work is Excel Workbook; when creating your own template, change the file type to Excel Template.

PAYROLL CALCULATOR GENERATE PAY STUBS PERIOD ENDING: 4/8/2013

ID	Employee Name	Reg Hours Worked	Vacation Hours	Sick Hours	Overtime Hours	Overtime Rate	Gross Pay	Taxes and Ded's	Other Ded's	Net Pay
1001	Tony Smith	50	5	1			$560.00	$273.08	$20.00	$266.92
1002	David Jones	40					$320.00	$131.76		$188.24
1003	Denise Smith	35	3				$532.00	$240.43		$291.57
1008	Sebastien Motte	50	5	1			$1,120.00	$441.16		$678.84
1011	Isabelle Scemla	40			2	$15.00	$430.00	$223.62		$206.39
1012	David Bristol	40	5	1			$552.00	$270.04		$281.96
1025	Anne Weiler	36		2	1	$18.00	$474.00	$225.36	$25.00	$223.64
1032	Luka Abrus	40	5	1			$460.00	$175.03	$50.00	$234.97
1049	David Ludwig	40	1				$615.00	$259.01	$23.00	$332.99
Totals	9	371	24	6	3		$5,063.00	$2,239.47	$118.00	$2,705.53

This template is designed for payroll calculations and already has the structure, formatting, and formulas in place.

Note! *Be aware that some templates require users to have advanced Excel knowledge!*

DEVELOP YOUR SKILLS: E5-D1

In this exercise, you will browse templates, create your own template, and start a new workbook using your template.

1. Start Excel.

   A list of templates displays. The first is Blank Workbook, and then there are several Excel feature tours, followed by a list of template options you can scroll down and browse through. There are many options, including workbooks, to create different types of schedules, calendars, budgets, and more.

2. Click in the **Search for Online Templates** box at the top of the screen, type **`Payroll`**, and tap Enter.

   Excel searches through thousands of online templates and shows a list of templates related to your search. If you like, you can click an option to preview it, or open a template to look at it.

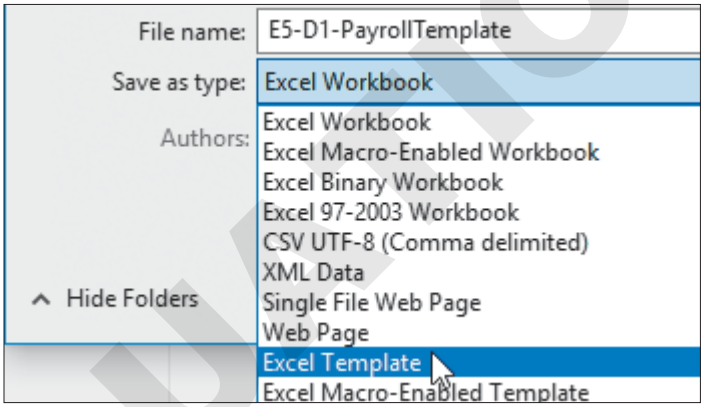
   Now you will create a template to be used for Airspace Travel.

3. If necessary, close any open files, then open **E5-D1-PayrollBlank** from your **Excel Chapter 5** folder.

   This is the file you want to start with every two weeks when you are creating the payroll.

4. Choose **File→Save As→Browse**.

5. In the Save As dialog box, type **`E5-D1-PayrollTemplate`** in the File Name box, then click the **Save as Type** menu and select **Excel Template**.



   You are choosing the type of file first because, by default, saving as a template will save the file to a custom Office template directory created by Microsoft. However, you can navigate back to your file storage location and save the template there instead.

6. Navigate to the **Excel Chapter 5** folder in your file storage location and click **Save**.

   Now that the file is saved as a template, you don't want to make any more changes to it, so you need to close it and then open a copy of the template using File Explorer.

Note! *To edit the template itself, use File→Open from within Excel to open the template file; to open a copy of the template, you can either use File→New to find templates saved in your custom Office template directory or simply use File Explorer.*

7. Close Excel; then use File Explorer to open **E5-D1-PayrollTemplate** from your **Excel Chapter 5** folder.

Note! *Notice that a 1 has been added to the end of the filename in the title bar, similar to when you create a new blank workbook and the default name is* Book1. *Changing this file will not affect the template; it is a new and separate file.*

8. Use **Save As** to save the workbook as: **`E5-D1-PayrollP17`**

   Now that it has been saved, this is just a regular Excel file for you to work on, and the template remains unchanged for future use.

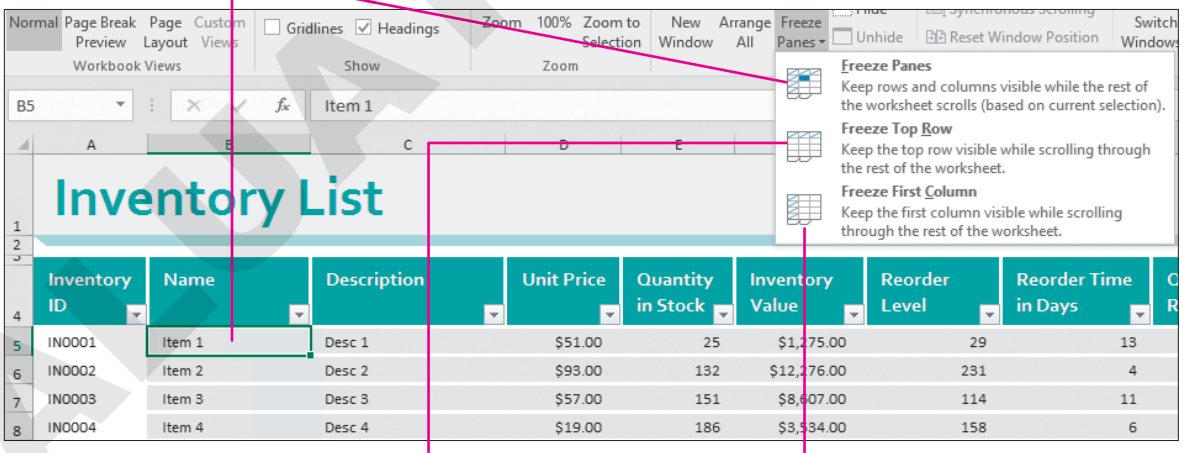
Adjusting View Options

When you have large amounts of data, it can be difficult to see it all and do what you need to do. For example, when you scroll down the worksheet, you will no longer see your headings, so you might lose track of what information is in each column. Or, you might want to see different parts of a spreadsheet at the same time for comparison. Using different view options makes it easier to work with these large worksheets.

Freeze Panes

To keep the headings in your worksheet visible while you scroll through your data, you can use the Freeze Panes feature. You can freeze rows or columns, or both at the same time. You can unfreeze the panes again at any time.

If cell B5 is selected, this option would freeze column A *and* rows 1:4, so the Inventory ID and all column headings would always remain visible.



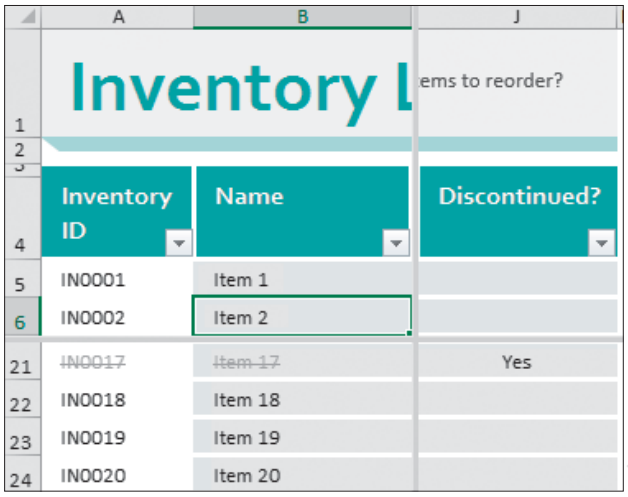
This option freezes row 1 only.

This freezes column A only; you cannot use Freeze Top Row and Freeze First Column at the same time.

View→Window→Freeze Panes

Split a Window

Another option is to split the Excel window, either into two halves or four quadrants. This allows you to scroll through different areas of your worksheet in the different split views, which is useful if you need to refer back and forth to data from different sections of your worksheet. Similar to Freeze Panes, the location of the split is based on the current active cell. To divide your worksheet in two halves, simply choose a cell in column A before creating the split. You can remove the split at any time.

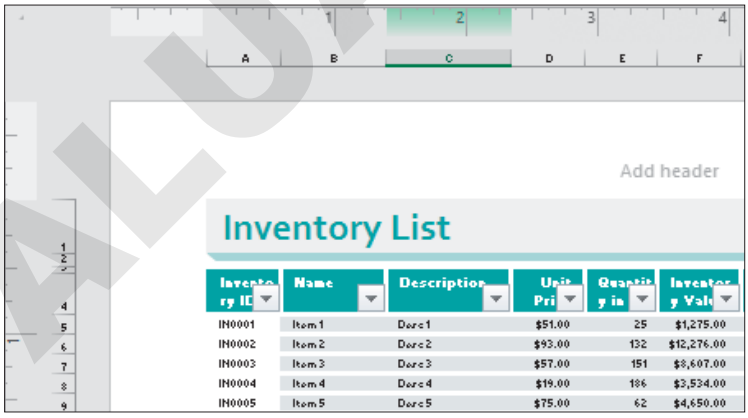


The split lines shown here divide the worksheet into four quadrants, and each can be scrolled through separately to view four different areas of the worksheet.

View→Window→Split

Change the Workbook View

Another issue with large worksheets is understanding how your worksheet will look when it is printed. To see how your worksheet will look when printed, or to see where page breaks will occur, you can use the Page Break Preview or Page Layout view.



Page Layout view shows the ruler and allows you to view and edit the margins and header and footer sections.

View→Workbook Views

DEVELOP YOUR SKILLS: E5-D2

In this exercise, you will copy the data for the payroll period, then make adjustments to view the worksheet several different ways.

1. Save your workbook as: **E5-D2-PayrollP17**

   A coworker from the accounting department has sent you the raw data file, which needs to be added to the payroll file for pay period 17. You will insert the data by simply copying and pasting.

2. Open **E5-D2-PayrollPeriod17data**, which is saved in your **Excel Chapter 5** folder.
3. Select all data in the worksheet using the keyboard shortcut Ctrl+A, then copy the data using the keyboard shortcut Ctrl+C.
4. Return to the **E5-D2-PayrollP17** workbook, ensure that **cell A6** is selected, and use the keyboard shortcut Ctrl+V to paste the data.
5. Autofit **column E** so the department names are fully visible.

   Now that you have the data, you can close the workbook you copied the data from.

6. Switch back to and close **E5-D2-PayrollPeriod17data**.

   When closing the file, you may see a dialog box asking you to either save or delete the data on the Clipboard; if so, click No to delete it.

7. Select **cell C6** and choose **View→Window→Split**.

   Use the scroll bars or mouse wheel to scroll through the worksheet in each of the four quadrants.

8. Turn off the split by choosing **View→Window→Split** a second time.
9. Scroll back to the top-left portion of your worksheet if you are not already there.
10. Select **cell C6** again, and this time choose **View→Window→Freeze Panes menu button →Freeze Panes**.

    Use the scroll bars or mouse wheel to scroll through the worksheet up and down, left and right. Notice that the headings and employee names remain visible.

11. Change the view by choosing **View→Workbook Views→Page Layout**.

    Because Page Layout View isn't compatible with Freeze Panes, it will prompt you to unfreeze the panes.

12. Click **OK** to unfreeze and continue.

    The status bar at the bottom now displays the number of pages in your document. You can scroll down to view the second page.

13. Switch back to the **Normal** view.
14. Save the workbook.

Organizing Data with Sorts and Filters

When you have large amounts of data, you need tools to help you make sense of it. Sorting gives you the ability to rearrange your data in the way that makes the most sense for your purpose. Filtering then allows you to narrow down your data to focus on certain parts of it.

Custom Sorts

Sorting can be performed on any column, using text values, numerical values, or even cell color or font color. Values can be sorted in either ascending or descending order, depending on the type of data being sorted: text, numbers, or perhaps dates.

In addition to a simple one-step sort, you can add multiple levels to your sorting for even better organization; for example, you might have an employee database with information like departments, job titles, office locations, sales performance data, and how long employees have been with the company, and you might decide to sort the data based on department first and then by length of time with the company.

To sort by a single column, you can use Ribbon commands or a shortcut menu. For more advanced sorting and to use multiple sort levels, use the Custom Sort dialog box.

Filters

Filtering allows you to choose what data to include (show) and what data to filter out (hide). You can also filter by text or numbers. For text you can create many filters to find data. This can help you find text that begins with or ends with a specific letter or that contains a certain string of text. For numeric values there are also numerous different ways to create rules to find values that are greater than, less than, equal to, and so on. Using the same company example, you could filter the list multiple ways to view only employees in the sales department, with five or more years of experience, and with less than $10,000 in sales last month.

A customer list with no sort or filter applied

Customers	Country
Carol Gregory	USA
Natasha Dyas	Canada
James Norman	Mexico
Joshua Garcia	USA
Sarah Mckinnon	USA
Shannon Miller	Mexico
Katrina Kormylo	Canada
Susan Colley	USA
William Emerson	Canada
Eugene Fink	USA

A customer list sorted by Country and then by Customers

Customers	Country
Katrina Kormylo	Canada
Natasha Dyas	Canada
William Emerson	Canada
James Norman	Mexico
Shannon Miller	Mexico
Carol Gregory	USA
Eugene Fink	USA
Joshua Garcia	USA
Sarah Mckinnon	USA
Susan Colley	USA

A customer list filtered to show only customers in the USA

Customers	Country
Carol Gregory	USA
Eugene Fink	USA
Joshua Garcia	USA
Sarah Mckinnon	USA
Susan Colley	USA

View the video "Using Sort and Filter."

Data→Sort & Filter→Sort | Home→Editing→Sort & Filter→Custom Sort... | Right-click data→Sort→Custom Sort...

Data→Sort & Filter→Filter

DEVELOP YOUR SKILLS: E5-D3

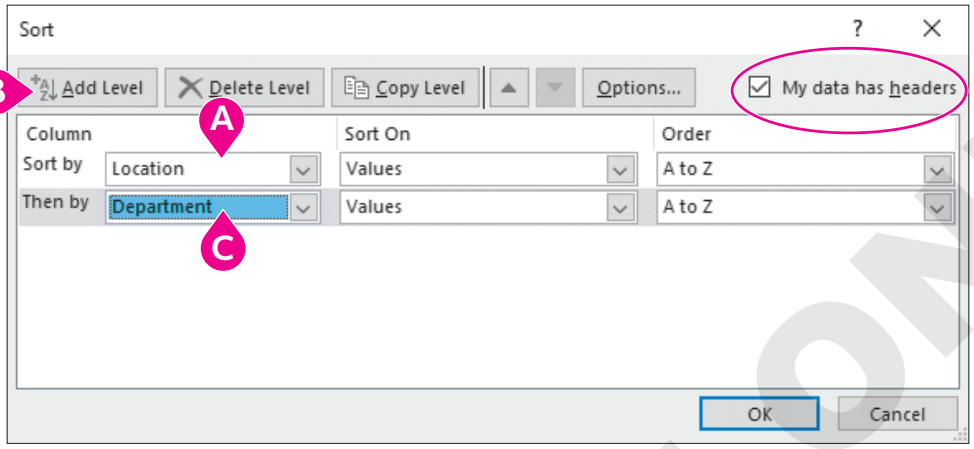
In this exercise, you will use Sort & Filter to organize the employee data and edit the pay rate for some of the employees.

1. Save your workbook as: **E5-D3-PayrollP17**
2. Select one cell that contains data within the **range A6:H63**.

3. Choose **Data→Sort & Filter→Sort** .

   Excel automatically selects the entire range of adjacent data to sort, which is easier than trying to select the entire range yourself, especially if there are hundreds or even thousands of rows of data.

4. Follow these steps to sort the data with multiple levels:



   A Choose to sort first by **Location**.

   Excel recognizes that your data has headers in the top row, so you can select the name of the column you wish to sort by from the drop-down menu; without headers, the menu would show only Column A, Column B, etc.

   B Click **Add Level** to perform an additional sort.

   C Choose **Department** for the second sort level and click **OK**.

   Your data is now sorted, with Los Angeles employees listed at the top and Vancouver employees listed at the bottom. Within each location the employees are sorted by department.

First Name	Last Name	Employee ID#	Location	Department
Jasmin	Newton	13651	Los Angeles	Administration
Tim	Parker	17232	Los Angeles	Administration
Carol	Gregory	16688	Los Angeles	Management
Kobe	Curry	20303	Los Angeles	Sales
Tracy	Bryant	14917	Los Angeles	Sales
Cam	Owens	22404	Los Angeles	Sales
Ashley	Bradford	17571	Miami	Administration
Deborah	Secrett	16735	Miami	Administration
Adel	Kahlmeier	13089	Miami	Administration
Brett	Aberle	22113	Miami	Administration
Tony	Duncan	12743	Miami	Administration
James	Norman	13733	Miami	Management
Melissa	Coelho	21635	Miami	Management
Sophia	Maria	13365	Miami	Management
Steven	Samuel	15563	Miami	Sales

   Now you can filter your data to narrow it down.

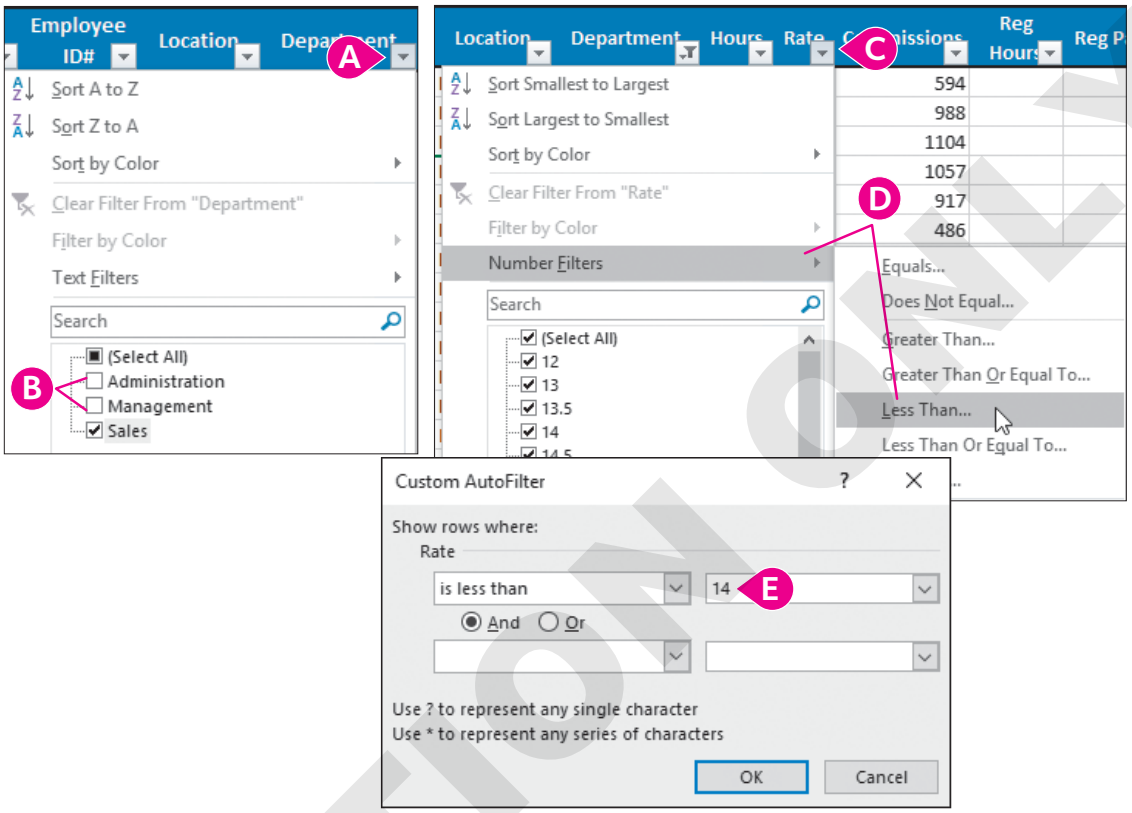
5. Ensure that you still have a cell selected within the sorted list.

   Remember, you need only a single cell selected anywhere within the range of data you wish to sort or filter; Excel will automatically detect the correct range.

6. Choose **Data→Sort & Filter→Filter** .

   Notice the menu buttons that appear beside all of your column headings.

7. Follow these steps to filter your data:



   A Click the **Department menu** button .

   B Filter the Department column to include only Sales employees by removing the checks next to **Administration** and **Management**; click **OK**.

   C Click the **Rate menu** button .

   D Choose **Number Filters→Less Than** to open the dialog box.

   E Type **14** to the right of *Show rows where rate is less than* and click **OK**.

   Your worksheet now displays only the six employees in the Sales department who have a rate below $14. Notice the Filter symbol beside the two columns with filters applied to them, Department and Rate.

8. The company has decided to increase all Sales employees to a minimum wage of $14 per hour, so adjust the rate for the six employees listed to: **14**

Tip! *After typing the value in the first cell, you can use the fill handle to copy the number 14; it won't affect the rows hidden by the filter.*

9. Choose **Data→Sort & Filter→Filter** to remove all filters and redisplay all data.

10. Save the workbook.

The IF Function

There are many functions available in the Excel Function Library, but most of us use only a handful of these on a regular basis. Once you understand simple functions like SUM and AVERAGE, you can start exploring additional, more advanced functions. As you learn more about functions, it becomes easier to understand which functions to use and how to insert the function with the correct arguments.

The IF function is used quite frequently because it is helpful in many situations. It allows you to determine the value to enter in a cell based on the outcome of a logical test. The IF function also provides the basis for many other statistical functions, such as COUNTIF and SUMIF. Although the IF function seems rather challenging at first, it gets easier to use with some practice and is almost like creating a sentence in the form of a question.

Logical tests for IF functions include comparison operators, and it's important to understand the symbols used.

COMPARISON OPERATORS

Symbol	Meaning	Symbol	Meaning
=	Equal to	<>	Not equal to
>	Greater than	>=	Greater than or equal to
<	Less than	<=	Less than or equal to

Greater	>	Than
2	>	1

The arrow points to the smaller number. If you can remember 2 is greater than 1, the less than symbol is the opposite.

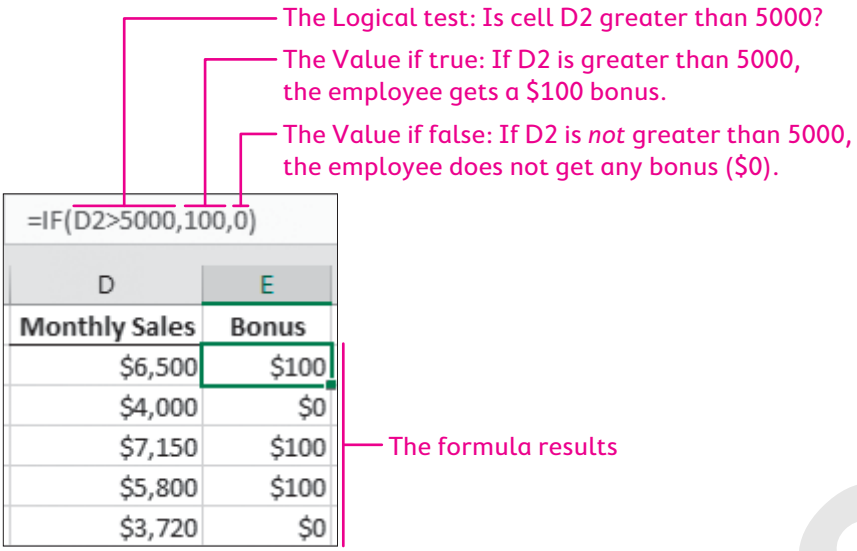
View the video "Using the IF Function."

Example: IF Function in Practice

Use the IF function where there are two possible outcomes and there are defined criteria to determine each outcome. For example, if you offer sales employees a $100 bonus if they achieve $5,000 in sales for the month, you can use an IF function to determine which employees qualify. In this case, the condition is that sales must be greater than or equal to $5,000, which needs to be written as a logical test.

THE IF FUNCTION

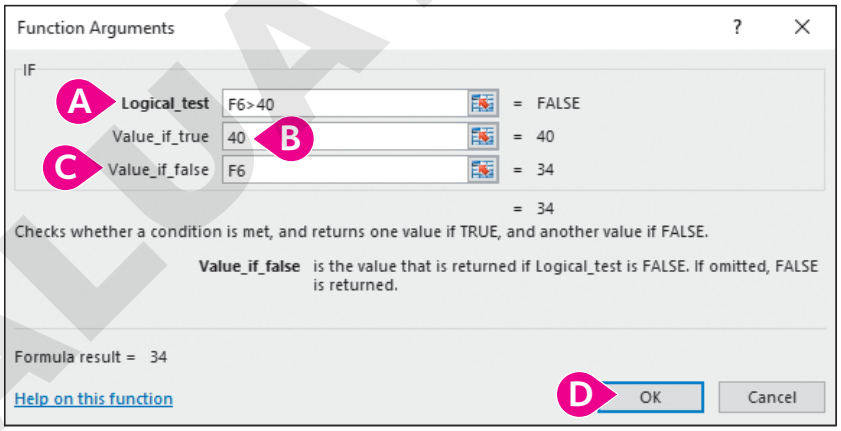
Arguments	Description	Examples
Logical Test	This is a question or criterion that must be a yes/no or true/false question, using a comparison operator, that usually includes at least one cell reference.	D2>5000 D2>=A1
There are two possible outcomes, so you need to enter two values.		
Value if true	If the answer is true, this determines what result is placed in the cell after completing the formula. The result can be text, numbers, cell references, or even another formula.	100 "Yes" D2*10%
Value if false	If the answer is not true, it must be false, so what will the result be? Again, the result can be text, numbers, cell references, or a formula.	0 "No" D2*2%



DEVELOP YOUR SKILLS: E5-D4

In this exercise, you will create several formulas using the IF function to calculate the number of regular hours and overtime hours each employee worked. You will then calculate total Gross Pay.

1. Save your workbook as: **E5-D4-PayrollP17**
2. Select **cell I6** and click **Insert Function** fx on the Formula Bar.
3. Choose the **IF** function (usually displayed by default under Most Recently Used; if not, select the **Logical** category) and click **OK**.
4. Follow these steps to create a formula using the IF function to calculate the number of regular hours for employees:



A. In the Logical_Test box enter **F6>40** to determine whether the employee worked more than 40 hours.

B. In the Value_If_True box enter **40** because if the employee did work more than 40 hours, that person would receive regular pay for 40 hours and the rest would be considered overtime.

C. In the Value_If_False box enter **F6** because if the employee worked 40 hours or fewer, all hours worked would be considered regular hours.

D. Click **OK**.

The result of the formula is 34; Jasmin worked 34 hours total, so her regular hours equal 34.

5. Select **cell K6** and enter this formula: **`=IF(F6>40,F6-40,0)`**

   The function arguments are typed within parentheses and separated by commas. The result of the formula is zero; Jasmin only worked 34 hours, so there are no overtime hours to be paid.

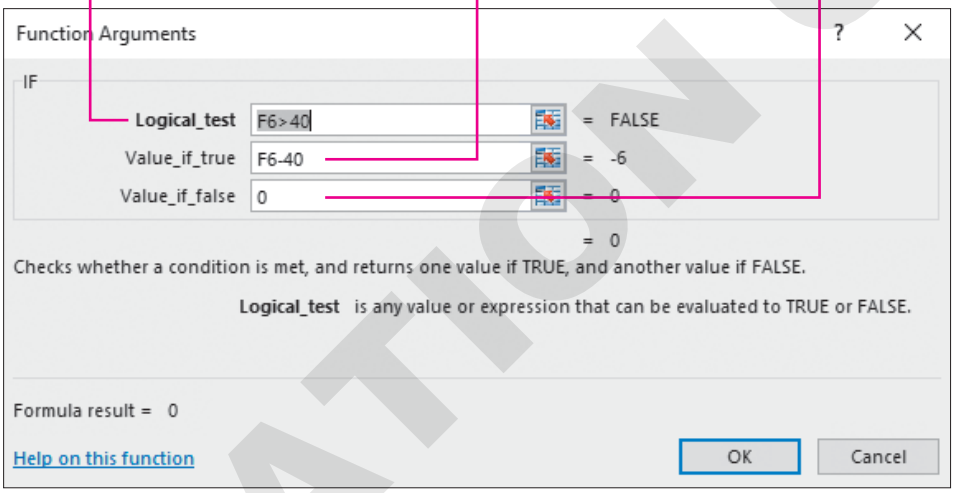
   To edit or to simply double-check the formula, you can click Insert Function at any time to open the Function Arguments dialog box.

6. If necessary, select **cell K6** again, and then click **Insert Function** fx and compare your screen to the following:

The Logical_test box has the same logical test, *F6>40*, which determines whether the employee worked more than 40 hours.

The Value_if_true box contains *F6-40*, because if the employee did in fact work more than 40 hours, that employee would receive overtime pay for the total number of hours less 40, the first 40 of which would be paid at the regular rate.

The Value_if_false box says *0*, because if the employee worked 40 hours or less, that employee does not receive any overtime pay.



7. Click **OK** to close the window.

   Since the regular hours and overtime hours have been calculated, you can now calculate the regular pay and overtime pay for employees by multiplying hours by their rate.

8. In **cell J6**, enter the formula **`=I6*G6`** and tap Tab twice.

   We know that Jasmin doesn't receive any overtime, but you will set up the formula to calculate overtime pay for all employees. Overtime pay is calculated as OT Hours x Rate x 1.5 because employees get time-and-a-half for overtime (100% + 50% = 150% or 1.5).

9. In **cell L6**, enter the formula **`=K6*G6*1.5`** and tap Tab.

   Total gross pay includes regular pay, as well as any overtime pay and commissions.

10. Enter the formula to calculate gross pay, which is: **`=J6+L6+H6`**

11. Apply bold formatting and **Currency** number formatting to **cell M6**.

12. Select the **range I6:M6** and double-click the **fill handle** to fill down the formulas for all employees.

    Double-clicking is much easier in this case than dragging the fill handle all the way down to row 63, and all five columns can be filled at once rather than one at a time.

    Gross pay is now calculated for all employees. You can double-check your formulas visually by checking a few examples of employees who worked overtime and a few who didn't. For example, you can quickly see that Cam Owens (row 11) worked 47 hours and received 7 hours of overtime pay.

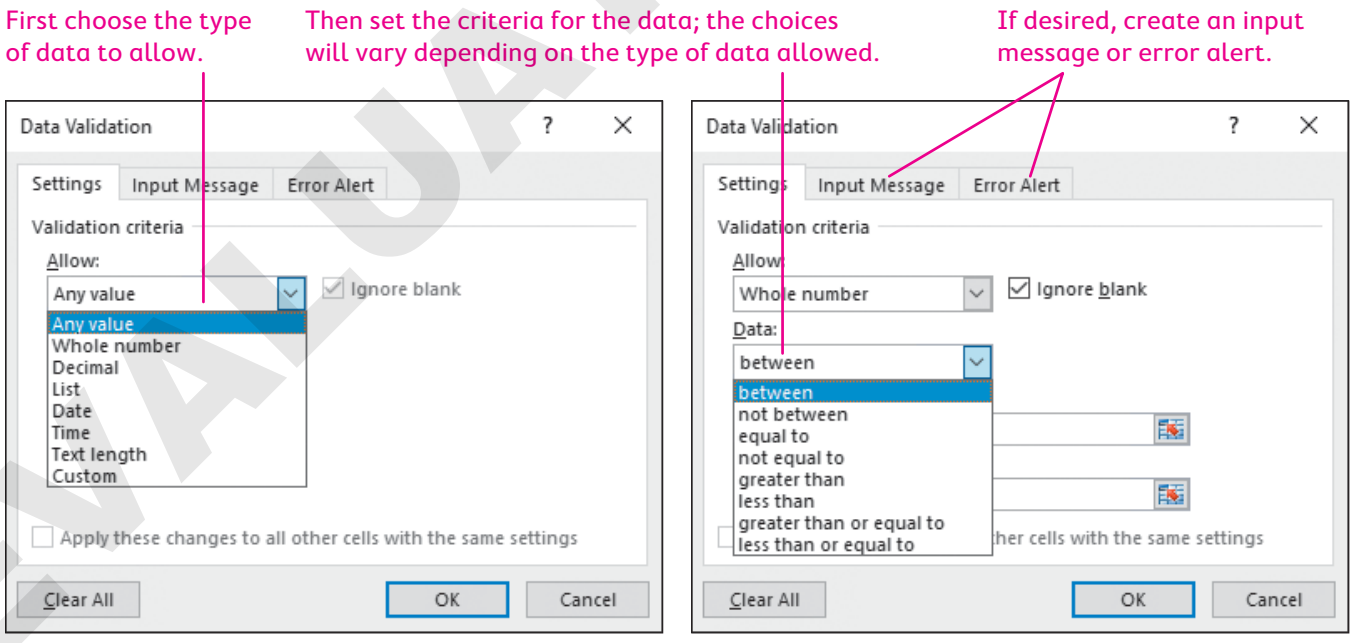
13. Save the workbook.

Controlling Data Entry with Data Validation

When entering values into an Excel worksheet, it is important to be consistent and accurate. However, mistakes can be made, especially if you ask someone else to do the data entry for you. To ensure accuracy and consistency, you can use data validation to create criteria for cells that limit the possible entries into those cells.

Normally, you set up data validation rules before entering the values. You also need to select the entire range where you intend to enter the data, so you are creating the rule for that full range. This is important because creating criteria for a cell that already contains data won't tell you if that data was correctly entered—unless you use the Circle Invalid Data option from the Data Validation menu.

The criteria you choose can restrict the type of data as well as the range of acceptable values. For example, you could restrict data entry to whole numbers between 0 and 100, or you could restrict data entry to a text list. You can also create a custom input message to assist the user in entering the acceptable data and an error alert if they enter an unacceptable value.



Data→Data Tools→Data Validation

DEVELOP YOUR SKILLS: E5-D5

In this exercise, you will create data validation criteria to choose the Department for each employee from a list and to restrict the number of hours that can be entered.

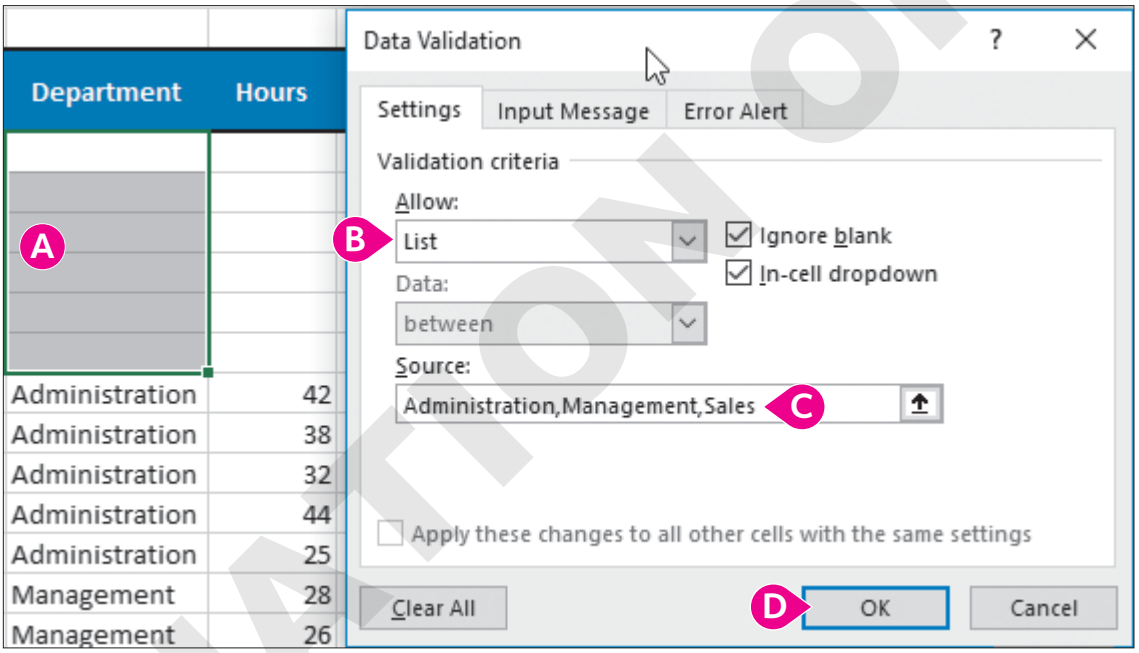
1. Save your workbook as: **`E5-D5-PayrollP17`**

   To begin, you will remove the data in the Department and Hours columns for the first six employees so you can create data validation rules that change how data is entered.

2. Select the **range E6:F11** and delete the data.

   Now you will use data validation rules to ensure the Department column is correctly populated using one of three choices from a list.

3. Follow these steps to create the data validation rule:



   A. Select the cells where the department data will be entered (**range E6:E11**) and choose **Data→Data Tools→Data Validation**.

   B. Click the **Allow menu** button ▾ and choose **List**.

   Allowing the List data type means only values you specify can be entered into the cells, which the user chooses from a list.

   C. In the Source box, type **`Administration,Management,Sales`** and ensure each word is separated by a comma but *no space*.

   D. Click **OK**.

   The three items typed into the Source box will appear for the user to choose from; an alternative to typing the source options is using cell references to a list of items on your worksheet.

4. Select **cell E6**.

5. Type **`Mgmt`** and then tap Enter.

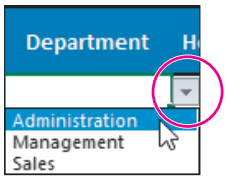
   A window will pop up telling you the value you entered doesn't match the data validation restrictions for the cell.

6. Click **Cancel**.

7. Now type **Ad** and tap Enter.

   This time typing just a few letters enters the entire department name from the list.

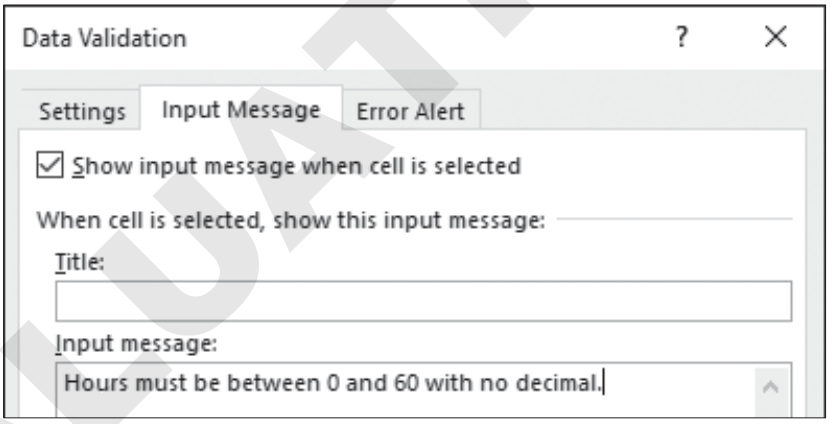
   You can also use the mouse to select a name from the drop-down menu button ▾ to the right of the cell, which displays the options you typed for the source of the list.



8. Use the **menu** button ▾ to select **Administration** from the list of Departments for Tim in **cell E7**.
9. Using whichever method you prefer, enter the departments for the other four employees:

First Name	Last Name	Employee ID#	Location	Department	Hc
Jasmin	Newton	13651	Los Angeles	Administration	
Tim	Parker	17232	Los Angeles	Administration	
Carol	Gregory	16688	Los Angeles	Management	
Kobe	Curry	20303	Los Angeles	Sales	
Tracy	Bryant	14917	Los Angeles	Sales	
Cam	Owens	22404	Los Angeles	Sales	

10. Select the **range F6:F11** to create data validation criteria for the hours to be entered.
11. Choose **Data→Data Tools→Data Validation** and set the criteria to allow only a **Whole Number** between **0** (minimum) and **60** (maximum).
12. Click the **Input Message** tab and enter the following into the Input Message field:



13. Click **OK** to complete the settings and then select **cell F6**.

    A ScreenTip appears with the message you entered.

14. To test the data validation rule, type **61** in **cell F6** and tap Enter. Read the message and then click **Retry**. Test again by typing **40.5** and tapping Enter; click **Cancel** to stop editing the cell.

    If you need someone else to enter the data, you can be confident no data will be entered that doesn't meet your criteria. For example, you won't end up accidentally paying someone for 400 hours instead of 40!

15. Enter these hours for the six employees in Los Angeles, starting with Jasmin in **cell F6**: **34**, **27**, **40**, **36**, **30**, **47**
16. Save the workbook.

Printing Options

To print large worksheets in a professional, presentable format, you may need to make some adjustments. For example, you may want to ensure that column headings are visible on all pages, you may want to choose how your data is divided across several pages, or you may want to add additional information that isn't part of the worksheet itself to the top or bottom of each printed page.

PRINTING OPTIONS

Feature	Description
Print Titles	Print the same headings on all pages by repeating the same rows or the same columns on all pages.
Print Area	Print only a specific area of your worksheet rather than the whole thing.
Breaks	Determine where one page ends and the next page begins when printing. Page breaks in Excel are both horizontal and vertical. Existing page breaks can be moved and new ones can be inserted.
Scale to Fit	Force data onto a desired number of pages, using width and height, by scaling or shrinking the size of the worksheet contents.

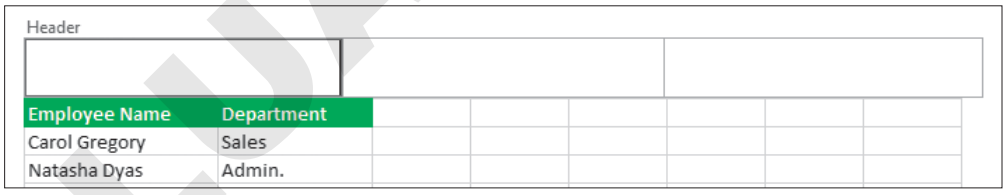
View the video "Printing a Large Worksheet."

Page Layout→Page Setup

Headers and Footers

When you are printing a worksheet, you may want information included on the printout that doesn't need to be shown on the screen. This might include information such as a title, company name, your own name, the page number, or perhaps the current date. There are tools in Excel for automatically entering some of this information, or you can manually type the information you want to appear.

In Excel, both the Header and Footer areas have three distinct sections. These are not part of the worksheet, so they do not have a cell address like the worksheet cells.



Tip! *Navigating to the Footer section can be tricky, but there's a button on the Ribbon that makes it much easier than scrolling down: Header & Footer Tools Design→Navigation→Go to Footer.*

Insert→Text→Header & Footer

View→Workbook Views→Page Layout

DEVELOP YOUR SKILLS: E5-D6

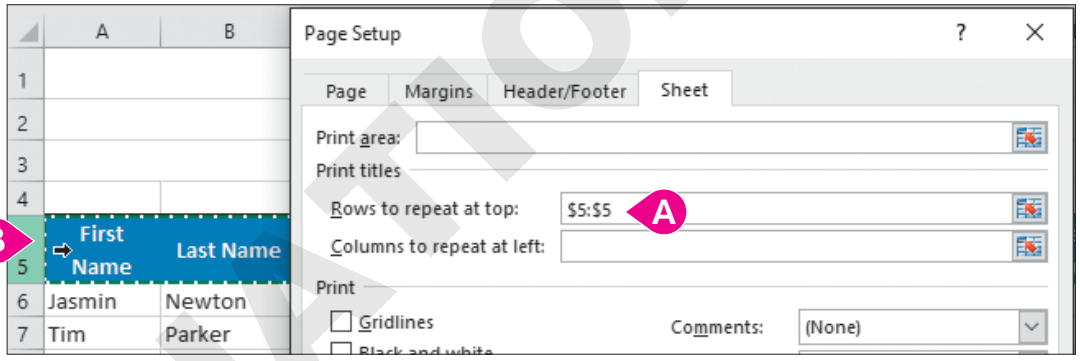
In this exercise, you will set up the print area, repeat the column headings on every page, and adjust other print settings.

1. Save your workbook as: **E5-D6-PayrollP17**
2. Choose **File→Print** to see the print preview.

   Notice that the worksheet prints on four pages, and the OT Hours, OT Pay, and Gross Pay columns appear on pages three and four. The first adjustment to be made is to adjust the worksheet width to one page.
3. Use the **Back** button to return to your worksheet.
4. Choose **Page Layout→Scale to Fit→Width→1 page**.
5. Go back to the preview and see that the worksheet now prints on two pages—one page wide and two pages long.
6. Use the **Back** button to return to your worksheet.

Print Repeating Headings

7. Choose **Page Layout→Page Setup→Print Titles**.
8. Follow these steps to print repeating headings:

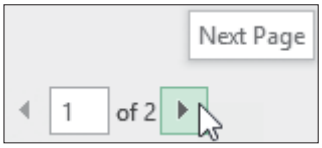


   A Select the box next to **Rows to Repeat at Top**.

   B Click anywhere in **row 5**.

   When you click to select the row, Excel adds the correct formatting to the row reference.
9. Click **OK**.

   You won't notice anything different in the current view, but you can check the print preview to see the repeating row on page two.
10. Choose **File→Print** and below the preview use the **right-pointing arrow** to advance to page two.



    Now you can see the same headings with the blue background on page two that are printed on page one.
11. Use the **Back** button to return to your worksheet.

Set the Print Area

12. Select the **range A5:M11**.

    You must select the desired range before setting the print area.

13. Choose **Page Layout→Page Setup→Print Area →Set Print Area**.

    Only the selected range will print, which means the Los Angeles employees and the headings in row 5.

14. Go to the print preview to view the change and then return to your worksheet.

15. Choose **Page Layout→Page Setup→Print Area →Clear Print Area**.

    Now the whole worksheet will print once again because the specified print area has been cleared.

Set Page Breaks

For editing some of the page layout settings, it is best to be in Page Layout view. However, for adding/adjusting page breaks, it is best to be in Page Break Preview.

16. Choose **View→Workbook Views→Page Break Preview**.

    There are two pages in the print area, and the page break falls between Natasha Dyas *and* Joshua Garcia.

36	Terrence	King
37	Lorraine	Martine
38	Natasha	Dyas
39	Joshua	Garcia
40	Karen	Ablitt
41	Megan	Dorfling

17. Place the mouse pointer over the page break line to display the two-way arrow and then drag the page break up and place it below **row 11**, where the data for Los Angeles employees ends and the data for Miami employees begins.

    Because the area below the page break is now too big to fit on one page, Excel automatically adds a new page break, so your worksheet will now print on three pages.

18. Drag the new page break up below **row 28**, where the data for Miami employees ends.

    Because the rest of the data does fit on page three, you have to manually insert two more page breaks to print New York, Toronto, and Vancouver on separate pages.

19. Select **cell A38**, below the row where the data for New York employees ends, and choose **Page Layout→Page Setup→Breaks →Insert Page Break**.

20. Insert another page break above the Vancouver employees.

21. Change the workbook view back to **Normal** and then go to the print preview.

    The data will print on five pages, one for each location, with the column headings repeated at the top of each page.

Insert Header

22. Return to your worksheet and then switch to **Page Layout** view and select the left header section.

    You will see the Header & Footer Tools Design tab appear on the Ribbon, which allows you to insert formatted elements like page numbers and the current date.

23. Choose **Header & Footer Tools→Design→Header & Footer Elements→File Name**.

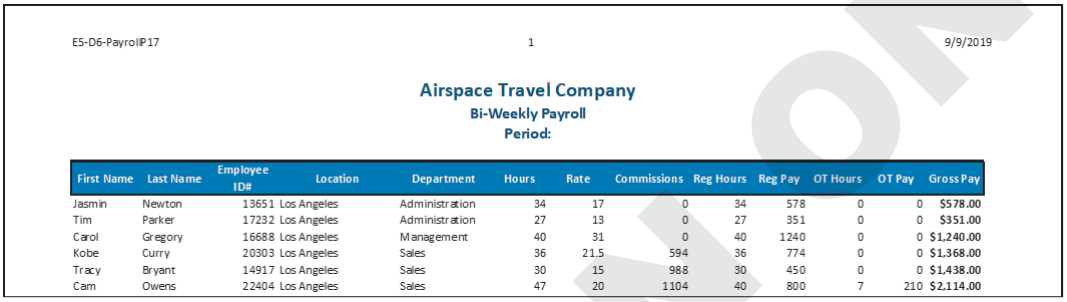
    Notice the code that is inserted; the code will display and print the filename when you click outside of the left header box. Also, if the filename ever changes, the text in the header will update automatically.

24. Select the center header section and insert the **Page Number**.

25. Insert the **Current Date** in the right header section.

26. Deselect the header area, switch back to **Normal** view, and then go to the print preview one last time.

    Excel won't let you change the workbook view while you are editing the header, so be sure to click a cell on the worksheet before changing the view.



E5-D6-PayrollP17 1 9/9/2019

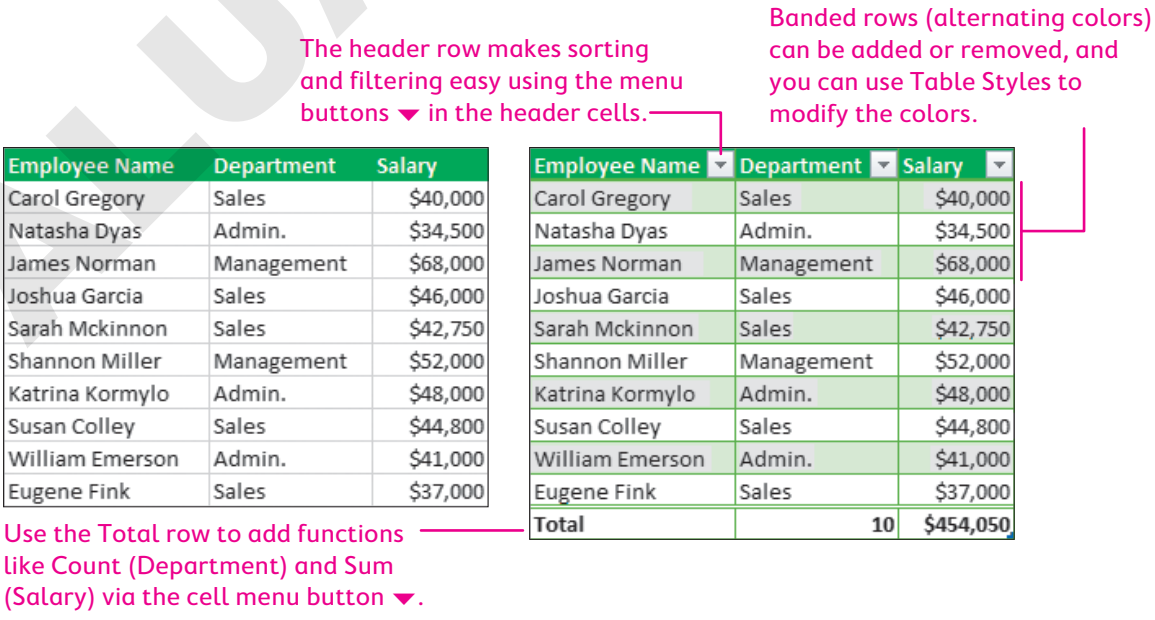
Airspace Travel Company
Bi-Weekly Payroll
Period:

First Name	Last Name	Employee ID#	Location	Department	Hours	Rate	Commissions	Reg Hours	Reg Pay	OT Hours	OT Pay	Gross Pay
Jasmin	Newton	13651	Los Angeles	Administration	34	17	0	34	578	0	0	$578.00
Tim	Parker	17232	Los Angeles	Administration	27	13	0	27	351	0	0	$351.00
Carol	Gregory	16688	Los Angeles	Management	40	31	0	40	1240	0	0	$1,240.00
Kobe	Curry	20303	Los Angeles	Sales	36	21.5	594	36	774	0	0	$1,368.00
Tracy	Bryant	14917	Los Angeles	Sales	30	15	988	30	450	0	0	$1,438.00
Cam	Owens	22404	Los Angeles	Sales	47	20	1104	40	800	7	210	$2,114.00

27. Save the workbook.

Excel Tables

Tables allow you to more easily organize and analyze related data. Tables simplify the process of performing sorts, filtering your data, calculating totals, and even modifying the format of your data. The process of taking existing data and inserting a table is very simple, and you can convert a table back to a normal range of cells at any time without losing any data.



Employee Name	Department	Salary
Carol Gregory	Sales	$40,000
Natasha Dyas	Admin.	$34,500
James Norman	Management	$68,000
Joshua Garcia	Sales	$46,000
Sarah Mckinnon	Sales	$42,750
Shannon Miller	Management	$52,000
Katrina Kormylo	Admin.	$48,000
Susan Colley	Sales	$44,800
William Emerson	Admin.	$41,000
Eugene Fink	Sales	$37,000

Employee Name	Department	Salary
Carol Gregory	Sales	$40,000
Natasha Dyas	Admin.	$34,500
James Norman	Management	$68,000
Joshua Garcia	Sales	$46,000
Sarah Mckinnon	Sales	$42,750
Shannon Miller	Management	$52,000
Katrina Kormylo	Admin.	$48,000
Susan Colley	Sales	$44,800
William Emerson	Admin.	$41,000
Eugene Fink	Sales	$37,000
Total	**10**	**$454,050**

The same data, before and after a table is inserted

As you add more data to the bottom or right of the table, the table area expands to include the new adjacent rows or columns. Another nice feature is that entering a formula in one table cell will automatically copy the formula to all cells in that table column.

Insert→Tables→Table 

Table Tools→Design→Tools→Convert to Range 

DEVELOP YOUR SKILLS: E5-D7

In this exercise, you will create a table and perform tasks such as filtering, sorting, and calculating totals.

1. Save your file as: **`E5-D7-PayrollP17`**
2. Select **cell J6** and choose **Insert→Tables→Table**  .

   Excel looks for the adjacent range of data and suggests the range A5:M63, which includes the table headers.
3. Click **OK** to accept the suggested table area.

   You may see a warning suggesting there are external data ranges. If so, choose to convert the selection to a table and remove all external connections.
4. Click the **Department menu** button ▾.

   Notice the sort and filtering options available.
5. Uncheck the filter boxes for **Administration** and **Sales** and click **OK**.

   Only employees in the Management department are now visible in the list.
6. Use the **Rate menu** button ▾ to sort the **Management** department employees by rate, from largest to smallest.
7. Choose **Table Tools→Design→Table Style Options→Total Row**.

   Notice that in column M there is a total automatically calculated for the Management department, which shows the sum of the department's gross pay.
8. Select **cell F64**, click the **menu** button ▾, and select **Sum**.

   The total hours for Management employees are calculated, showing 416 hours.
9. Change the Table Style to **White, Table Style Medium 1**.
10. Use the **Department** filter to hide the Management data and display the Sales department only.
11. Use the **Location menu** button ▾ to re-sort the data by Location from A to Z.

    Locations should be listed in order from A to Z, and the Total row at the bottom of the table should recalculate the total hours and gross pay.
12. Save the workbook and close Excel.

First Name	Hours	Gross Pay
Total	1152	$40,921.50

Self-Assessment

Check your knowledge of this chapter's key concepts and skills using the Self-Assessment in your ebook or online (eLab course or Student Resource Center).

Reinforce Your Skills

REINFORCE YOUR SKILLS: E5-R1

Import and Organize Data for a Donor List

In this exercise, you will open a template and import data related to this year's Kids for Change donors. You'll also organize the data with sorts and filters.

1. Open the **E5-R1-DonorList** template from the **Excel Chapter 5** folder.

   Remember, to create a copy you must open the template from File Explorer. If you do not see a number at the end of the filename after opening the file, you are editing the template itself; close it and reopen through File Explorer.

2. Save the workbook, replacing the number at the end of the filename with the current year.

   The donor information is saved in another file, so you need to open it and copy the data, then paste it into the current workbook.

3. Open **E5-R1-DonorData** from the **Excel Chapter 5** folder and then select all the data and copy it.
4. Paste the data into **cell A4** in the **DonorList** file; close the DonorData file.
5. If necessary, select **cell A4** again and freeze the top three rows.
6. Scroll down to ensure the data was copied correctly. (Hint: *Nicki Hollinger* should be the last donor in the list in row 45.)
7. Scroll to the top of your data and then do a multiple-level sort, first by **Donor Type**, **A to Z**, and then by **First Donation**, **Oldest to Newest**.
8. Filter your data to display only those donors with total annual donations greater than $5,000.

   These are your high-priority donors; you want them to stand out in the list, so you will add a fill color to these rows.

9. With the data filtered, select the **range A4:F40**, which is all donor data including the blank column below *Free Membership*.
10. Click the fill color **Green, Accent 6, Lighter 40%**.
11. Remove the filter from the data.
12. Save the workbook.

REINFORCE YOUR SKILLS: E5-R2

Use the IF Function

In this exercise, you will add information about the Kids for Change donors, using the IF function and data validation, and adjust the sheet for printing.

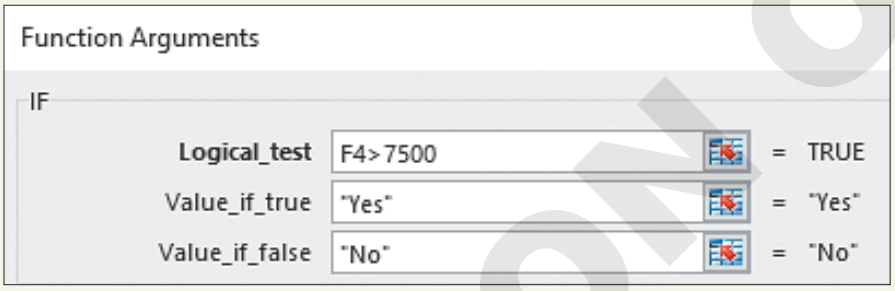
1. Save your workbook as **`E5-R2-DonorList`** and include the current year at the end of the filename.
2. Insert a new column, with the heading **`Contact OK`** in **cell C3**, to the left of the Phone # column.

   It is important to ensure you have permission before calling your donors, so you will list Yes or No for each donor.

3. Select all the blank cells below the Contact OK heading in the **range C4:C45**.
4. Create a List data validation rule that allows users to enter only the text *Yes* or *No*.

   All but two donors have given you permission to contact them, so you can fill in this information for all donors now. (Hint: It will be quicker to use the fill handle to fill in "Yes" for everyone first and then adjust the entry to "No" for the two applicable donors.)
5. Enter **Yes** in the Contact OK column for all donors. (Hint: If you use the fill handle, use the **AutoFill Options** to adjust to **Fill Without Formatting** so all cells do not have a green fill color.)
6. Scroll through the list and change the entry to **No** for Eastjet and Crystal Robinson, in **rows 14** and **23**.

   A local business is offering free memberships to donors with total annual donations greater than $7,500, so you will create a formula to determine which donors qualify for the promotion.
7. In **cell G4**, enter a formula using the **IF** function and these arguments:



8. Copy the formula down the column using **AutoFill** and adjust the option to **Fill Without Formatting**.
9. Center align the text in the **range G4:G45** you just entered.
10. Switch to **Page Break Preview** view.
11. To adjust the list to fit nicely on two pages, adjust the page break to fall between *Business* and *Private* in the Donor Type column.
12. Return to **Normal** view and set up the page layout to repeat **rows 1–3** at the top of each page.
13. Select **cell A3** and insert a table using your data in the **range A3:G45**; add the checkmark beside **My Table Has Headers**, if necessary.

    Inserting a table affects the column width, so you need to readjust the column width and page layout options.
14. Adjust the widths of **columns F–G** to **13** and use the appropriate Scale to Fit command to ensure the page width is one page.
15. Use the table tools to remove the banded rows.
16. Add a total row to the bottom of the table.
17. In the total row, insert the **Sum** function in the Total Annual Donations column, and remove the Count function from the Free Membership column. (Hint: To remove a function, click the **menu** button ▾ and choose **None**.)
18. Apply Currency number formatting, with no decimals, to the total in **cell F46**.
19. Save and close the workbook.

REINFORCE YOUR SKILLS: E5-R3

Organize a Large Worksheet and Use the IF Function

In this exercise, you will organize the information about students who have volunteered for Kids for Change using the skills learned in this chapter.

1. Open **E5-R3-StudentHours** from your **Excel Chapter 5** folder and save it as: **`E5-R3-StudentHoursRevised`**
2. Autofit **column B** and adjust the column width for **columns D–F** to: **`7`**
3. In **column G**, insert the heading **`Total`** and then use **AutoSum** to calculate the total hours from January to March for each student.

   Students who volunteer 60 hours or more in a quarter are invited to an appreciation dinner at the end of each quarter, so you will use an IF formula to determine who is invited.
4. In **cell H3**, enter **`Dinner Invite`** for the heading.
5. Create an IF function in **cell H4** that inserts *Yes* for students with 60 or more hours and *No* for those with fewer than 60 hours.

   Inserting text into arguments from the dialog box automatically inserts quotations around the text ("Yes"). If you type the formula directly into the cell, remember to type quotation marks around the text Yes *and* No.
6. Center align and bold the result in **cell H4** and then fill the formula down the column for the other students.
7. Now freeze the panes so the top three rows remain visible at all times.
8. Perform a multiple-level sort on your data so students are listed from A to Z by school and then by total from largest to smallest.
9. Create a table from your data that includes the **range A3:H26**.
10. Filter your table to show only students who have *Yes* in the Dinner Invite column.
11. Adjust the page layout orientation to **Landscape** and then insert a page break below each of the first three schools so each prints on a separate page.
12. Save the workbook and close Excel.

Apply Your Skills

APPLY YOUR SKILLS: E5-A1

Import and Sort Data

In this exercise, you will create a template to record future expenses for Universal Corporate Events. Then you will organize the company's Q3 data.

1. Start Excel, open **E5-A1-Expenses** from your **Excel Chapter 5** folder, and save it as: **`E5-A1-ExpensesQ3`**
2. Save the workbook as a template named: **`E5-A1-ExpensesQuarterly`**

   Remember that after you choose the file type, you have to navigate back to your Chapter 5 folder.
3. Delete all data in **cell A3** and the **range D5:F46** to clear the sheet for future use.
4. Save the file and then close the template.
5. Reopen the **E5-A1-ExpensesQ3** workbook you saved in step 1 to continue working on it now.
6. Freeze all rows above **row 6**.
7. Sort your data by category and then by expense, both A to Z.

   Auto Repairs *should now be the first expense listed, in row 6.*
8. Add a total in **cell G6**, and an appropriate heading in **cell G5**, that calculates the three-month total for each type of expense.

   Be sure not to include the budget amount in the total when using the SUM function.
9. Apply Accounting number formatting with no decimals to the total in **column G**.
10. Copy the formula down the column for all expenses.
11. Save the workbook.

APPLY YOUR SKILLS: E5-A2

Use Tables and the IF Function

In this exercise, you will determine if Universal Corporate Events went over budget on any of the expense items.

1. Save your workbook as: **`E5-A2-ExpensesQ3`**

   To identify which expenses were over budget, you will use the IF function in a formula.
2. In **cell H5**, enter the heading: **`O/U`**
3. In **cell H6**, enter this formula: **`=IF(G6>C6,"OVER","Under")`**

   This formula compares the total to the budget amount and returns the text Under *or* OVER *(in caps), depending on the result.*
4. Copy the formula down the column for all expenses.
5. Insert a table using all data in the **range A5:H46**.
6. Remove the banded rows formatting.
7. Turn on the Total Row option and then insert the Sum function at the bottom of the data for all five columns with numerical data: Budget, July, August, September, and Total.
8. Remove the Count function from the Total row in the O/U column.

9. Filter the table to display only the expenses that were over budget.
10. Apply **Gold, Accent 4, Lighter 40%** fill and bold formatting to the O/U column and then remove the filter.
11. Select the **range A1:H10** and set the print area so only the Auto expenses will print.
12. Change the page orientation to **Landscape** so the auto expense data fits on one page.
13. Save and close the workbook.

APPLY YOUR SKILLS: E5-A3

Organize a Large Worksheet and Use Data Validation

In this exercise, you will sort and analyze the data that Universal Corporate Events collected from its clients over the past two months.

1. Open **E5-A3-Feedback** from the **Excel Chapter 5** folder and save it as: **`E5-A3-FeedbackAnalysis`**
2. Create a formula in **cell H5** to calculate the average rating from each customer based on the three columns: Staff Rating, Experience Rating, and Facility Rating.
3. Copy the formula down the column for all clients and edit the number format to show only one decimal.
4. Freeze panes so **rows 1–4** are always showing.
5. Sort the data by **event** (A to Z) and then by **average rating** (Largest to Smallest).
6. Identify which clients gave an average rating above 6 by creating an IF function in **cell I5** that inserts **`YES`** for those above 6 and **`NO`** for those at or below 6.
7. Copy the formula down the column for all clients and center-align the data.

   You want to offer a coupon to the clients who were equal to or below 6.0 since they found their event unsatisfactory, and you need to enter a data validation rule to prevent the coupon amount from exceeding $200.
8. Select the range below the Coupon Offered column for all clients and create a data validation rule that only allows whole numbers between 0 and 200.
9. Input the coupon amounts by entering **`$0`** for all clients, and then edit the coupon amount for the two clients NOT above 6:
   - Stormy BBQ: **`$100`**
   - Wilson Samuels Corp.: **`$200`**
10. Go to **Page Break Preview** view and insert page breaks between *Staff Party Events* and *Team Building Events*, and between *Team Building Events* and *Training Events*.
11. Use **Print Titles** to repeat **row 4** at the top of each page.
12. Go to **Page Layout** view and insert the current date in the left footer section and the page number in the right footer section.

    Remember, you can use the Go to Footer button to navigate to the footer!
13. Return to **Normal** view.

    If you like, check the print preview to verify that your worksheet will print properly—on three pages, with the titles at the top and the footers at the bottom of each page.
14. Save the workbook and close Excel.

Project Grader

If your class is using eLab (labyrinthelab.com), you may upload your completed Project Grader assignments for automatic grading. You may complete these projects even if your class doesn't use eLab, though you will not be able to upload your work.

PROJECT GRADER: E5-P1

Rewarding Top Distributors with Rebates

Taylor Games relies on an extensive list of distributors to move items into various retail channels. In this exercise, you will develop a financial model to reward top distributors with rebates.

1. Download and open your Project Grader starting file.
   - *Using eLab:* Download **E5_P1_eStart** from the Assignments page. You must start with this file or your work cannot be automatically graded.
   - *Not using eLab:* Open **E5_P1_Start** from your **Excel Chapter 5** folder.
2. Starting with **cell A6**, freeze the panes.
3. In **cell B4**, create a data validation using these settings:

Setting	Value
Allow	**Decimal**
Data	**Less than or equal to**
Maximum	**0.05**
Input Message	**Show input message when cell is selected**
Input Message Title	**Maximum Rebate Percentage**
Input Message	**5%**

4. In **cell B4**, enter the number: 5%
5. In **cell F7**, use an IF function with this logic: If the March Purchases in cell E7 are greater than or equal to 2000 then display **Yes**; otherwise, display **No**.
6. Copy the formula down to the **range F8:F36**.
7. In **cell F6**, turn on filtering and then set the filter so that only rows where the Top Distributor? is **Yes** are displayed.
8. In **cell G7**, use a formula with cell references to multiply the March Purchases (**cell E7**) by the March Rebate % (**cell B4**): (March Purchases * March Rebate %). Use an absolute cell reference to the March Rebate % in **cell B4**.
9. Copy the formula down to the **range G11:G33**.
10. In the Page Setup window, set the scaling to fit to 1 page wide.
11. Save your workbook.
    - *Using eLab:* Save it to your **Excel Chapter 5** folder as **E5_P1_eSubmission** *and* attach the file to your eLab assignment for grading.
    - *Not using eLab:* Save it to your **Excel Chapter 5** folder as: **E5_P1_Submission**

PROJECT GRADER: E5-P2

Classifying Cars and Displaying Their Values

If Classic Cars are maintained well, their values tend to appreciate over time. In this exercise, you will classify the cars that belong to members as either antiques or classics and display their corresponding values.

1. Download and open your Project Grader starting file.
   - *Using eLab:* Download **E5_P2_eStart** from the Assignments page. You *must* start with this file or your work cannot be automatically graded.
   - *Not using eLab:* Open **E5_P2_Start** from your **Excel Chapter 5** folder.
2. Starting with **cell A8**, freeze the panes.
3. In **cell F8**, use an IF function with this logic: If the car year in cell E8 is less than 1950, display **`Antique`**; otherwise, display **`Classic`**.
4. Copy the formula down to the **range F9:F55**.
5. Sort the worksheet as follows:
   - Sort first in ascending order (A to Z) on the **Status** field.
   - Then in descending order (Largest to Smallest) on the **Car Value** field.
6. Starting in **cell A7**, insert a table with the **data range $A$7:$G$55** and indicate that the table has headers.
7. Add a Total row to the table.
8. Apply a different table style. You can choose any table style as long as it's different from the current style.
9. Set **row 7** to repeat at the top of each printed page.
10. Set the footer to include the page numbering format **page 1 of ?**.
11. In the Page Setup window, set the scaling to fit to 1 page wide.
12. Save your workbook.
    - *Using eLab:* Save it to your **Excel Chapter 5** folder as **`E5_P2_eSubmission`** and attach the file to your eLab assignment for grading.
    - *Not using eLab:* Save it to your **Excel Chapter 5** folder as: **`E5_P2_Submission`**

Extend Your Skills

These exercises challenge you to think critically and apply your new skills in a real-world setting. You will be evaluated on your ability to follow directions, completeness, creativity, and the use of proper grammar and mechanics. Save files to your chapter folder. Submit assignments as directed.

E5-E1 That's the Way I See It

A friend of yours is teaching a course at Learn Fast College for the first time. She knows you are an Excel expert and has asked for your help setting up her workbook to track student performance. Open the **E5-E1-GradesData** file and save it as: **`E5-E1-Grades`**

Format the headings appropriately and adjust column width as needed. Create a data validation rule so the participation grades must be a whole number between 0 and 10; your friend will enter the data later. Then, use a formula to specify which students qualify for the attendance award; to qualify, their attendance must be perfect (0 days absent). Last, sort the data by the Status and Absent columns and make any other adjustments that will allow your friend to easily print the worksheet, if desired.

E5-E2 Be Your Own Boss

At the end of the year, you always add up all the hours your clients at Blue Jean Landscaping put into their own landscaping work. You track the data in the file **E5-E2-ClientHours**. Open the file and save it as **`E5-E2-ClientTotals`** and insert the current year at the end of the filename. To begin, find the total for each client and sort the data by customer type and then by total. To calculate the customers' discounts for their labor, use the IF function in a new column. Add the heading *Discount Per Hour* and create a formula so customers with more than 100 hours get a discount of $17/hour and customers with fewer than 100 hours get $15/hour. Ensure the maximum number of hours that can be entered per month is 40; create a data validation rule to allow decimal numbers between 0 and 40 and then use the Data Validation menu button and click the option to circle invalid data. Find any numbers entered that are greater than 40 and change them to 40. (Hint: You will change five numbers.) Create a table for your data so you can insert a total row at the bottom for all months. Make any other adjustments necessary so the worksheet is ready to be printed.

E5-E3 Demonstrate Proficiency

Stormy BBQ keeps an inventory of ingredients in its kitchen, complete with the current stock as well as the required minimum for each item in the **E5-E3-Inventory** file. You are organizing the information and determining which items need to be reordered. Save the file as **`E5-E3-InventoryOrders`** and begin by reviewing the data. Insert titles and apply formatting as you see fit. Then in the Order column, use a formula to determine how much of each item needs to be ordered. (Hint: Use the IF function to determine if the In Stock number is less than the Required Amt number; if it is, enter the difference between the two in the Order column.) Organize your list by sorting in an appropriate manner and then prepare the file for printing, if necessary.

Glossary

Access Database software that helps you quickly retrieve data; allows you to create and enter data into a table and then use forms, reports, and queries to display the desired results

adjacent Arrangement of cells, objects, or files next to each other; may be selected as a group by using [Shift]; also known as *contiguous*

alignment Horizontal placement of text relative to the left and right margins of a cell or a page, where text is left-, right-, or center-aligned; or vertical placement of text relative to the top and bottom margins of a cell or page, where text is top-, middle-, or bottom-aligned

arguments The information or values, such as numbers, text, or cell references, used by a function in Excel to solve a formula

AutoComplete A feature that offers to complete the typing for you when it recognizes certain words or phrases

AutoFill A feature that extends a series, copies data, or copies a formula into adjacent cells

cell A box formed by the intersection of a row and column in a worksheet or table, in which information is entered and displayed

cell references Sets of coordinates that indicate the location of cells on a worksheet; for example, the cell reference D2 indicates a cell that appears at the intersection of column D and row 2

Clipboard A location within Microsoft Office that contains thumbnails of what you have recently cut or copied from your Microsoft Office file(s) during your Windows session; used to quickly paste text, pictures, images, or charts into a file

conditional formatting Formatting applied to cell contents only when user-specified criteria are met

contextual tab(s) Hidden Ribbon tabs that only appear when certain types of objects, such as pictures or tables, are selected

Copy Creates a duplicate of the original selection, which remains in the source location, and places a copy of the selection on the Office Clipboard

Cut Removes the original selection from the source location and places the selection on the Office Clipboard

database A collection of data related to a particular subject or purpose, organized by records and fields; for example, an employee database contains information for each employee, such as their name, employee ID, and contact information

data validation Feature used to limit the type of data and values allowed to be entered in a cell and to provide the user with messages to guide them when entering data

default Setting or name a computer program uses until you specify otherwise

dragging (drag) Clicking and holding down the left mouse button while moving the mouse pointer; used for many tasks, including selecting, moving, and resizing text, objects, cells, columns, or rows

Excel Worksheet software, arranged with rows and columns, used to create calculations and to make what-if analyses; perfect for preparing a budget or income statement or determining the amount of interest paid on a loan

filtering (filter) Process used to display only the rows of data that meet the conditions specified

Format Painter Applies the character and paragraph formatting from the source selection to any characters or text selected

formula A cell entry that uses a sequence of values, cell references, names, functions, or operators to perform a mathematical calculation and produce a new value; always begins with an equal sign (=)

Formula Bar A bar above the Excel worksheet that can be used to enter or edit values or formulas in cells; displays the constant value or formula stored in the active cell

freeze To set a row or column so it remains visible at the top or left of the screen while scrolling

functions Specific formulas that take an input value or values in the form of arguments, performs an operation, and returns a value or values; functions simplify the creation of formulas and are useful for lengthy or complex calculations

Keep Source Formatting Pastes the text and the selection with any formatting (bold, italic, underline) of the selection from the source location to the target location; the selection pasted retains the original formatting from the source location

Keep Text Only Pastes the selection from the source location to the target location; the selection pasted takes on the formatting of the target location

link Objects and formulas can be linked to connect the information from the source to the destination; the source can be on the same sheet, another sheet, or another workbook, and the destination is updated when the source is modified

Merge Formatting Pastes the text and selection with any formatting (bold, italic, underline) of the selection from the source location to the target location and combines it with any formatting already at the target location; the selection pasted has formats from both the source and target locations

Microsoft account Account that gives you access to your Microsoft settings, files, contacts, and more, as well as to your computer or other devices; can include Bing, Hotmail, MSN, Office, OneDrive, Outlook, Skype, Stores, or Xbox Live

Microsoft Office 2019 Version of Microsoft Office that you purchase one time, for one device, similar to what you may have done to obtain software in the past; anytime there is a new version of Microsoft Office, you need to purchase it if you desire the most recent version (select Office Home & Student 2019 to install Office on one PC)

name A word or string of characters created or defined to represent a cell or range of cells, which can then be used for navigation or used as a cell reference in a formula

Name Box The box on the left side of the Formula Bar that identifies the selected cell; can be used for navigating to another cell or creating a new name for the selected cell

nonadjacent The arrangement of cells, objects, or files not next to each other; may be selected as a group using [Ctrl]; also known as *noncontiguous*

Office 365 Version of Microsoft Office that has a monthly subscription rate for one or more devices that offers automatic updates similar to how you make apps purchases on your smartphone or tablet (select Office 365 Personal for a monthly subscription for one device—PC or Mac, plus one smartphone and one tablet; select Office 365 Home for a monthly subscription for up to five PCs or Macs, plus five smartphones and five tablets)

Office Online Version of Microsoft Office that is free when you are logged in to a Microsoft account; the online apps include Outlook, Word Online, Excel Online, PowerPoint Online, OneNote Online; not all features of Office 365/2019 are available in these apps

OneNote Notetaking software used to organize notes (handwritten or keyed), audio/sound recordings, screen captures, or sketches you have collected or created to share with others

Outlook Personal information manager software used to create, send, and receive emails, record tasks, maintain one or more calendars, schedule meetings and appointments, manage contacts, and take notes

Paste Inserts a copy of the most recent item found on the Office Clipboard at the target location, or destination; there are usually at least three paste choices: Keep Source Formatting, Merge Formatting, and Keep Text Only

PowerPoint Presentation software used to create, edit, revise, format, and share slides designed to tell a story, market a product, or explain a concept

Publisher Desktop publishing software used to design and lay out text and images, often for newsletters or brochures

Ribbon Band at the top of an application window that contains commands to complete tasks; organized in tabs that relate to a particular type of activity and groups of related commands (some tabs are only shown when needed, such as Chart Tools, Table Tools, or Picture Tools)

Scale to Fit (Scale) Process that increases or reduces size to a percentage of its original size; can be applied to an object or to a worksheet for printing

Skype Web communication software that utilizes the Internet to share audio, video, text, messages, files, or Desktops via a webcam on both the sending and receiving devices

software suite Collection of applications generally produced by the same manufacturer and bundled together for a better price that provides a common user interface throughout each application

sorting (sort) Process used to arrange data in a specific order, such as alphabetic, numeric, by date, or in ascending or descending order

source Original location of text that has been cut or copied

tab Area on the Ribbon that displays an organized collection of commands; some tabs are only shown when needed, such as Chart Tools, Table Tools, or Picture Tools

table A related collection of data about a subject stored in records (rows) and fields (columns) that allow for easier sorting, filtering, formatting, and calculations using structured references

target Destination location for pasted text

template A preformatted document or workbook layout used as the basis for new documents to maintain consistency among documents and save the user time and that usually contains text, paragraph, table, graphical, and other types of formatting; in Excel, can also include formulas

thumbnails Small images that represent an application, file, etc.

toggle Selecting a button once to turn it on and again to turn it off

Word Word-processing software for creating, editing, revising, formatting, and sharing documents, such as letters, reports, essays, and business plans

workbook One or more worksheets saved together as one file

worksheet A collection of information, or blank space to enter new information, divided into columns and rows that form cells

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