CISC 302: COMPUTER FAMILIARIZATION



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CISC 302: Computer Familiarization (Duffy)

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1.1: Hardware

Learning Objectives

- Discuss the role hardware plays in computing

Computer hardware (usually simply called hardware when a computing context is concerned) is the collection of physical elements that constitutes a computer system. Computer hardware is the physical parts or components of a computer, such as the monitor, mouse, keyboard, computer data storage, hard disk drive (HDD), graphic cards, sound cards, memory, motherboard, and so on, all of which are physical objects that are tangible.

Mainboard

The motherboard is the main component of a computer. It is a large rectangular board with integrated circuitry that connects the other parts of the computer including the CPU, the RAM, the disk drives (CD, DVD, hard disk, or any others) as well as any peripherals connected via the ports or the expansion slots.

Components directly attached to or part of the motherboard include:

- The **CPU** (Central Processing Unit) performs most of the calculations which enable a computer to function, and is sometimes referred to as the "brain" of the computer. It is usually cooled by a heat sink and fan. Most newer CPUs include an on-die Graphics Processing Unit (GPU).
- The **Chipset**, which includes the north bridge, mediates communication between the CPU and the other components of the system, including main memory.
- The **Random-Access Memory** (RAM) stores the code and data that are being actively accessed by the CPU.
- The **Read-Only Memory** (ROM) stores the BIOS that runs when the computer is powered on or otherwise begins execution, a process known as Bootstrapping, or "booting" or "booting up."
- The **BIOS** (Basic Input Output System) includes boot firmware and power management firmware. Newer motherboards use Unified Extensible Firmware Interface (UEFI) instead of BIOS.
- **Buses** connect the CPU to various internal components and to expand cards for graphics and sound.
- The CMOS battery is also attached to the motherboard. This battery is the same as a watch battery or a battery for a remote to a car's central locking system. Most batteries are CR2032, which powers the memory for date and time in the BIOS chip.

Storage

Computer data storage, often called storage, refers to computer components and recording media that retain digital data. Data storage is a core function and fundamental component of computers. The price of solid-state drives (SSD), which store data on flash memory, has dropped a lot in recent years, making them a better choice than ever to add to a computer to make booting up and accessing files faster.

Fixed media

Data is stored by a computer using a variety of media. Hard disk drives are found in virtually all older computers, due to their high capacity and low cost, but solid-state drives are faster and more power efficient, although currently more expensive than hard drives, so are often found in more expensive computers. Some systems may use a disk array controller for greater performance or reliability.

Removable media

To transfer data between computers, a USB flash drive or Optical disc may be used. Their usefulness depends on being readable by other systems; the majority of machines have an optical disk drive, and virtually all have a USB port.

Practice Question

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Input and Output



Input and output devices are typically housed externally to the main computer chassis. The following are either standard or very common to many computer systems.

Input

Input devices allow the user to enter information into the system, or control its operation. Most personal computers have a mouse and keyboard, but laptop systems typically use a touchpad instead of a mouse. Other input devices include webcams, microphones, joysticks, and image scanners.

Output device

Output devices display information in a human readable form. Such devices could include printers, speakers, monitors or a Braille embosser.

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1.2: Inside a Computer

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1.3: Introduction to Operating Systems

What you'll learn to do: determine what operating system you have.

Every computer has an operating system: put simply, this is the system that allows your computer to operate. It is important to know which operating system your computer has because the steps to accomplish various tasks varies between operating systems. Reading directions on how to change the desktop background in Windows 10 may not help you if you are running Windows XP, and those directions will be useless if you are using a Mac. However, nearly all versions of Windows and macOS are capable of doing the same things.

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1.4: Identifying Your Operating System (OS)

Learning Objectives

- Determine what operating system you have.

An operating system (OS) is system software that manages computer hardware and software resources and provides common services for computer programs. Nearly every computer program requires an operating system to function. The two most common operating systems are Microsoft Windows and Apple's macOS. This course's main focus will be Windows 10 and 7.

Although this class will be focusing on Windows 10 and 7, the things you will learn in this module can be done by any version of Windows or macOS. If you are not running Windows 10 or 7, you can find directions online by searching for the task you are trying to do and the name of your operating system. (For example, you might search for "create folder windows vista.")

Windows vs. Mac



Apple logo

To identify your operating system, start by narrowing down which brand of OS you have. Often you can determine whether you are running Windows or macOS without even turning on your computer:

- Is there an Apple logo somewhere on your computer?
- Does your computer have a Command key (⌘) on the keyboard?
- Was your computer purchased at an Apple store?

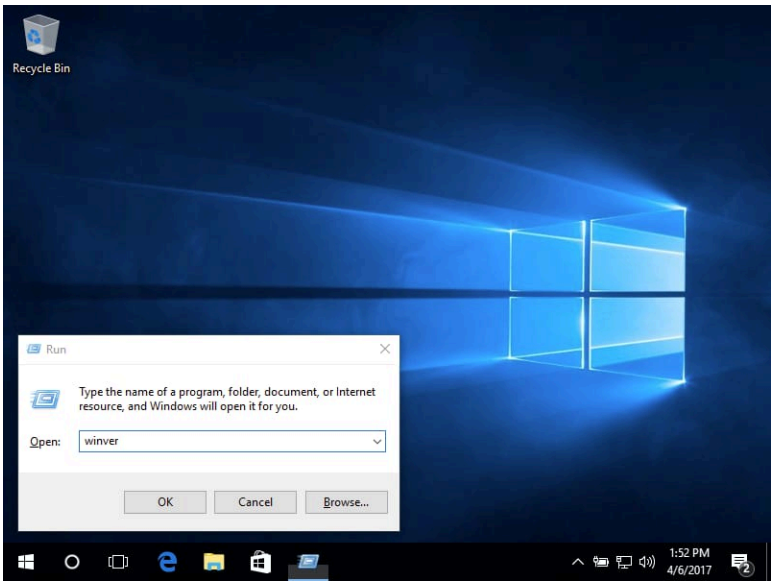
If the answer to any of those questions is *yes*, then you most likely have a computer that runs macOS.

Another good way to see whether you are running Windows or Mac is simply to turn the computer on. As the operating system boots up, it will display a logo. A Windows logo means you are running Windows, while an Apple logo means you are running macOS.

If you have determined that you are running Windows, there are many methods to determine your specific operating system, not all of which are listed here. **It doesn't matter which method you use**; what's important is figuring out which operating system you have. If one method doesn't work, try another.

Method 1

Press the Windows key (at the bottom of the keyboard, looks like four squares) and R key at the same time to open the Run dialog box. Type in "winver."



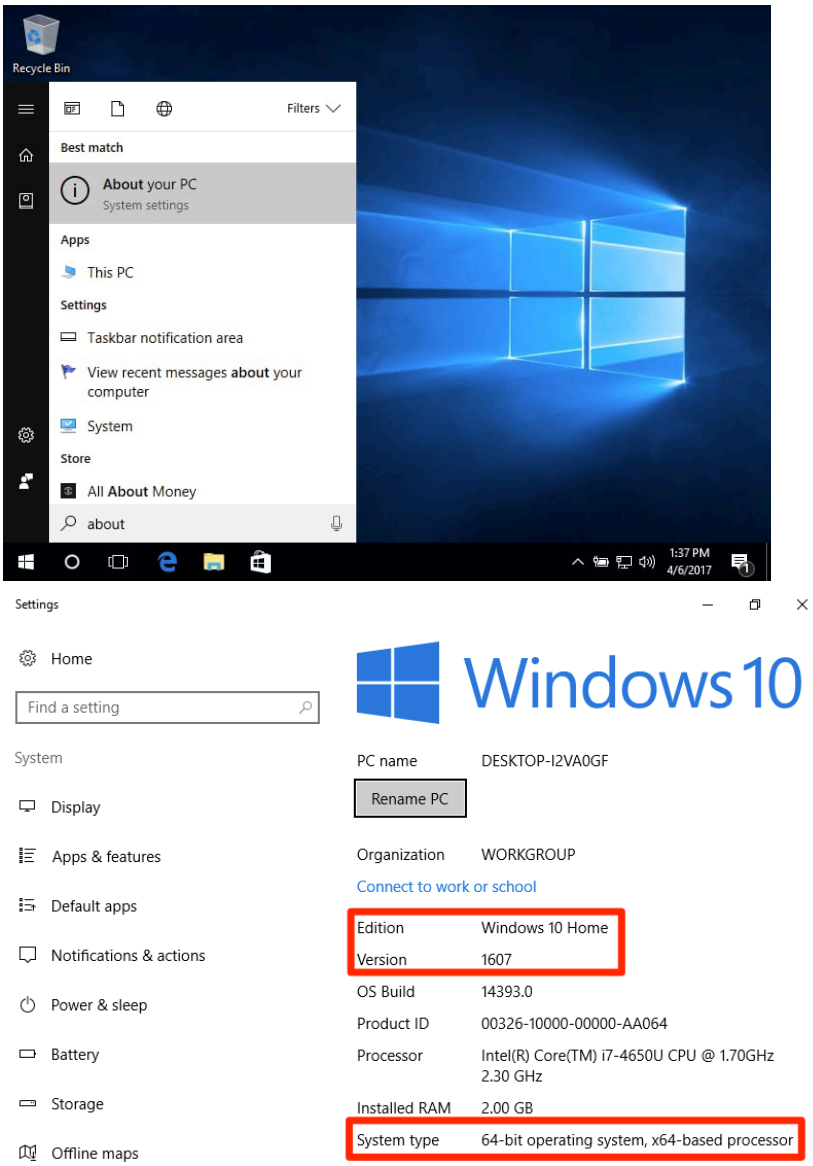
Click OK. A window should open called About Windows that tells you which operating system you are using.



This computer is using Windows 10.

Method 2

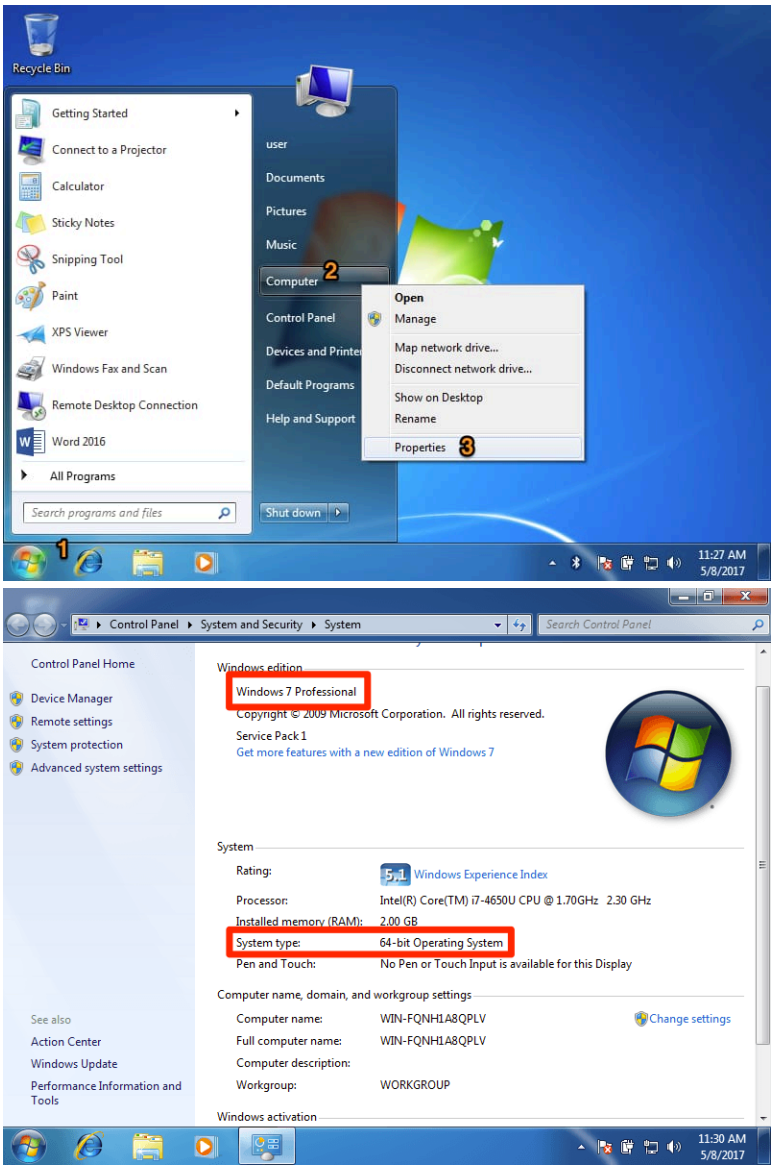
Open the Start menu by clicking the bottom left-hand corner of your screen. If you see a search text box, select it and then type “about” or “about your pc.” If you do not see a search text box, then just start typing “about” or “about your pc.” Select About your PC. If you do not see About your PC, try a different method.



This computer is running Windows 10 Home Version 1607 with a 64-bit operating system.

Method 3

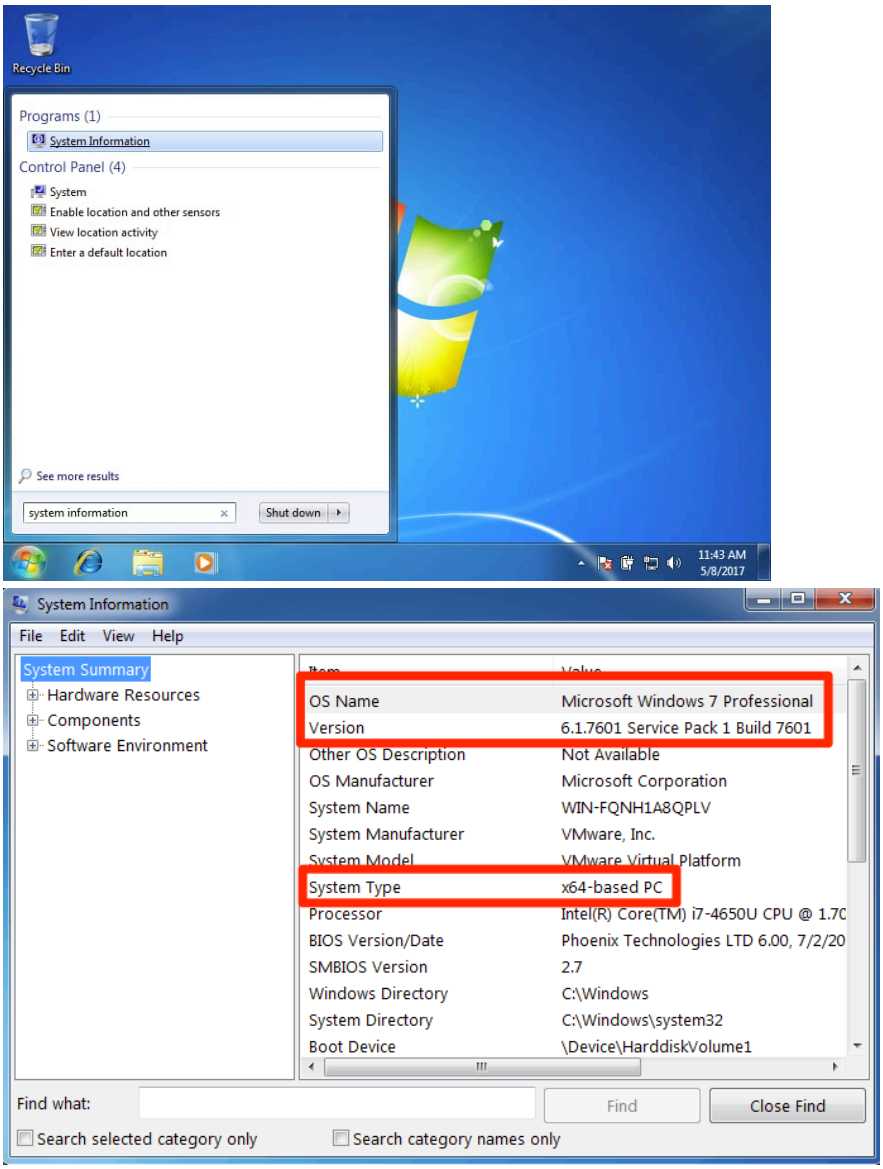
Open the Start menu by clicking the bottom left-hand corner of your screen. Right-click on Computer, then select Properties.



This computer is running Windows 7 Professional with a 64-bit operating system.

Method 4

Open the Start menu by clicking the bottom left-hand corner of your screen.If you see a search text box, select it and then type “System Information” in the search box. If you do not see a search text box, then just start typing “system” or “system information.” Select System Information under Programs. If you do not see System Information, try a different method.



This computer is running Windows 7 Professional with a 64-bit operating system.

Methods 2–4 also provide additional information on your computer that is useful for troubleshooting and determining what programs you will be able to run. For example, many software programs have a version for a x32-based processor and another for a x64-based processor. For the purposes of this course, you only need to know which edition of Windows you have.

Practice Questions

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1.5: GETTING STARTED WITH MICROSOFT WINDOWS

Now that you understand the foundations of computer operations, it is time to begin exploring the user interface and navigation features of Microsoft Windows. Make sure you have connected all the necessary components (keyboard, monitor, mouse, power supply) to your computer case, and press the power button  on your computer and/or monitor to get started. Windows will boot up into the lock screen.

1.5.1: Logging in

1.5.2: Windows Desktop

1.5.3: Windows Start Menu

1.5.4: Windows Taskbar (Tutorialspoint.com, n.d.)

1.5.5: Notification Area

1.5.6: Windows 10 Task View

1.5.7: Checking for Understanding

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1.5.1: Logging in

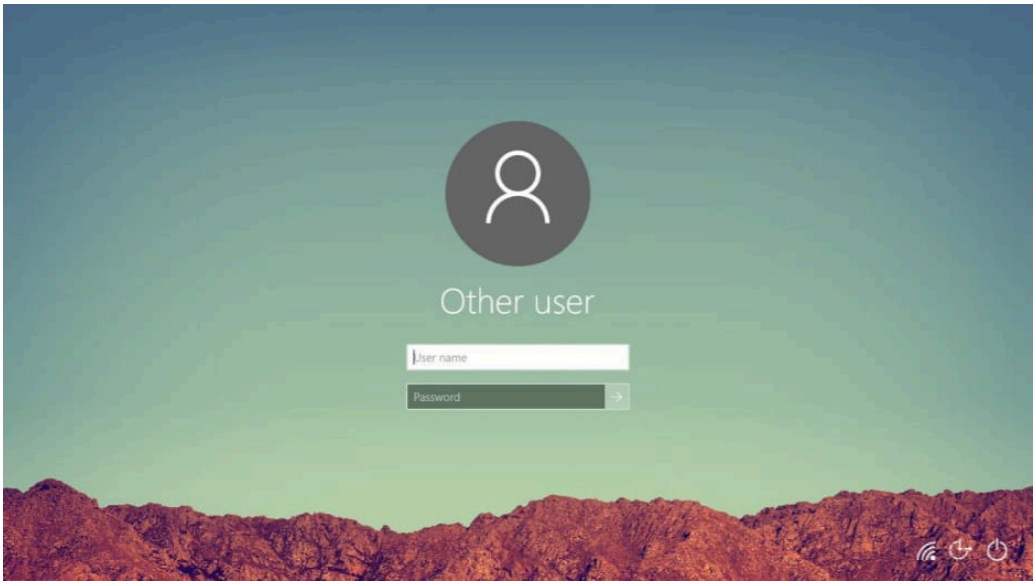


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The lock screen displays the current date, time, and usually and image background. You will learn how to change this later. The lock screen is displayed when the computer first boots or starts up and if you leave your computer unattended for a while. Windows 10 can also be set up to allow multiple users to have their own profile and files on the PC and utilize the lock screen to switch to their account.

To begin the login process, press the Spacebar on the keyboard to continue the login process. If the computer requires a username and/or password, you will be prompted to enter it here. You will learn how to create a password for your account later in Chapter 6 Windows Security. Depending on your computer hardware, windows may permit login passwords based upon a username and password, personal identification numbers (PIN) biometrics like your facial features or fingerprint, or some other password identification (such as a personal password) When you have completed entering your password, please click on the right arrow to complete the login into Windows.

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1.5.2: Windows Desktop



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The Windows 10 desktop is the first workspace available to you after logging in to your computer. When logging in to a computer for the first time, you may see files (information that applications on your computer use to allow you to complete computing tasks), shortcuts, (icons that will send you to the actual file or application) folders, a place to consolidate files or the recycle bin (a folder that contains items you wish to delete). Some users prefer to keep their desktop uncluttered with none or only a few files that they are currently working on to appear, and others place many files in an unorganized fashion on their desktops. You will develop your own organizational systems as you become more comfortable with windows. There is also a keyboard shortcut to allow you to access the Desktop at any time when the computer is powered on. To perform this keyboard shortcut, simply press the Windows Key and the letter “D” on your keyboard at the same time. At the bottom left of the computer, the display is the Windows Start Menu, and the bottom of the computer display is the taskbar which will be discussed next.

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1.5.3: Windows Start Menu



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Please move your mouse cursor over to the bottom left of the computer display and click on the Start button . After clicking on the start button, the start menu will display. The start menu consists of a list of shortcuts to applications that allow the user to run applications on the computer. When the start menu launches, your user account name and optional picture appear at the top. The menu shows a list of often-used programs and other controls on the left, and variously-sized shaded rectangles called tiles on the right. Each tile represents an app, short for an application program. Some titles show updated content using a feature called a live tile the updates the application with relevant information to share with the user. You may categorize these shortcuts by dragging them into different areas and changing the file folder names to suit your preferences. Apps may also be resized if you right-click on the shortcut and select “resize”. You may also “pin” applications you use often to start menu shortcuts area on the right by dragging and dropping them to the start menu shortcuts menu. or by right-clicking, selecting “more” and then “pin to taskbar.

You can click on “All Apps” to display and scroll through all applications on your computer using the slider. Take some time to navigate and explore the start menu. You will find folders and subfolders and applications on this menu along with helpful shortcuts to several applications and navigation menus on your computer to increase your productivity.

You may also “pin” applications in the start menu to the taskbar, the bar on the lower part of the screen. To do so, right-click on the start menu icon, select “more” and “pin to taskbar” The application will now be always displayed on the Windows Taskbar.

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1.5.4: Windows Taskbar (Tutorialspoint.com, n.d.)

The Windows 10 taskbar sits at the bottom of the screen giving the user access to the Start Menu, as well as the icons of frequently used applications. On the right side, the Taskbar features the Notification Area which informs the user of different things like the state of the Internet connection or the charge of the laptop battery



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1.5.5: Notification Area

The Notification Area is located on the right side of the Taskbar. It displays different types of notifications that are pertinent and useful to the user, like the Internet connection status or the volume level.

The default display of the notification area is to list only a few icons. By clicking the upward arrow on its left-side the display will expand to see all other icons. Picture of Windows Notification Area

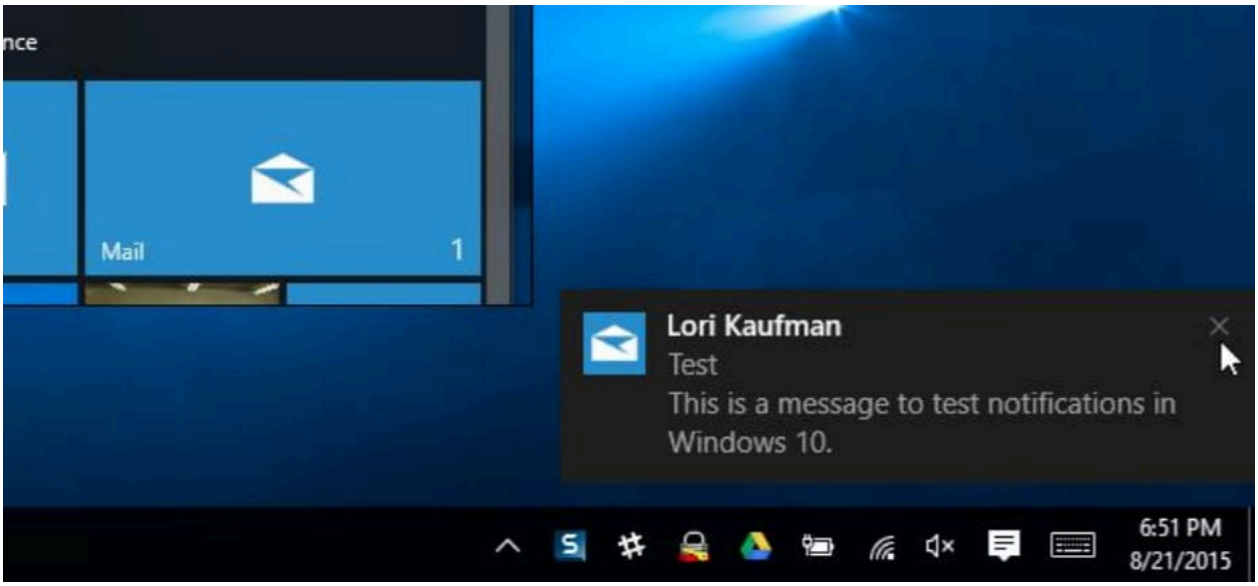


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1.5.6: Windows 10 Task View

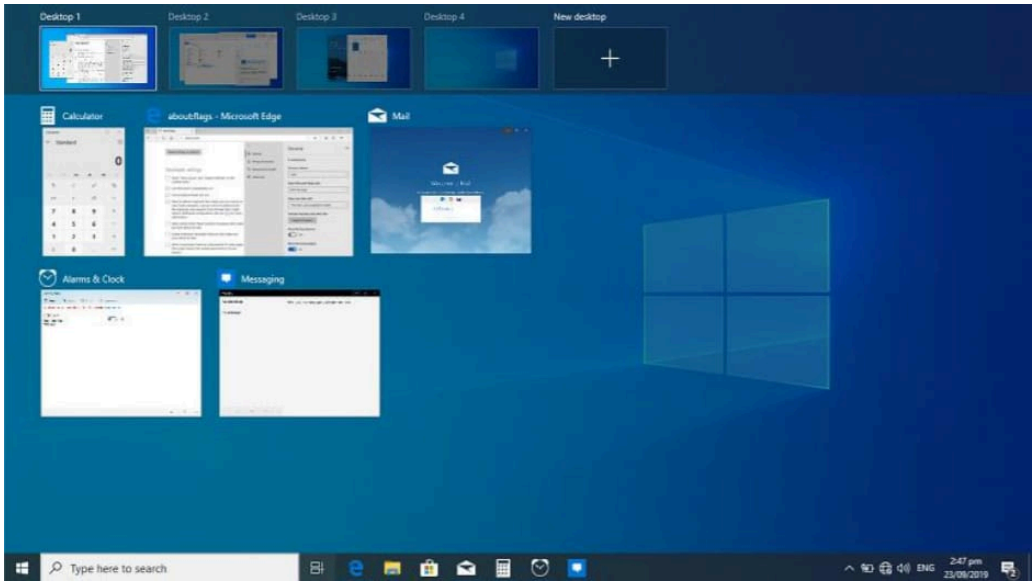


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Windows 10 Task View allows you to quickly move within your open windows and applications and multiple desktops. Users often use Task view to create efficient workspaces to perform groups of tasks. You can access Task View the “Task View” button from the Taskbar. You can also access it by pressing and holding the Windows key, and then press Tab to achieve the same result.

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1.5.7: Checking for Understanding

1. Demonstrate Pinning five (5) applications from the start menu to the start menu shortcuts area and taskbar. Then unpin the same applications.
2. Demonstrate resizing applications on the Windows Start shortcuts menu and moving them around the shortcut's menu.
3. Demonstrate moving shortcuts on the Windows Taskbar.
4. Demonstrate the Windows 10 Task View- create multiple desktops and place applications on that desktop.
5. Demonstrate adjusting the volume control in the Windows notification area.
6. Demonstrate accessing notifications in the Windows notification area.

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1.6: FILE MANAGEMENT - WINDOWS FILE EXPLORER

1.6.1: Windows File Explorer

1.6.2: Ribbon

1.6.3: Organizing Files and Folders

1.6.4: Cut/ Copy/ Paste

1.6.5: Check for Understanding

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1.6.1: Windows File Explorer


File Explorer is an application built into Windows 10 to help the user find, browse, and select folders and files. The main way to access the File Explorer is by clicking the folder icon in the Taskbar. After clicking the icon, the File Explorer window will open.

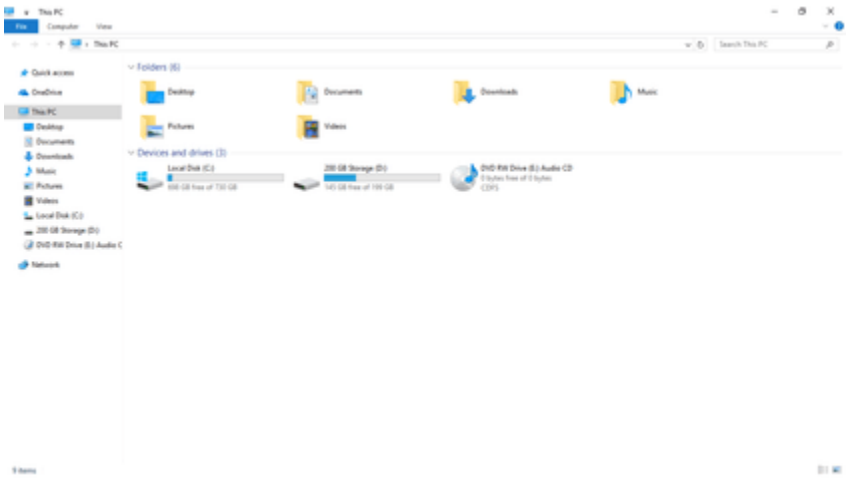


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The initial File Explorer window is comprised of the File Explorer Ribbon, the Navigation Pane, Frequent Folders, and Recent Files.

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1.6.2: Ribbon

In Windows 10, the File Explorer features a new ribbon toolbar, like the one featured in the recent versions of Microsoft Office. This ribbon contains buttons and commands for the most common tasks.

Home Tab of Windows 10 Ribbon

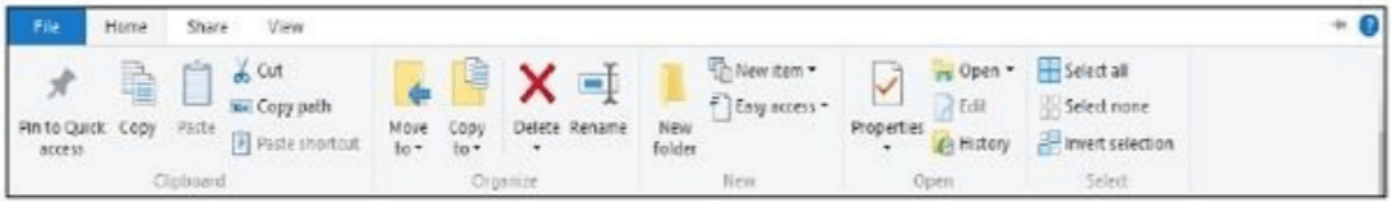


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The Ribbon features four tabs, each with different commands. Among the tasks, you can perform from the Home tab is (Tutorialspoint.com, n.d.) –

- Copying and pasting files and folders from one place to another.
- Moving files and folders to another location.
- Copying files and folders to another location.
- Deleting a file or folder permanently or sending it to the Recycle Bin.
- Renaming a file or folder.
- Creating a new folder or other new items.
- Verifying or modifying the Properties of a document or folder.
- Opening a file or folder.
- Different options to select one or various files and folders.

Share Tab of the Windows 10 Ribbon

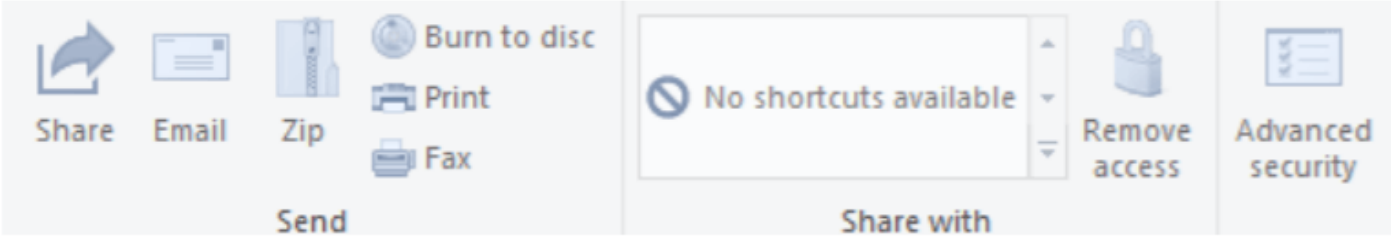


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The Share ribbon gives you different options to share your files and folders. For example: (Tutorialspoint.com, n.d.)

- E-mailing or messaging a file.
- Compressing (“Zip”) a folder to take less space.
- Printing or faxing documents.
- Sharing with other users or networks.

View Tab of the Windows 10 Ribbon

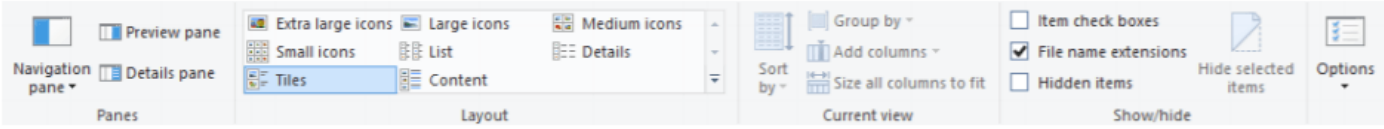


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The View ribbon allows you to change the way Windows displays your files and folders. Some of the changes you can make here are (Tutorialspoint.com, n.d.) –

- Adding additional panes to show a preview or details of your files.
- Changing the layout of the files and folders from icons to list, and others.
- Sorting and arranging the contents of your folder.
- Hiding selected folders or files.

File Tab of the Windows 10 Ribbon



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The File tab opens a menu with different options like

- Opening a new File Explorer window.
- Open command prompt (DOS) advanced users.
- Providing more options to change or configure file explorer.
- Frequent places that will link users to specific file folders that are often used.

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1.6.3: Organizing Files and Folders

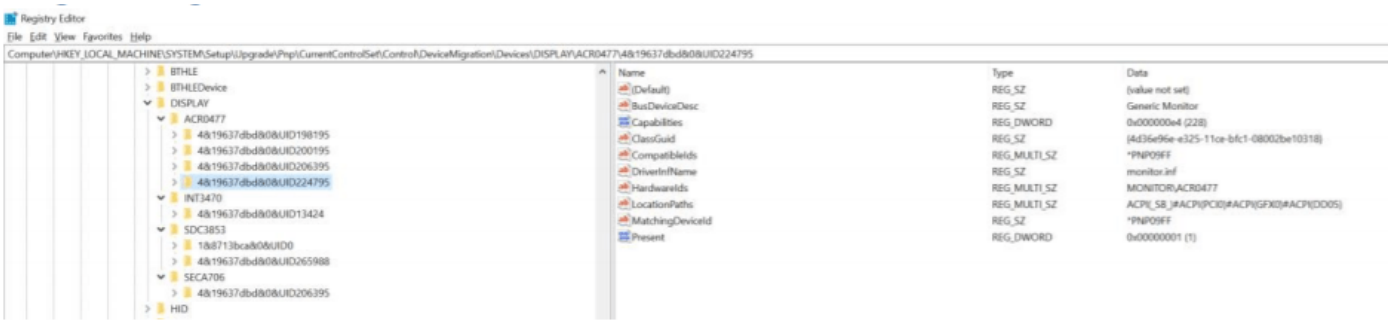


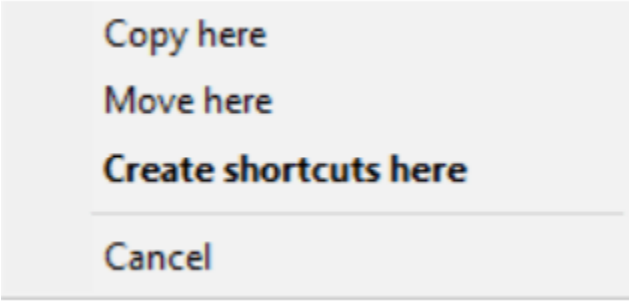
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A common method to organize your files is to place them in folders, which can contain files and other folders. Folders can be stored on multiple locations on your PC. The specific location or address allows your computer to keep track of where each file is located. You may also create a Windows File Explorer window for each folder you are working in. Files and Folders may be moved between folders by clicking on the file/folder and dragging the file/folder to the new location.

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1.6.4: Cut/ Copy/ Paste



One of the most common operations for users is cut, copy, or pasting files & folders. Pasting a file inserts the new file into the new location. Selecting “Cut” to a file will remove it from its current location and paste the file to its new location. The “Copy” command creates a replica of an original file and pastes the file in the selected location. To copy a file, select the file you want to copy and click Copy under the Home tab. In addition, you can copy or move a file without leaving your current location. Under the Home tab within the Organize group, click ‘Copy to’ or ‘Move to’ button, and choose the location if it’s listed, or click the Choose Location button and select the location.

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1.6.5: Check for Understanding

1. Demonstrate the creation of a new folder. Place a folder in that folder. Create another folder in that folder. Rename the Original Folder.
2. Perform the following: create a folder in your “Documents” folder. Drag the new folder into the “Downloads Folder”
3. Cut a newly created folder in the “Downloads folder” and paste it into the “Pictures” folder.

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1.7: COMPUTER BASICS

1.7.1: What is Windows 10?
1.7.2: Mouse Tutorial
1.7.3: How to Use Built-In Help

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1.7.1: What is Windows 10?

https://edu.gcfglobal.org/en/windows10/windows-10-features/1/

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1.7.2: Mouse Tutorial

https://edu.gcfglobal.org/en/mousetutorial/mouse-tutorial/1/

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1.7.3: How to Use Built-In Help

https://edu.gcfglobal.org/en/computerbasics/how-to-use-your-computers-builtin-help/1/

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1.8: Managing Windows

Learning Objectives

- Manage multiple windows

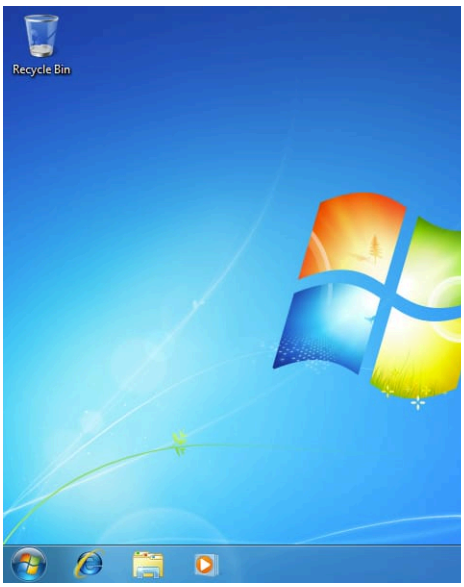
There are several terms that are commonly used in discussions about and instructions for computer use. This guide will define these common terms to help you read instructions.

Desktop

Desktop refers to the main screen of the computer. It is the first screen you see after logging in. The desktop's appearance can vary widely because it is highly customizable, but generally desktops will feature a large image, icons, and a **taskbar** (covered later on this page).



The Windows 10 desktop.

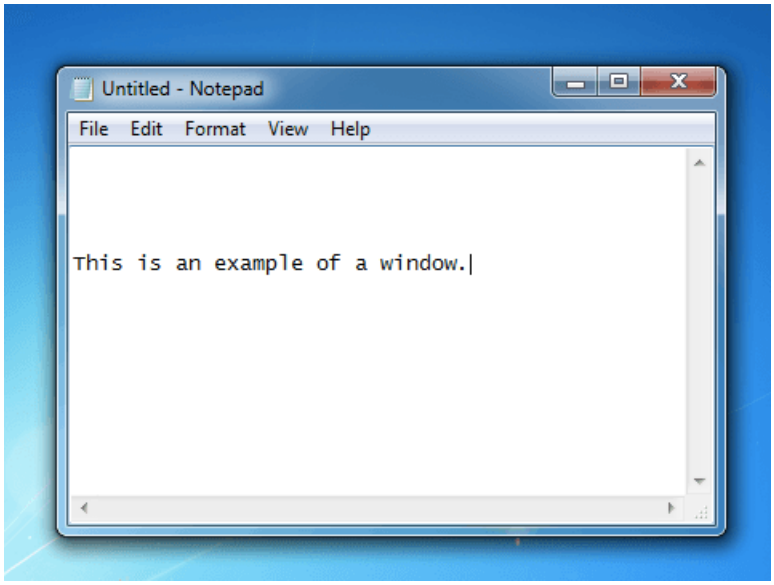


The Windows 7 desktop.

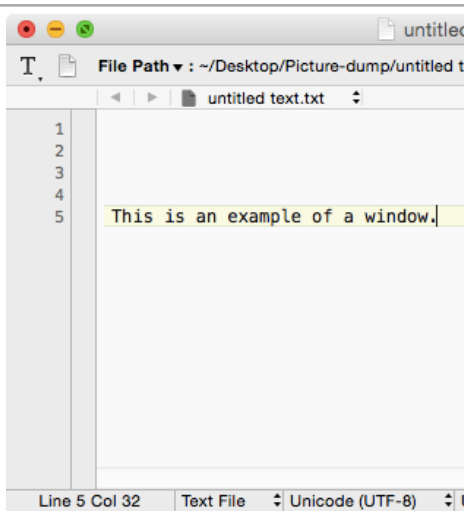
Note that the word *desktop* is also used to refer to a desktop computer. A desktop computer is not portable (it stays on the desk) while a laptop computer is portable.

Window

A window is a viewing area that graphically displays a program so that the user can interact with it. A window is adjustable, so it can take up the entire screen or just part of the screen. Note that this is a different term from the Windows operating system—Macs also have windows.



A Windows 7 window.



A Mac window.

The look of windows varies by operating system and program. Not every program's window will function the same. For example, many programs open in full screen by default, so you will not see any of the window's toolbars or buttons. Most windows have the same features, which we will cover here.

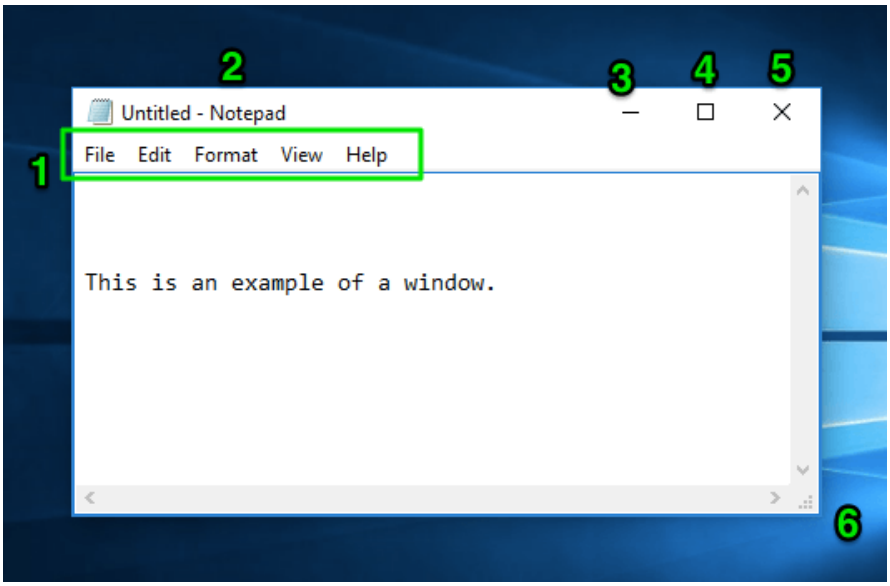
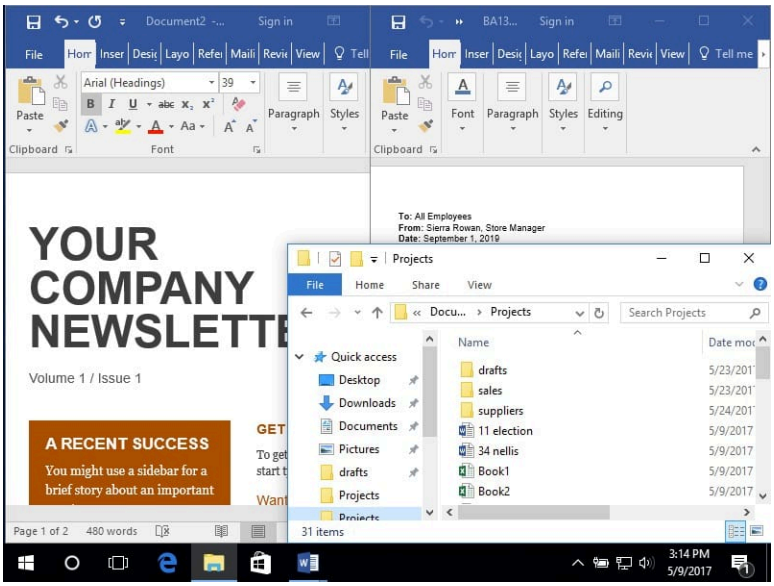


Diagram of a Windows 10 window.

1. **Menu bar.** This toolbar contains various commands that often lead to **dialog menus** (covered later on this page). Windows computers have this bar at the top of windows; Macs have this bar at the top of the screen instead. The options contained in this toolbar vary greatly from program to program.
2. **Title bar.** This shows the title of the program (in this case, Notepad) and has the minimize, maximize/resize, and close buttons. If the window is not maximized, you can click and drag the title bar to move the window.
3. **Minimize.** Minimizing a program means making the program "collapse" into the taskbar. A minimized window is no longer visible but still running.
4. **Maximize/resize.** Clicking this button will maximize the window so it takes up the whole screen. If the window is already maximized, clicking this button will resize the window to be smaller.
5. **Close**. This button closes the window.
6. **Resize corner.** Clicking and dragging this button will change the size of the window.

Working with Multiple Windows: Resizing

Resizing windows can help you see multiple windows at once, as shown below.

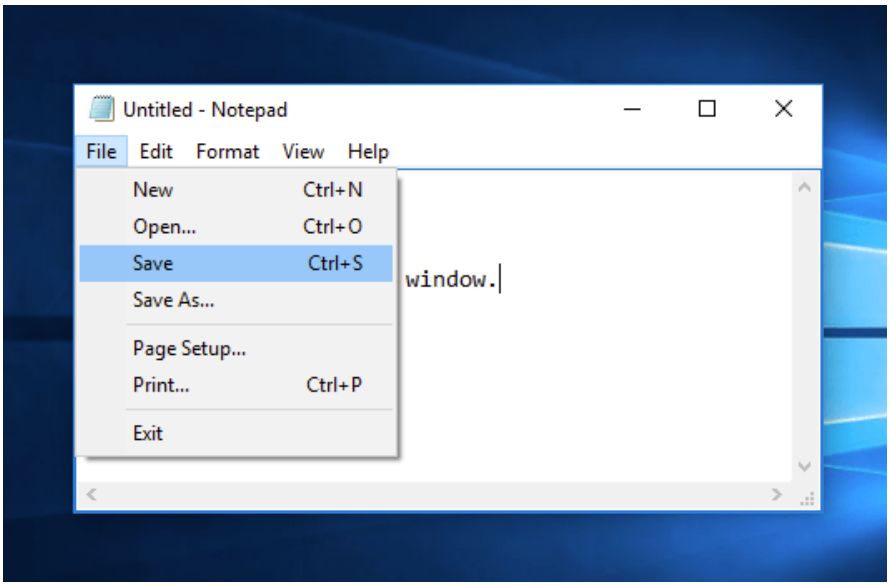


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Menu Bar and Dialog Menus

Clicking an option on the menu bar, such as File, opens a **dialog menu** that gives you more options to interact with the program.



A window with a dialog menu.

Instructions in this course—and elsewhere—will often use shorthand to indicate how to get to a particular command through dialog menus. This shorthand separates phrases that should be clicked with a > symbol. For example, the instructions for the screenshot above would be “File>Save.”

Taskbar

The taskbar runs at one edge of the screen, almost always the bottom. The taskbar is used to access the Start menu and currently running programs. Like the desktop, it is very customizable.



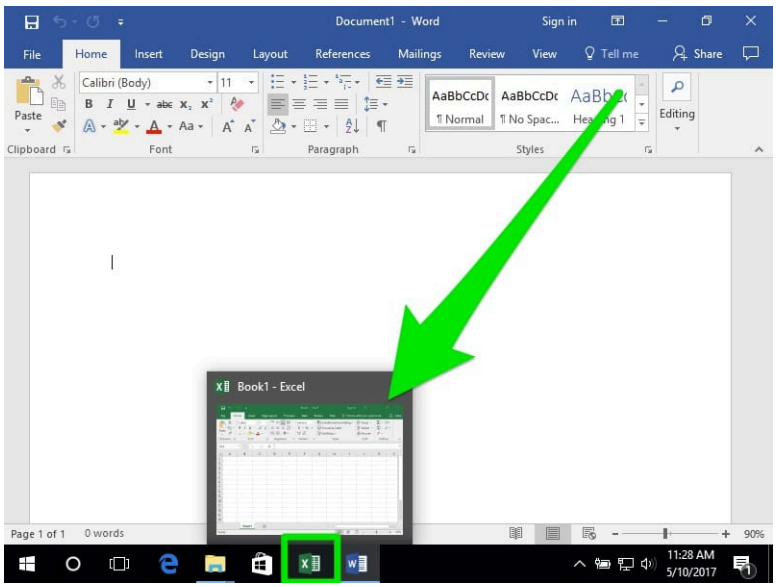
Windows 10 taskbar

1. **Start menu button.** The appearance of the Start button varies between versions, but it is always the left-most button of the taskbar. The Start menu can also be opened by pressing the Windows key ( ) on the keyboard.
2. **Pinned programs.** Programs can be pinned to the taskbar so that they are quicker to get to: you can open a pinned program simply by clicking on it. You can customize which programs are pinned to the taskbar by opening a program, then right-clicking on the program's taskbar icon and selecting "Pin to Taskbar." You can also unpin pinned programs by right-clicking the program's icon and selecting "Unpin from Taskbar."
3. **Open (minimized) program**. The icons of open programs will appear to the right of the pinned programs. In Windows 10, the blue line beneath the icon indicates the program is minimized.
4. **System tray**. The system tray is on the right side of the taskbar. It displays the date and time and has icons that show helpful information related to computer and program functions. The icons in the system tray vary widely from computer to computer depending on what programs are installed and what version of Windows you have, so do not worry if your system tray does not match the screenshots in this course or your classmates' system trays. In the screenshot above, from left to right in the system tray:
    - *Arrow*. When clicked expands to show more system tray icons
    - *Battery*. This is a feature of laptop computers. Hover over the battery icon to see how much charge is left.
    - *Network*. This icon shows the status of your internet connection. In the screenshot above, the computer is connected to the internet with a cable; wireless connection icons often look like a fan or a bar chart.
    - *Sound*. Clicking on the sound icon in the system tray allows you to change the volume or mute your computer.
    - *Date/time*.
    - *Notification center*. When your computer needs updates or has security notifications, those messages can be accessed here.
    - *Show desktop*. At the very far right side of the taskbar is a thin line. Clicking the sliver of the taskbar between that line and the edge of your screen will minimize all programs. Hovering the mouse over that sliver of screen will allow you to "peek" at the desktop.

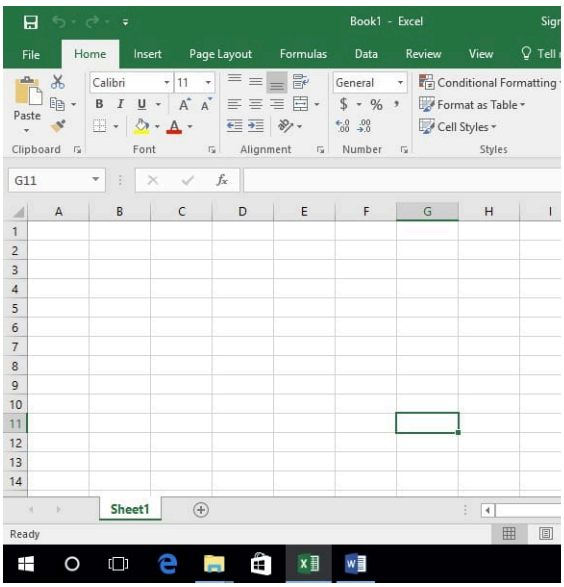
Note that Macs do not have a taskbar, but they do have a similar feature called the Dock.

Working with Multiple Windows: Taskbar

The taskbar can be very useful for multitasking. By clicking between the icons of two open windows on the taskbar, you can work in two different documents or programs at once. Move your mouse over an icon to have a preview of the other window, then click on it to switch.



Hover to preview the program.



Click the icon on the taskbar to switch.

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1.9: Keyboard Shortcuts

Learning Objectives

- Use keyboard shortcuts to perform tasks

A keyboard shortcut is a series of keys you can press to complete a computer command. As a common convention, keys that are meant to be pressed at the same time are joined by a + in written text. For example, Ctrl+S means you should press the Ctrl and S keys at the same time.

There are many, *many* keyboard shortcuts. However, you will probably only need to use a few. We will use many of these shortcuts throughout the course.

Most Commonly Used Shortcuts

These are a few of the most common shortcuts that you'll use as you navigate your computer. There are both Windows and Mac shortcuts listed. Note that Ctrl stands for the control key, and Cmnd stands for the command key.

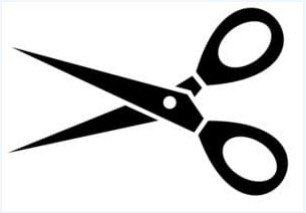
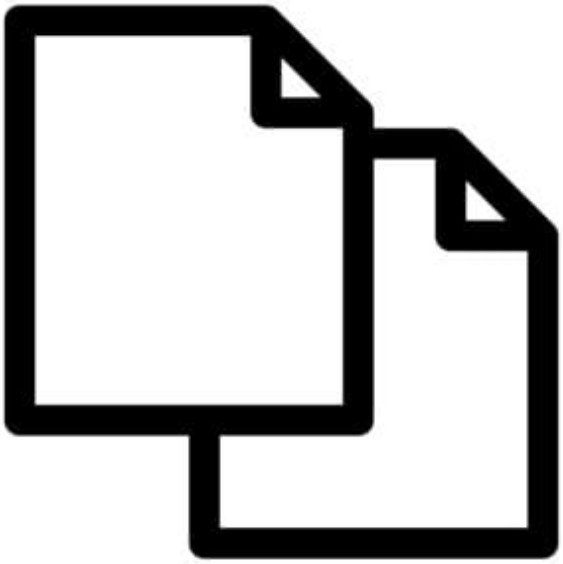
Table 1. Common Keyboard Shortcuts

Command	Windows Shortcut	Mac Shortcut	Explanation
Cut	Ctrl+X	Cmnd+X	Copies and removes an item or text; used with Paste
Copy	Ctrl+C	Cmnd+C	Copies an item or text; used with Paste
Paste	Ctrl+V	Cmnd+V	Inserts the last cut or copied item or text
Select All	Ctrl+A	Cmnd+A	Selects all text or items
Undo	Ctrl+Z	Cmnd+Z	Undoes the last action
Redo	Ctrl+Y	Cmnd+Y	Redoes the last thing undone
Task Manager/ Force Quit	Ctrl+Alt+Delete	Cmnd+Opt+Esc	Opens Task Manager (see note)
Close window	Alt+F4	Cmnd+W	Closes window; (in Windows, this command shuts down computer if all windows are closed)
New	Ctrl+N	Cmnd+N	Opens a new window, tab, or document
Open	Ctrl+O	Cmnd+O	Opens a file or document
Save	Ctrl+S	Cmnd+S	Saves a file
Find	Ctrl+F	Cmnd+F	Opens search tools; in most programs, opens a search box to find specific words on a page

Practice Question

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Note: Cut vs. Copy

Cut	Copy
	
	

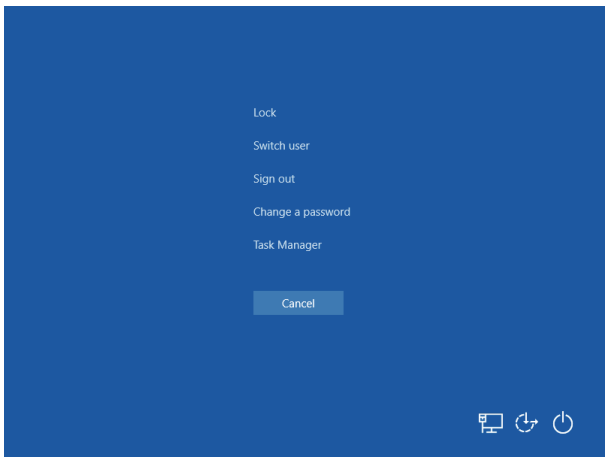
Cutting and copying can be used on files, folders, and text. Both are followed by the Paste command. So what's the difference between cutting and copying?

The **cut** command removes the selected data from its original position, while the **copy** command creates a duplicate; in both cases the selected data is kept in a temporary storage tool called the **clipboard**. The data in the clipboard is later inserted in the position where the **paste** command is issued. The data is available to any application supporting the feature, thus allowing easy data transfer between applications.

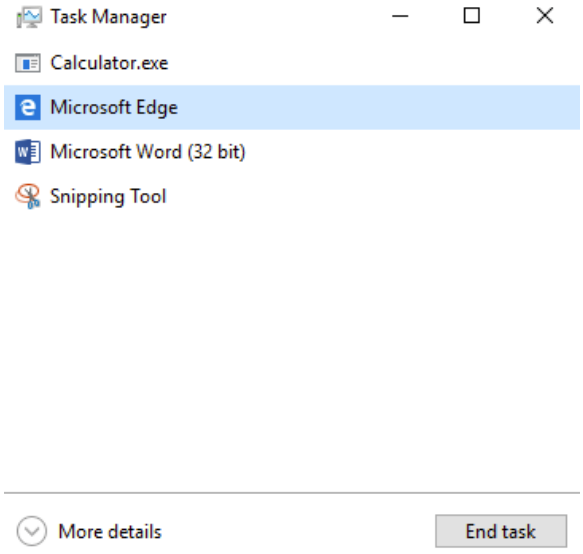
Think of using scissors to cut out a line of text on a printed sheet of paper and pasting it onto another sheet of paper. The line is no longer part of the original piece of paper when you cut it out. Now think of using a copy machine to copy the sheet of paper. The line of text is still on the original sheet of paper.

Note: Task Manager/Force Quit

Task Manager/Force Quit (**Ctrl+Alt+Delete** or **Command+Option+Esc**) is a useful tool for terminating crashed programs or shutting down a frozen computer. Task Manager interrupts whatever your computer is doing and allows you to shut down your computer or access the Task Manager. The Task Manager shows every program currently being used and allows you to close unresponsive programs or background tasks.



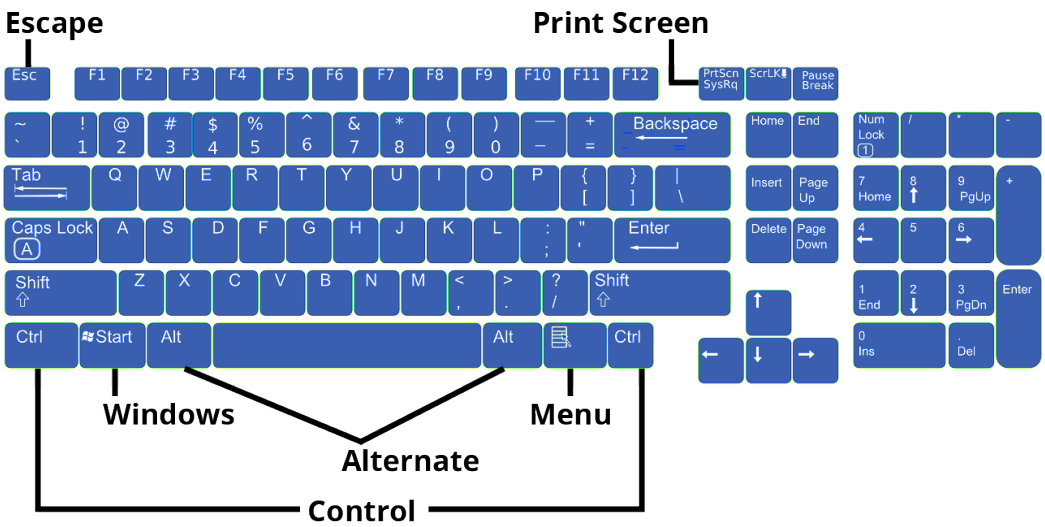
The Windows 10 Ctrl+Alt+Delete screen. (Click the image to enlarge.)



Windows 10 Task Manager. To close a program, select the program then click End task.

Overview of Keys

Below is a diagram of the keyboard with some keys labeled. Do not be worried if your keyboard does not match the diagram or does not have exactly the same keys.



Control Key

The **control key**, or Ctrl key, is essential to many common shortcuts. It does not do anything when pressed by itself, but when pressed at the same time as other keys, it can modify the other key's function.

Note: The Command Key

If you're using a computer with Mac OS, you'll most likely have a Command (Cmnd) key instead of a Ctrl key. In most keyboard shortcuts, command will replace Ctrl (for example, on a Windows machine **Ctrl+C** copies, and on a Mac machine, Cmnd+C

copies).

There is also a control key on some Mac machines, but its function is entirely different. For now, you won't need to worry about it.

Alt Key

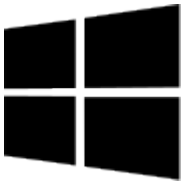
The **alt key**, or alternate key, triggers an alternate use for keys. For example, many special characters (characters not commonly found on the keyboard, such as ¿ or ¢) are available when pressing Alt and the right series of numbers. Like the control key, the alt key is also essential to many common shortcuts.

Note: The Option Key

If you're using a computer with Mac OS, you'll most likely have an Option (Opt) key instead of a Alt key. In some keyboard shortcuts, Opt will replace Alt, but the two are less directly related.

Windows Key

The **Windows key** (also known as Win key, start key, or home) causes the start menu to open. The logo may vary slightly from the design in the diagram above. If the Windows key is missing, Ctrl+Esc can serve the same function.

 This logo was used from 2012 to the present.	 This logo was used 2002–2012.

Menu Key

The **menu key**, or application key, is usually represented by a small icon depicting a pointer hovering above a menu. It is typically found on the right side of the keyboard between the right Windows logo key and the right control key (or between the right alt key and the right control key). The menu key is frequently omitted in the interest of space, particularly on portable and laptop keyboards. The key's primary function is to launch a context menu with the keyboard rather than with the usual right-mouse button. It can be used when the right-mouse button is not present on a mouse.

Escape Key

The **escape key**, or Esc, is at the top-left corner of the keyboard. It can be used as a shortcut in dialog boxes to close programs.

Print Screen Key

The **print screen key**, or **Prt Sc** key, is used for taking screenshots. Pressing Prt Sc will take a snapshot of the entire screen, and pressing Prt Sc+Alt will take a snapshot of just the currently selected window. The default save location of screenshots taken is C:\Users\<user name>\Pictures\Screenshots.

Note: Print Screen on a Mac

If you're using a computer with Mac OS, you most likely won't have a print screen key. Instead, you can use one of the following shortcuts:

- **Cmnd+Shift+3** will take a screenshot of your full screen

- **Cmnd+Shift+4** will bring up a crosshair and let you drag to select a portion of your screen to screenshot

Practice Question

https://assessments.lumenlearning.co...essments/18547

More Shortcuts (If You Really Want Them)

For a full list of Windows shortcuts, consult Microsoft's list of shortcuts.

For a full list of Mac shortcuts, consult Apple's list of shortcuts.

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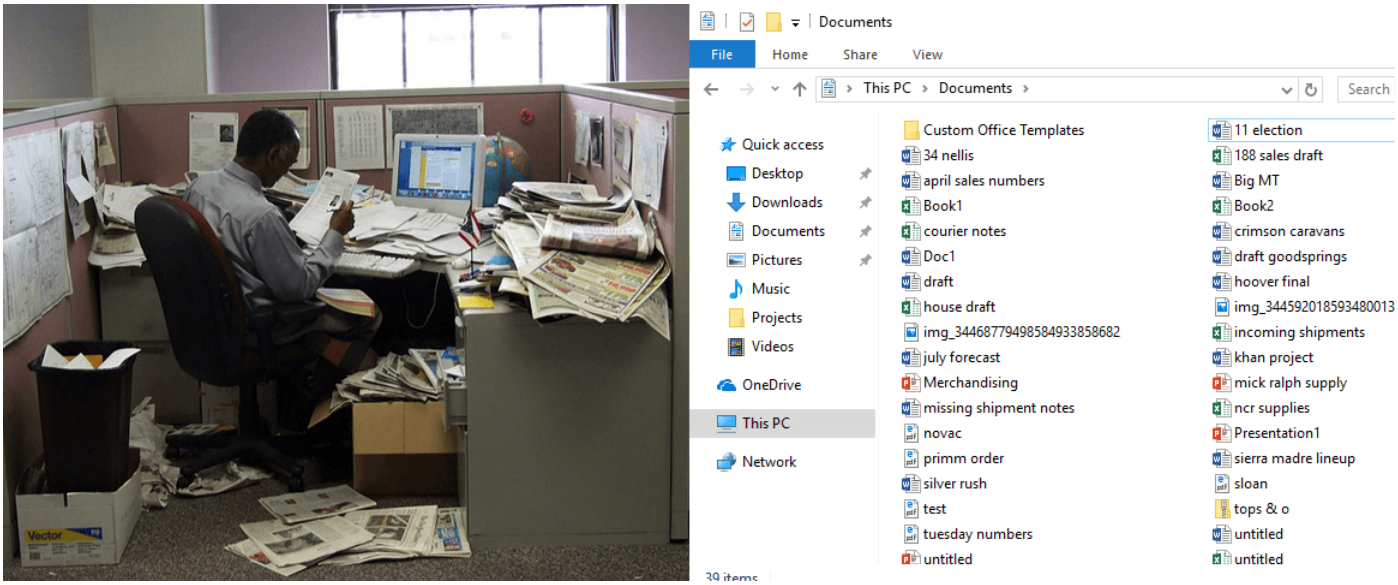
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1.10: Introduction to Finding Programs and Files

What you'll learn to do: locate and manage files and folders.

As you use your computer to create and download files, it's easy to become buried in a sea of tiny icons with vague names. Just as it is important to organize papers so that you can find them later, it is important to organize your computer files by creating folders and putting files inside of them.



Failing to organizing your files makes it harder to find them later.

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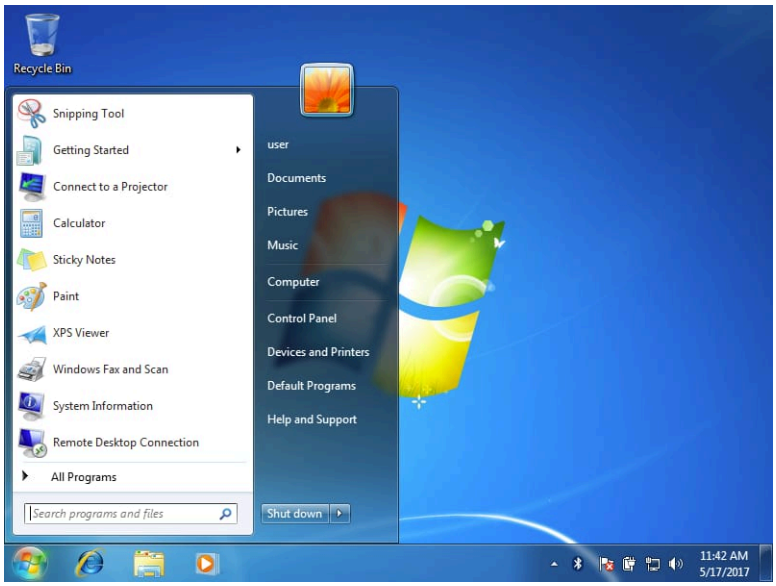
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1.11: Start Menu

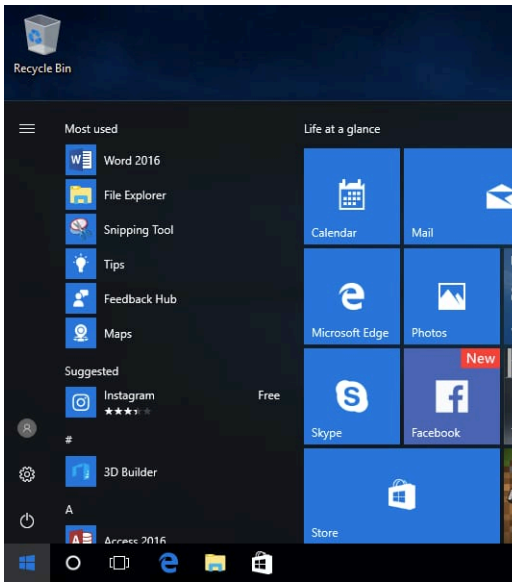
Learning Objectives

- Navigate the Start menu to locate programs, files, and settings.

The Start menu provides access to every program installed on the computer. To open the Start menu, click the the Start menu button at the bottom-left corner of the screen or press the Windows key on the keyboard.



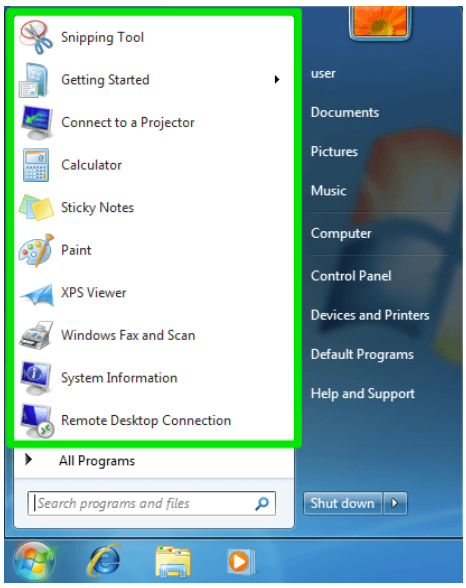
Windows 7 start menu



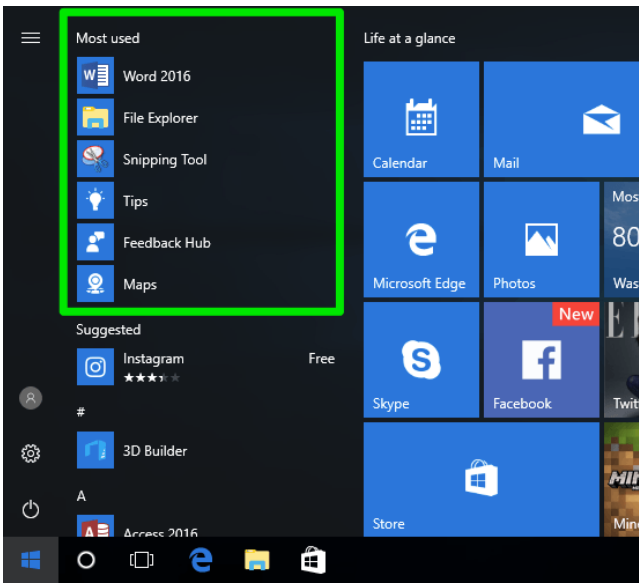
Windows 10 start menu

Frequently Used Programs

In Windows 7 and older operating systems, the most frequently used programs are listed in the left section of the Start menu, with the folder All Programs near the bottom-left corner. The All Programs folder leads to every program installed on the computer. Windows 10 does not have the All Programs folder, but instead lists all programs on the left section of the start menu, with the most used at the top.



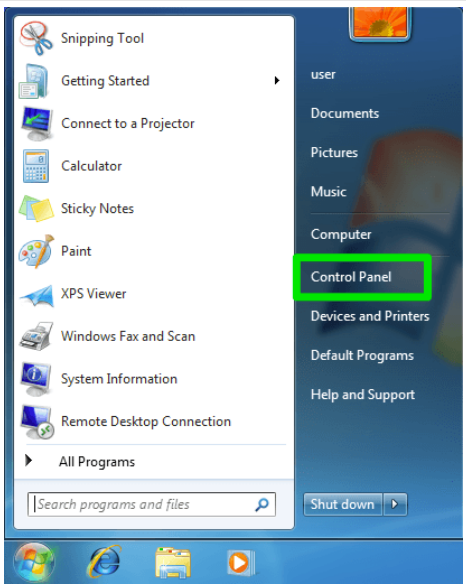
Windows 7 frequently used programs



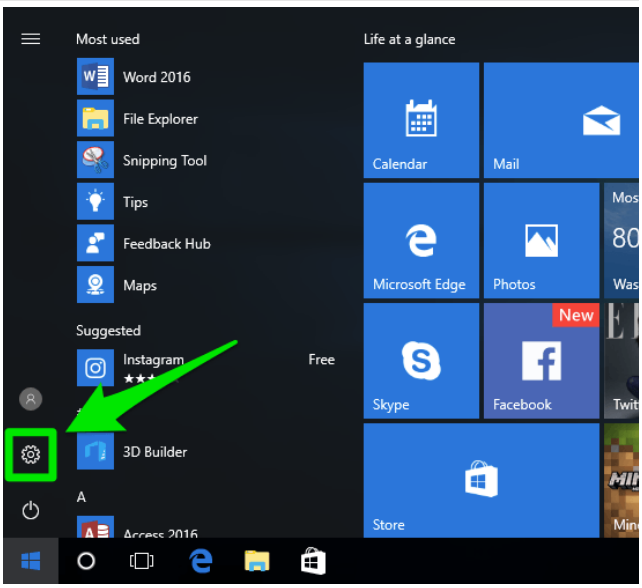
Windows 10 frequently used programs

Control Panel

The Start menu also provides access to Control Panel, a settings program that allows you to change the computer's settings. In Windows 7 and older, Control Panel is labeled Control Panel on the right section of the Start menu, while in Windows 10 it is represented by a gear icon on the left above the Start button.

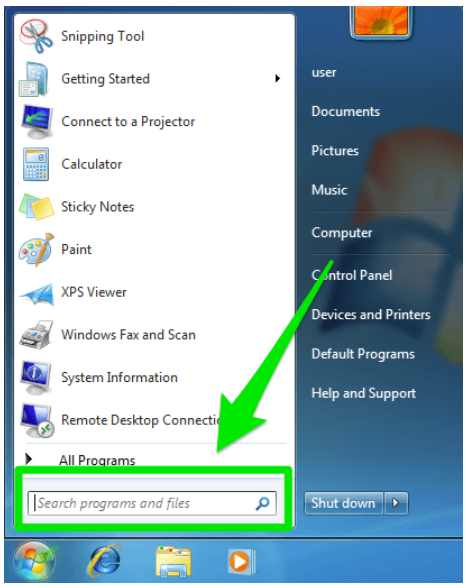


Windows 7

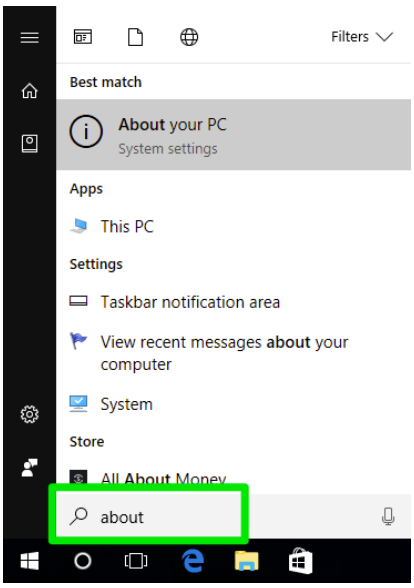


Windows 10

The Start menu also provides a search text box or search button. Press the search button or type a word in the search box to search the computer for a program or file. (In Windows 10, the search box is not visible, but typing will trigger a search for what is being typed.)



Windows 7 search



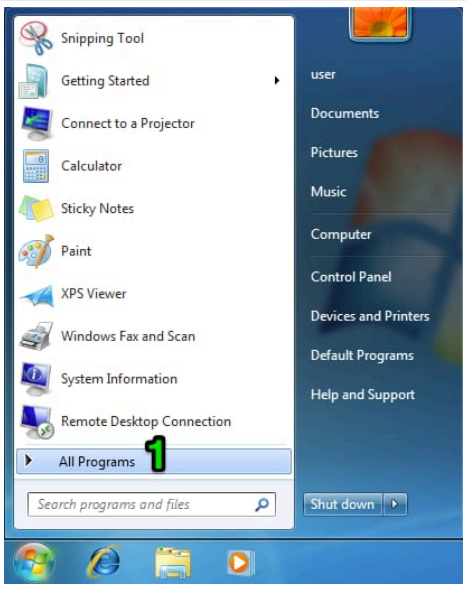
Windows 10 search

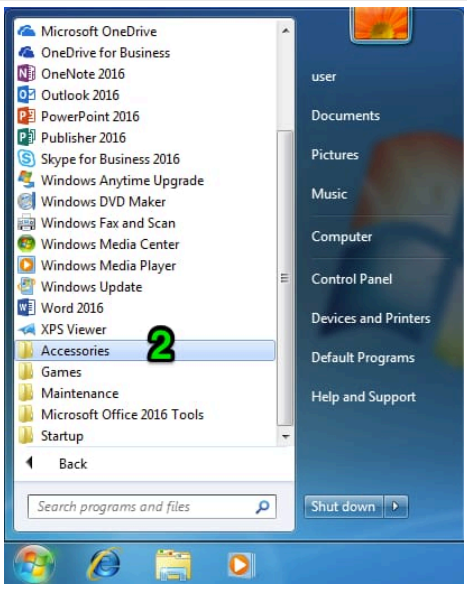
Practice Question

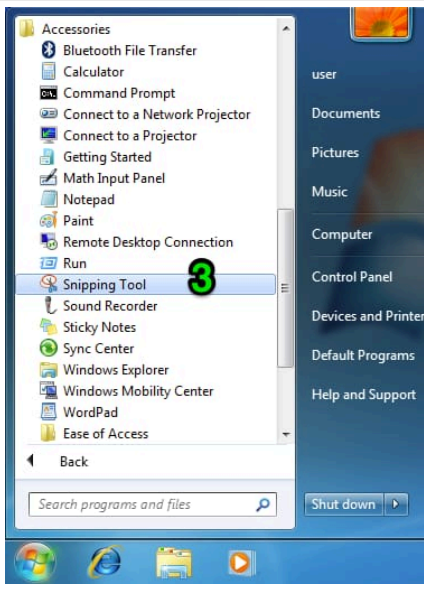
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Open a Program

Like dialog menus, the Start menu also can use the > shorthand in instructions for navigating. For example, in Windows 7, the snipping tool is at Start>All Programs>Accessories.



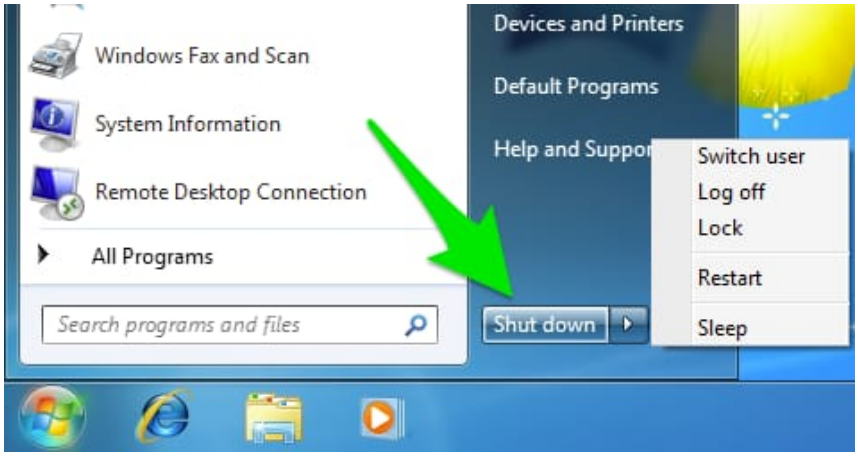




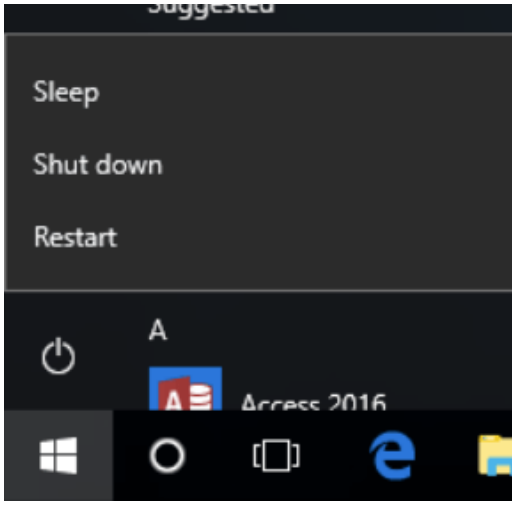
Shutting Down

You can also use the Start menu to turn your computer off. In Windows 7 and older, the power button is usually marked Shut Down near the right corner of the Start menu. In Windows 7, clicking the arrow to the right of the Shut Down button gives you additional

options. In Windows 10, the power button is a power icon located on the left directly above the Start menu button. Clicking it will also provide additional options.



Windows 7



Windows 10

A Look at Some Shut Down Options

Not every shut down option is available on every version of Windows, but here are some common shut down options and what they mean.

- **Switch user:** Switch between user accounts.
- **Log off:** Logs you out of the computer. The computer is still on, but programs are closed and you must enter your password to use the computer again.
- **Lock:** Locks the computer. You will not be logged out, and programs will still be running, but you must enter your password to use the computer again.
- **Restart:** Logs you out of the computer, closes all programs, shuts down Windows, turns the computer off, then turns the computer back on and restarts Windows. You will have to enter your password to use the computer again.
- **Shut down:** Logs you out of the computer, closes all programs, shuts down Windows, and turns the computer off.
- **Sleep:** This is sort of like pausing the computer. The screen will go dark, and you will be unable to use the computer until you wake it up by shaking the mouse or pressing a key on the keyboard. The computer will appear to be off. However, what is actually happening is that the computer will go into a low-power state. It will still be on, and programs will still be running, but the computer will use considerably less power. This is useful because waking the computer from sleep is much quicker than waiting for the computer to turn on and boot up Windows. By default, shutting your laptop lid will put the computer to sleep, and reopening the lid will wake the computer up.

Note about Windows 8

Windows 8 has a Start screen rather than a Start menu because Windows 8 was designed primarily for tablets. You can find instructions on navigating the Windows 8 start screen here.

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1.12: Creating Files and Folders

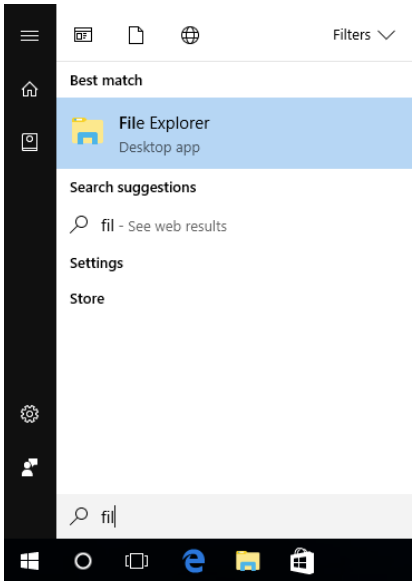
Learning Objectives

- Create files and folders.

File Explorer

In Windows, the primary way of interacting with files and folders is through the File Explorer application. (In older versions of Windows, this may be called Windows Explorer. In Macs, the equivalent would be Finder.)

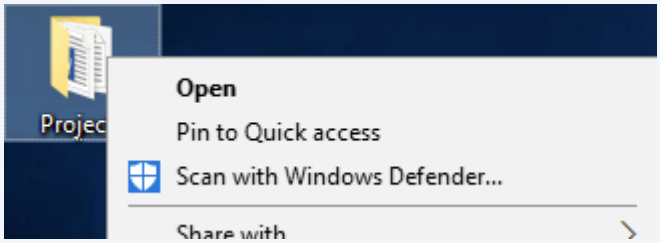
There are a couple of ways to open File Explorer. The shortcut Win+E will open File Explorer. It can also be opened by clicking the Start button and typing “File Explorer” or by right-clicking any folder and selecting Open. By default, File Explorer is pinned to the task bar (see below), and it can be opened from there.



Open the Start menu and type “File Explorer.”



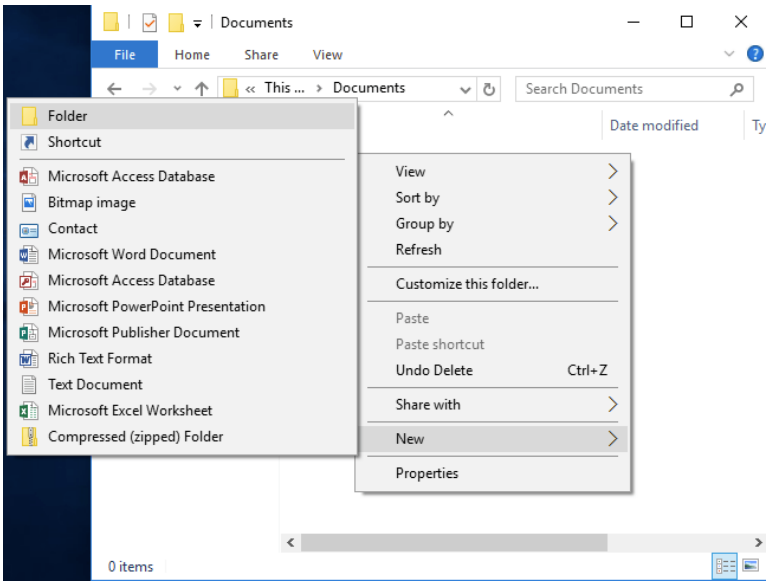
Find File Explorer pinned to the taskbar.



Right-click a folder and select Open.

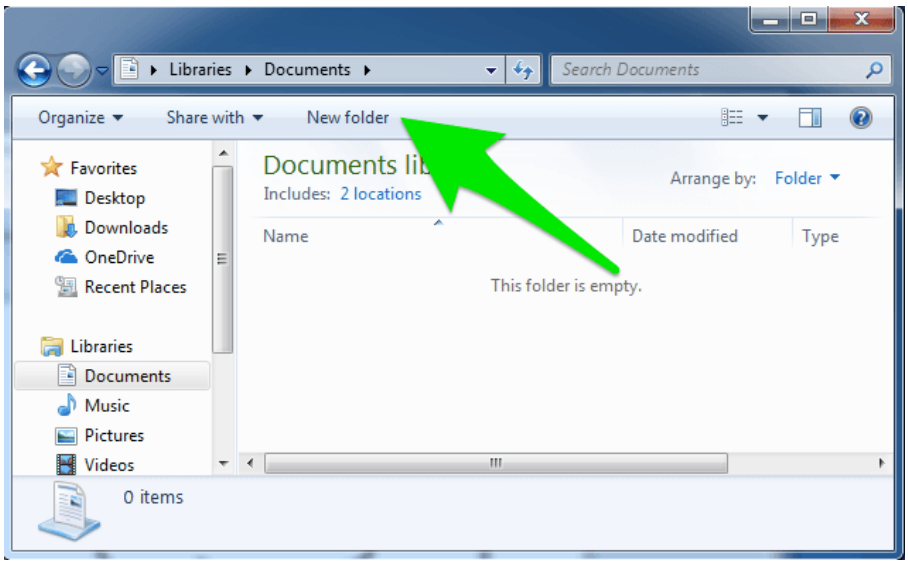
Some folders already exist in File Explorer, such as Documents, Desktop, and Downloads. (Documents may be called “My Documents” in older versions of Windows). You can create more folders or folders within folders to allow for better organization.

To create a folder, right-click, then select New>Folder.

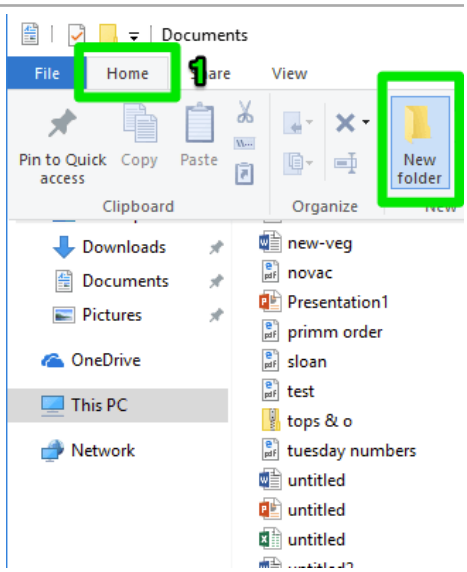


Right-click in File Explorer, then select New>Folder.

In Windows 7, there is a New folder button near the top of the window. In Windows 10, you can also click the Home tab, then the New Folder button.



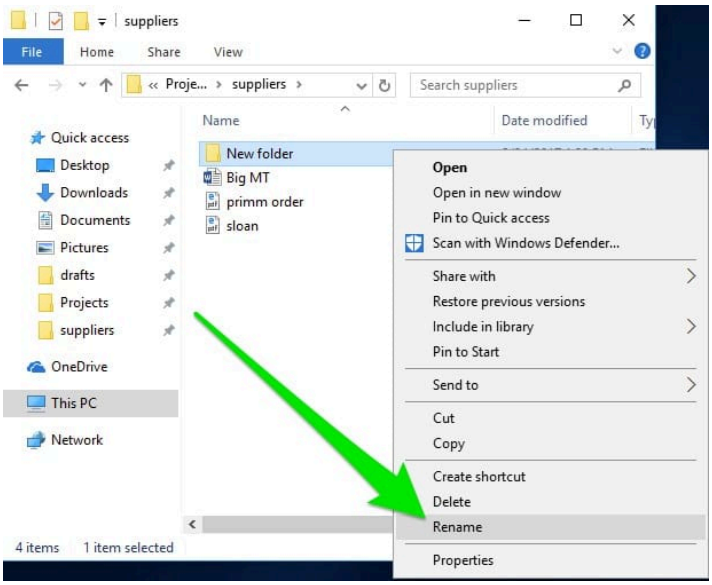
Windows 7 New folder button



Windows 10 New folder button

Renaming Files

To rename a file or folder, right-click the file or folder, then select Rename.



You can also click the name of the file or folder once, wait one second, then click the name of the file or folder again.

Note that in Windows, a file cannot contain any of the following characters: `\ / : * ? " < > |`. This is because those characters have special meaning in Windows. (For example \ is included in file paths.) If Windows encounters a file or folder with those symbols, it could potentially misread the file or folder name and cause problems. As a precaution, Windows will not let you save files or folders with those characters, so don't worry about saving a file with those characters in the name by mistake.

Macs are less stringent about what characters can be included in a file or folder's name; only the colon (:) cannot be used. However, it is a good practice to avoid using the Windows-prohibited characters in file names because the file name will be automatically changed when moved to a Windows computer.

Practice Question

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1.13: Organizing Files and Folders

Learning Objectives

- Organize files and folders.

Finding a Specific Folder or File: File Paths

When looking for a specific folder or file, it is helpful to follow the **file path**. The file path tells you what folders to click on to get to the file. Read it left to right to show what folders to click on to get to the file; read it right to left to show which folders are nested in each folder.

For example:

C:\Users\Sierra Rowan\Documents\Projects\suppliers

This file path means that the file is in the suppliers folder, which is in the Projects folder, which is in the Documents folder, which is in the Sierra Rowan username folder, which is in the Users folder, which is on the C drive of the computer.

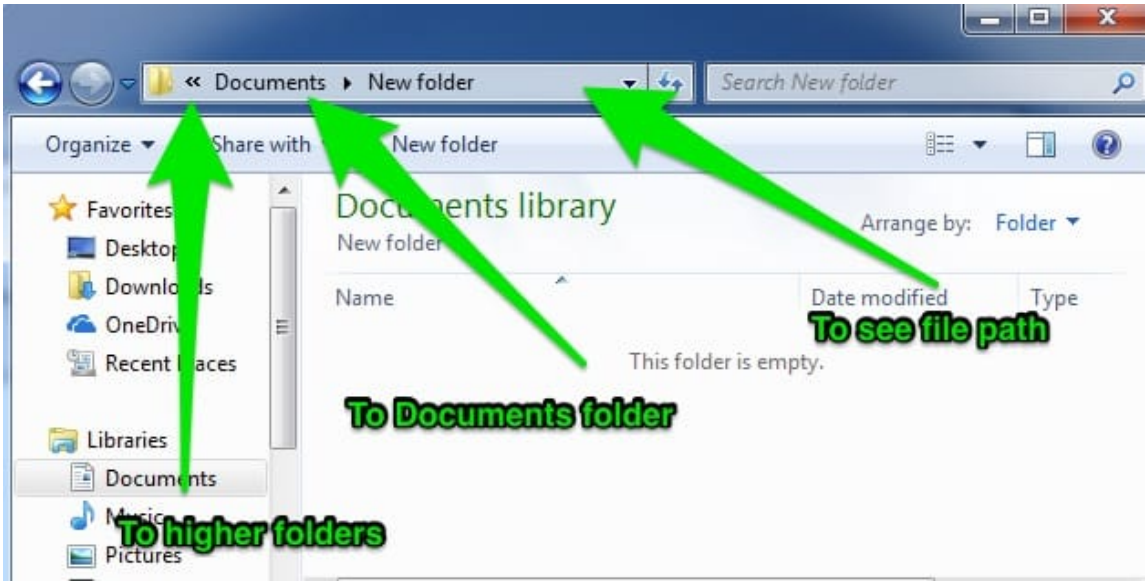
Note that the backslash is another shorthand format you might see in instructions to indicate which folder is being discussed. (For example, “Go to the Documents\Office Templates folder”)

Traveling the File Path

Rather than remembering the file path for a specific file, you can use the toolbar at the top of File Explorer or the Properties window.

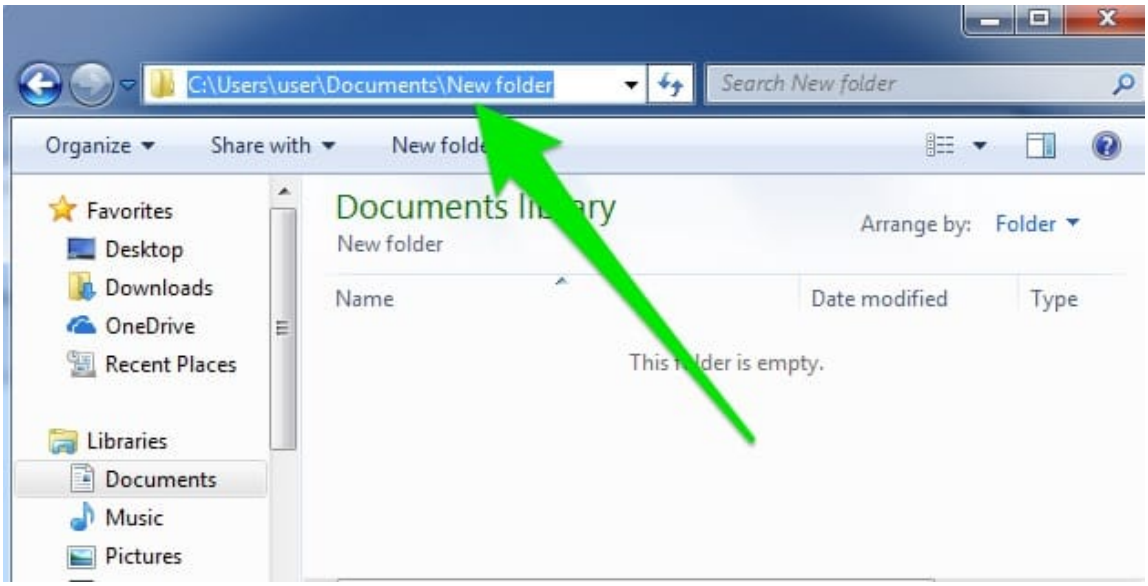
Toolbar Method

For example, the screenshot below shows a folder in Windows 7 called New folder. The file path for this folder is C:\Users\user\Documents\New folder. In the screenshot below, the user could click Documents to go up one folder to the Documents folder, and the small double-arrow on the left to go up to higher folders such as user.



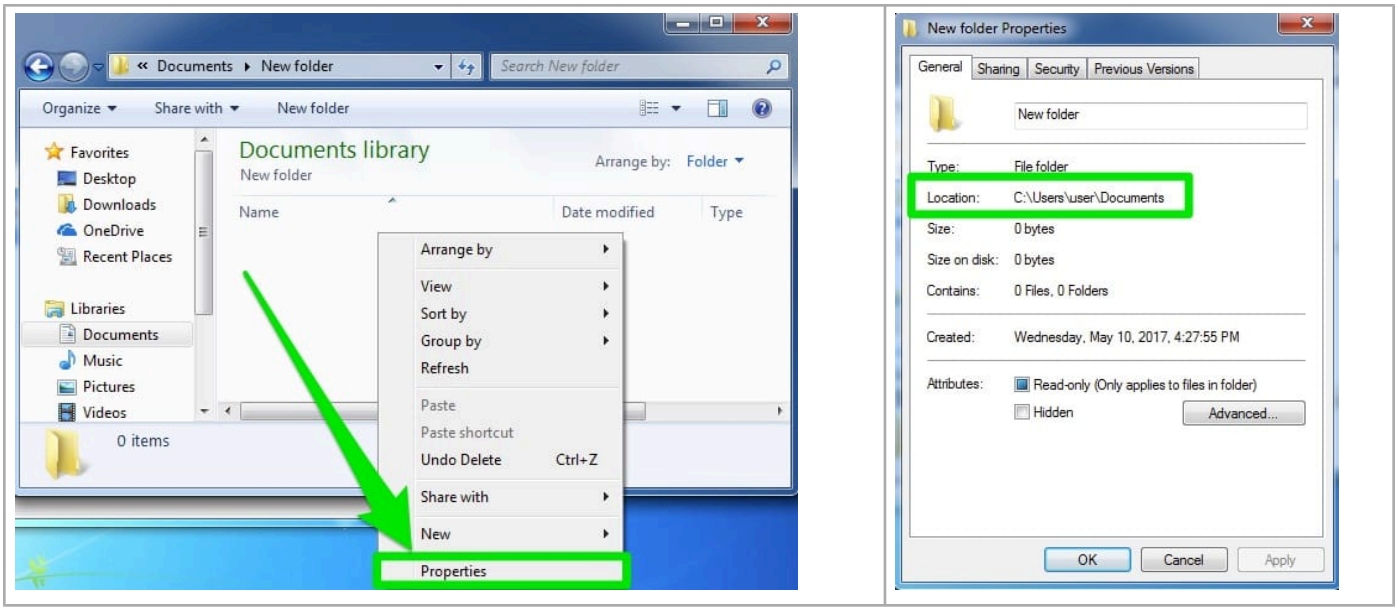
The screenshot shows a folder in Windows 7 called New folder. The file path for this folder is C:\Users\user\Documents\New folder. The user could click Documents to go up one folder to the Documents folder, and the small double-arrow on the left to go up to higher folders such as user.

Clicking the blank space to the right of the folder name will reveal the entire file path, which can be copied and pasted elsewhere.



Properties Method

Right-click the file or anywhere in the folder and select Properties. A window will pop up displaying the file path of the file or folder. (Note that it does not include New folder itself.)



Practice Question

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Selecting and Moving Files

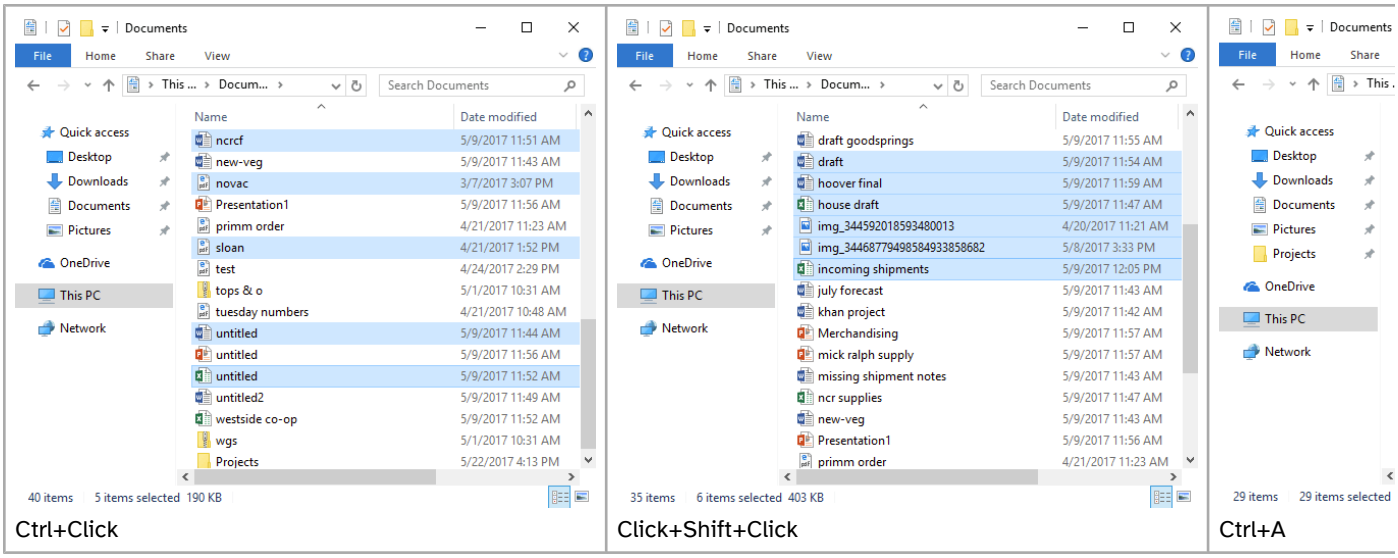
There are several ways to move files:

- Click and drag the file into a folder.
- Click a file, cut using Ctrl+X, then paste into the new folder using Ctrl+V
- Click a file, copy using Ctrl+C, then paste into the new folder using Ctrl+V (leaves the original file where it is)
  - Note that the copies are not connected; edits made to one copy will not be reflected in the other copy.
- Right-click a file, select either Copy or Cut in the dialog menu, then right-click in the folder and select Paste.

Moving Multiple Files

There are a few different ways to select multiple files (which we'll discuss below). Once you've selected multiple files, anything you do to a single file will be done to all selected files. (For example, clicking and dragging will move all selected files, hitting Ctrl+C will copy all selected files, etc.)

You can select multiple files at once using the following shortcuts: Hold down Ctrl while clicking to select multiple files. Hold down Shift while clicking to select two files and all the files between them. Press Ctrl+A to select all files. (Note that when using Ctrl+A, you can use Ctrl+Click to deselect files. You'll want to deselect the destination folder, since a folder cannot be in itself.)



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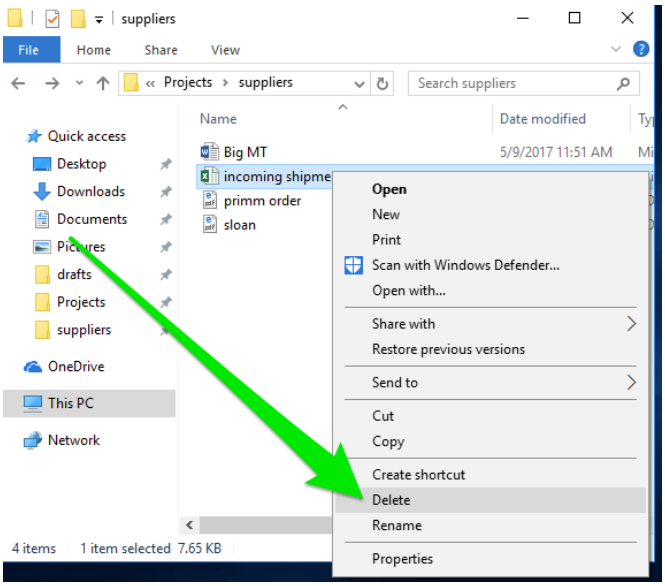
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1.14: Deleting Files and Folders

Learning Outcomes

- Delete and restore files and folders using the Recycle Bin.

To delete a file or folder (or multiple selected files), right-click on the file and select Delete. You can also select the file and hit the Delete key on the keyboard. Deleting a folder deletes all its contents as well.



You may get a dialog prompt that asks if you want to move the file to the recycling bin. If that happens, say yes. If you didn't get a dialog prompt, the file was still sent to the Recycle Bin. (The Mac equivalent is called Trash.) **Deleted files are not gone forever**; they are sent to the Recycle Bin.

Recycling Bin



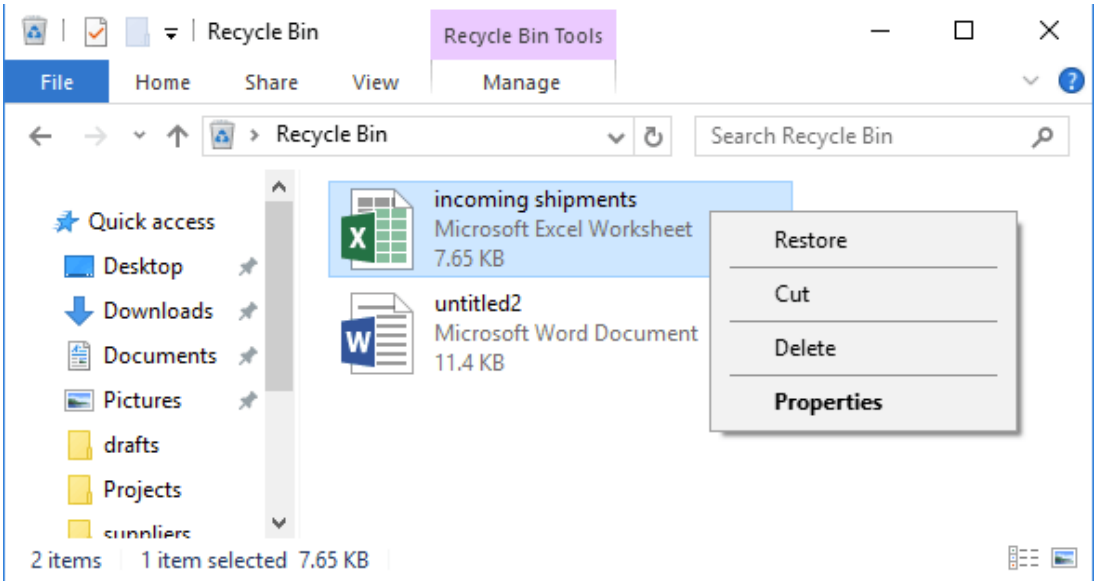
An empty and occupied Recycle Bin

Deleted files are not gone forever. When a file is deleted, it is sent to the Recycle Bin. The Recycle Bin can be found on the Desktop. Its icon resembles a recycle bin or trash can, and the icon changes depending on whether the Recycle Bin contains any files.

The recycle bin is a holding place for deleted files. To permanently delete a file, you can delete it again from the Recycle Bin, or you can empty the Recycle Bin. It is recommended you empty the Recycle Bin every once in a while to free up space.

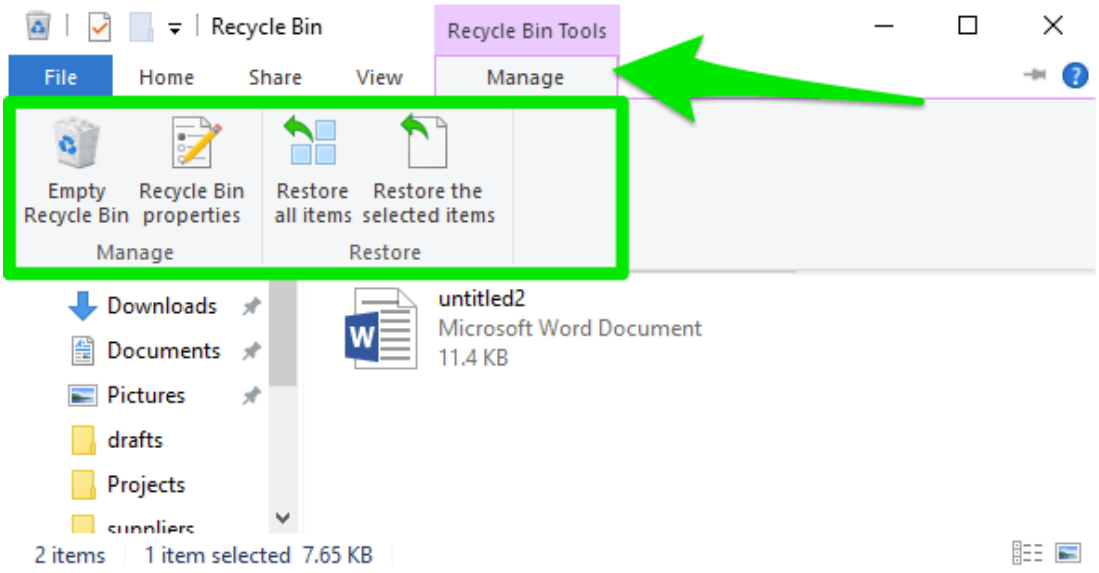
If you delete something by accident, or if you change your mind about a deleted file, you can un-delete it by restoring the file from the Recycle Bin.

To restore or permanently delete a file, right-click on the file and select either Restore or Delete. Deleted files are permanently deleted; restored files are restored to their original location before being deleted.



Right-clicking a file

You can restore or permanently delete individual files or multiple files at once using the Manage option on the toolbar.



In the toolbar in the screenshot above, from left to right:

- **Empty Recycle Bin:** Permanently deletes everything in the Recycle Bin.
- **Recycle Bin properties:** Allows you to choose how much space to allot to the Recycle Bin. When the Recycle Bin reaches capacity, it will automatically delete its oldest files. The Recycle Bin properties also has an option to automatically delete files permanently. (Unless you know what you are doing, it is recommended you leave Recycle Bin properties alone.)
- **Restore all items:** Restores everything in the Recycle Bin to its former location.
- **Restore the selected items:** Restores only the file or files you have selected.

Practice Question

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1.15: Introduction to File Management

What you'll learn to do: Discuss proper file and folder management techniques in a variety of environments

Now that we've discussed the basics of file management, let's dive into the unique needs and strategies for local files, network files, and online files.

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1.16: Local Files

Learning Outcomes

- Discuss proper file management techniques for local files

File management includes folder structures and naming conventions, plus the choice of appropriate formats. Before we begin our discussion, take a moment to think about how you name files that you create.

Practice Question

https://assessments.lumenlearning.co...essments/18552

With regards to folder structures, a good way to go about organizing your data is to create a hierarchy of folders. As an example, you could use a folder for each project, with two subfolders:

- “Data,” to store your research data, including images, databases, media, etc.
- “Documentation,” to store all relevant project documents, including, e.g. methodology and consent forms.

The more complex the project, the more detailed your folder structure can be. If you are working alone or in a small team, you might wish to use just a handful of subfolders. However, if you work on a large project you could create a range of subfolders to suit the team’s needs. As an example, under “Data,” you might create a subfolder for each data type, such as “Databases,” “Images,” and “Sounds.” Similarly, under “Documentation” you might create a subfolder for each category of document, such as “Methodology,” “Consent forms,” and “Information sheets.”

When it comes to file naming, we recommend using simple but meaningful names. Best practice includes the following:

- Capital letters should be used to delimit words in the place of spaces or underscores
- File names and paths should avoid unnecessary repetition and redundancy
- Numbers should always include at least two digits (i.e. 01 to 09 instead of 1 to 9)

Naming will follow a convention chosen by you and other project members. For instance, you may decide that “InterviewTra07JD20180214” means “Interview Transcript 7, written by John Doe, on 14/02/2018.” You will need to describe such conventions as part of your study metadata.

Practice Question

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Finally, choosing appropriate file formats is key to ensuring data is reusable, as some formats become obsolete in time and may make your research inaccessible. You can use whatever software or format is convenient during your work, but when sharing the data you should follow best practice and ensure future reusability of your work. The US Library of Congress maintains a recommended formats statement , which we invite you to consult. This lists a series of file formats in order of preference by output type, including recommended metadata fields.

When saving data for sharing, you might need to convert your working files. If you do so, always ensure that the conversion was successful and that no errors appear (e.g. missing values, wrong characters, text formatting, resolution, etc.).

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1.17: Network Files

Learning Objectives

- Discuss proper file management techniques for network files

There is a saying about file management storage that goes “lots of copies keeps stuff safe.” The idea behind the principle is that even if your main storage system fails, you still have access to your data.

If you have very important data, you may want to keep many copies, but most people should follow the 3-2-1 Rule and keep three copies of their files. This rule states that you should have 3 copies of your data in 2 locations on more than 1 type of storage media.

The offsite copy is particularly critical. Many people keep their data and a backup copy on-site, but this doesn’t factor in scenarios where the building floods or burns down (as can happen in a chemistry building) or a natural disaster occurs. Storing a copy of your data off-site can make the recovery process easier if everything local is lost.

While the 3-2-1 Rule mainly concerns redundancy, it’s also a recommendation for variety in that data should not all be stored on one type of hardware. Computer hard drives fail, cloud storage can be disrupted, and CDs will go bad over time; each storage type has its own strengths and weakness so using several types of storage spreads your risk around. So if the first copy your data is on your computer, look for other options for your backups like external hard drives, cloud storage, local server, CDs/DVDs, tape backup, etc. Finally, always keep a local copy of your data if its main storage is in the cloud. Accidents happen, even with well-run cloud storage, so it’s always best to have a copy of your data in your direct control, just in case.

Here’s an example of following the 3-2-1 Rule using resources a research has locally available:

- a copy on my computer (onsite)
- a copy backed up weekly to the office shared drive (onsite)
- a copy backed up automatically to the cloud

The 3-2-1 Rule is simply an interpretation of the old expression, ‘don’t put all of your eggs in one basket.’ This applies not only to the number of copies of your data but also the technology upon which they are stored. With a little bit of planning, it is very easy to ensure that your data are backed up in way that dramatically reduces the risk of total loss.

Backups

Part of following the 3-2-1 Rule means having backups in place. When looking for good backup options, consider the following:

- Any backup is better than none
- Automatic backup is better than manual
- Your work is only as safe as your backup plan
- Check your backups periodically

You should check your backups for two reasons. First, you need to know that they are working properly. A backup that is not working is not a backup at all. You should test your backups once or twice a year and any time you make changes to your backup system. If your data are particularly complex to back up or particularly valuable, considering testing your backups more frequently.

The second reason to test your backups is to know how to restore from backup. You don’t want to be learning how to restore from backup when you’re already in a panic over losing the main copy of your data. Knowing how to restore from backup ahead of time will make the data recovery process go much more smoothly.

It’s a small thing to periodically test restore from backup, but it will give you peace of mind that your data are being properly backed up and that you will be able to recover everything if something happens to your main copy.

Practice Question

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1.18: Online Files

Learning Outcomes

- Discuss proper file management techniques for online files

When we talk about file management for online files, we are talking about **cloud technology**.

Cloud file sharing, also called cloud-based file sharing or online file sharing, is a system in which a user is allotted storage space on a server and reads and writes are carried out over the Internet.

Cloud storage involves stashing data on hardware in a remote physical location, which can be accessed from any device via the internet. Clients send files to a data server maintained by a cloud provider instead of (or as well as) storing it on their own hard drives.

To keep data secure, the front line of defense for any cloud system is encryption. Yes, the only way to keep your data safe for certain is to lock it up in a safe beneath the ground. That being said, your cloud-stored data is generally safer than your locally stored data.

There are several very good commercial cloud sharing services. File sharing services provide two key capabilities:

- They allow you to share files between your own devices including Macs, iPhones, iPads and Windows-based PCs. This makes it easy to access your data wherever you are and on whatever device you're using.
- They let you share files or folders with others sometimes with permissions or date-based restrictions. Such capabilities are incredibly effective for workgroup collaboration.

Numerous cloud-based file sharing services exist but the most popular are Box, Dropbox, Google Drive, iCloud Drive, and Microsoft's OneDrive. All offer free plans with limited amounts of storage.

Practice Question

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1.19: Online Drives

All About Google Drive

https://edu.gcfglobal.org/en/googledriveanddocs/all-about-google-drive/1/

Getting Started with Google Drive

https://edu.gcfglobal.org/en/googledriveanddocs/getting-started-with-google-drive/1/

Word –Understanding One Drive

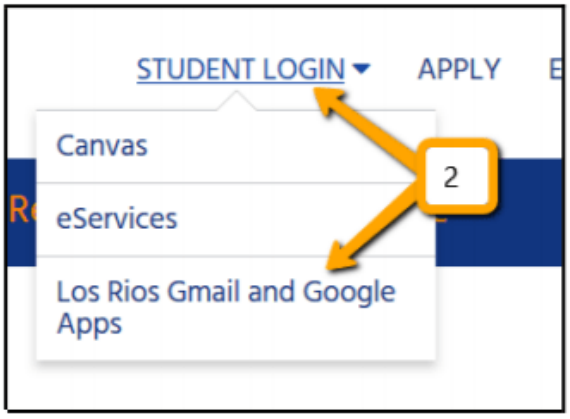
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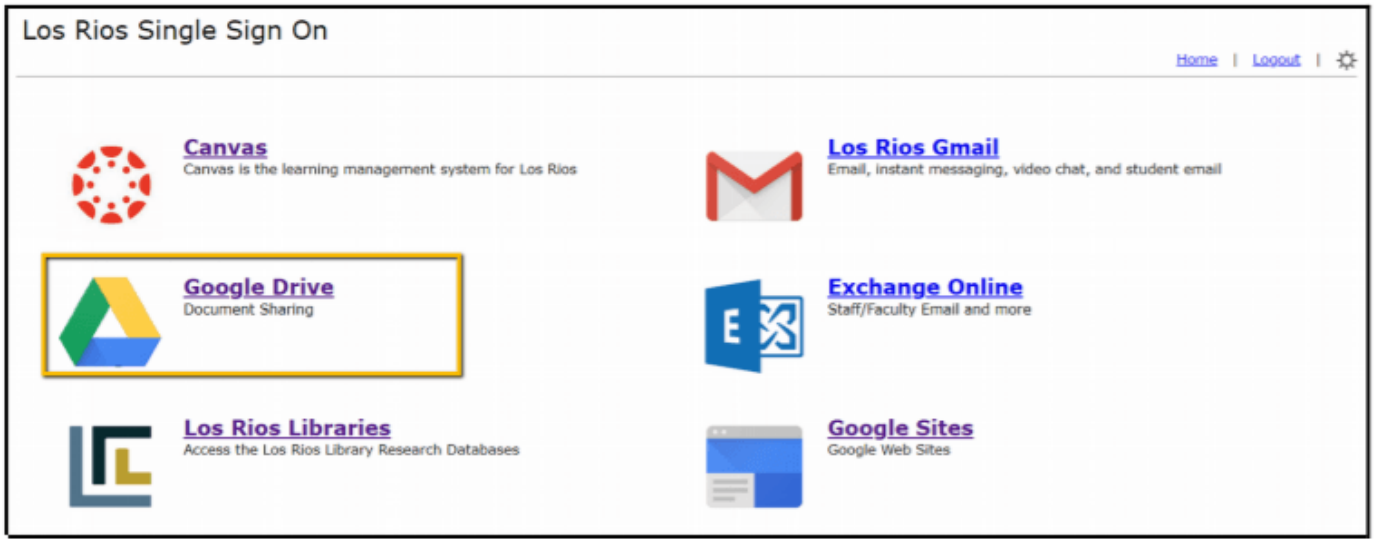
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1. Go to the CRC homepage (https://www.crc.losrios.edu/)
2. In the top ribbon, click Student Login and then the link for Los Rios Gmail and Google Apps
3. The login screen will appear – enter your wID and password to access the Los Rios Hub





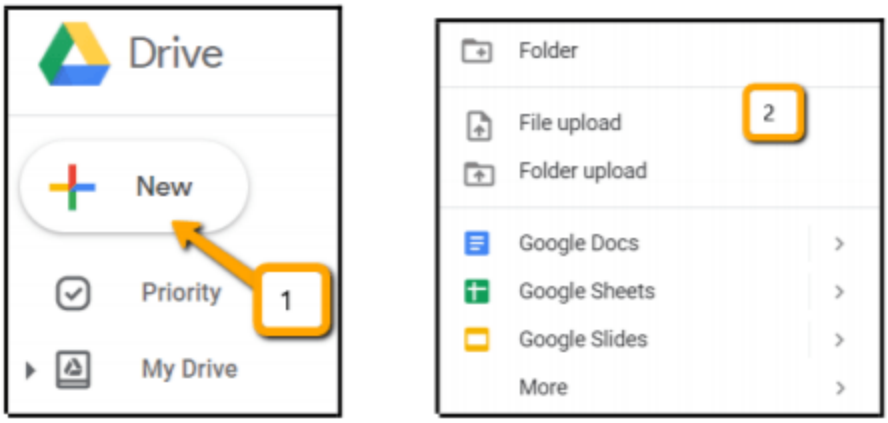
The Los Rios Hub includes links to Canvas, your Los Rios Gmail, the CRC Library, your Los Rios Google Drive, and more.



Clicking on the Google Drive link takes you to your personal storage area where you can create Google docs (word processing), Sheets (spreadsheets), Slides (slide shows), and other things. You can also upload documents, including PDFs, images, and more.

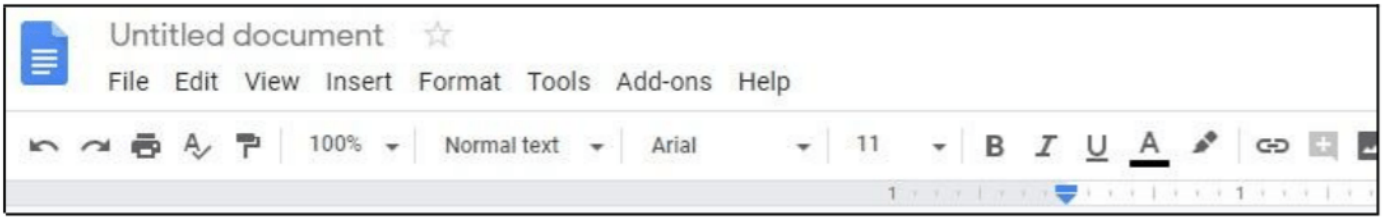
To Upload Files or Create New Ones:

1. Click on the New icon, which is usually in the upper left corner.
2. A menu appears and you can choose what you want to do including creating folders, uploading files, and creating new files.

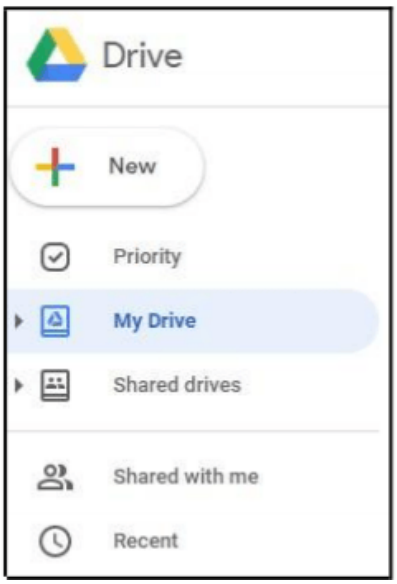


To Create a Google Doc:

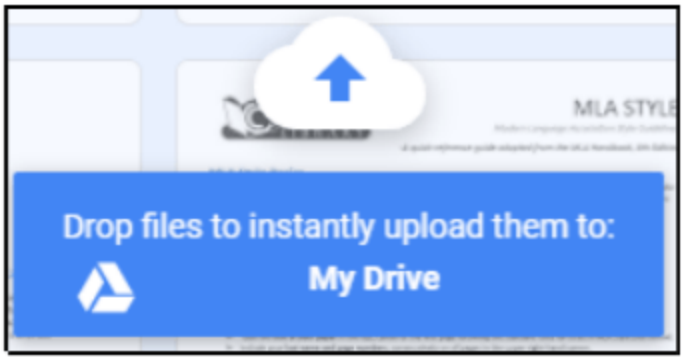
1. After clicking new – click the Google Docs link
2. A new tab will open with your new document. The upper menu in a Google Doc allows you to format your document and includes a very user-friendly menu.



New documents don't have a name or title. To name your document, click on "Untitled document" in the upper left and name your document. Google Docs save automatically as you type and can even be set to be available "offline" so you don't need to have an internet connection to edit them. Once you create anything using Google Apps, it will show up on your Google Drive homepage by clicking on My Drive:



You can also upload any type of files (PDFs, images, etc.) to Google Drive by dragging them onto the home screen. You should see this pop up as you are dragging:



This is an overview of a few of the things you can do with Google Drive. If you want to get more training try:

- Google's support page (https://support.google.com/drive/answer/2424384)
- The CRC Library's Google Docs How To videos (https://bit.ly/gdochowto)

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1.21: Files Management

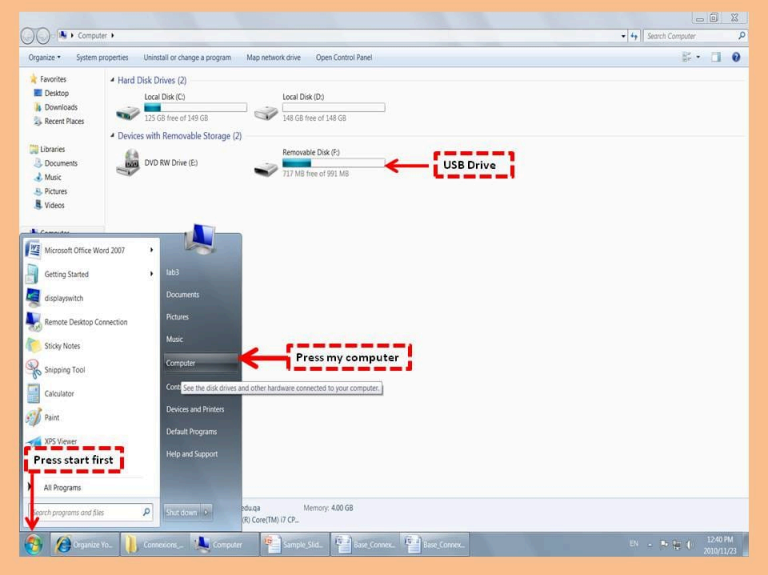
Learning Objectives

- Simple instructions for managing files using USB drives.

Usb Drive

Usb drive can be used for storing file and folders, it can be used for backing up files, and it is Easy to share and travel with.

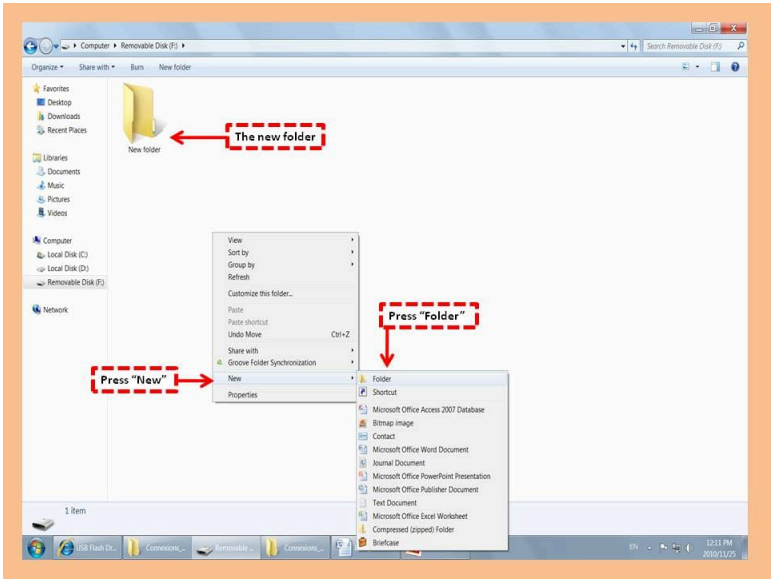
- You can find the USB Drive in my computer in start.
- You will find it under Devices with removable storage.
- You can rename the USB Drive by clicking the right side of the mouse.



To create a folder in the USB Drive

Folders can be created in Documents and in the Desktop, with creating folders you can create a folder within the folder that's called "Subfolders".

- Start my computer.
- Double-Click on the removable disk
- Right click on the empty space find the word "New" – find the word "Folder".



To save fills in the folder USB Drive

Saving files is very easy, you can save files anywhere in the computer, you can rename the file; change the saving location of the file, and save it in a Different type.

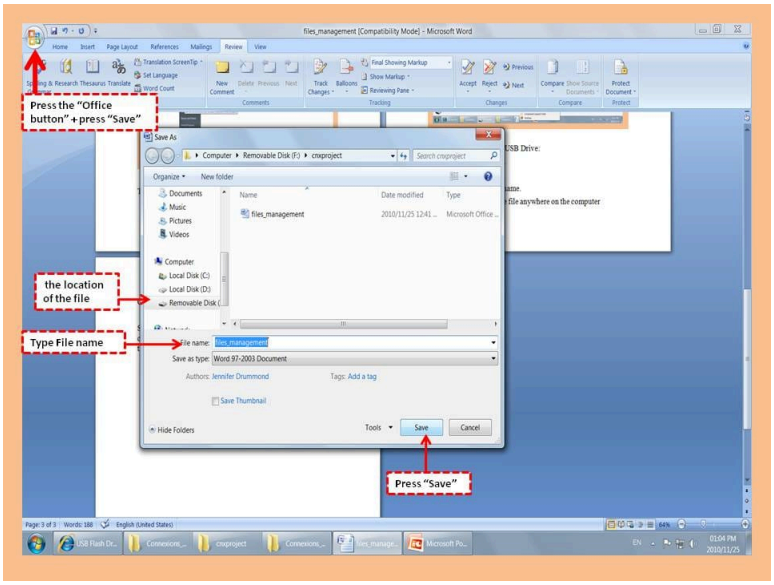
Press the “office button”.

Click on “Save as”.

Type the file name.

Change the location of the file anywhere on the computer

Click “Save”.



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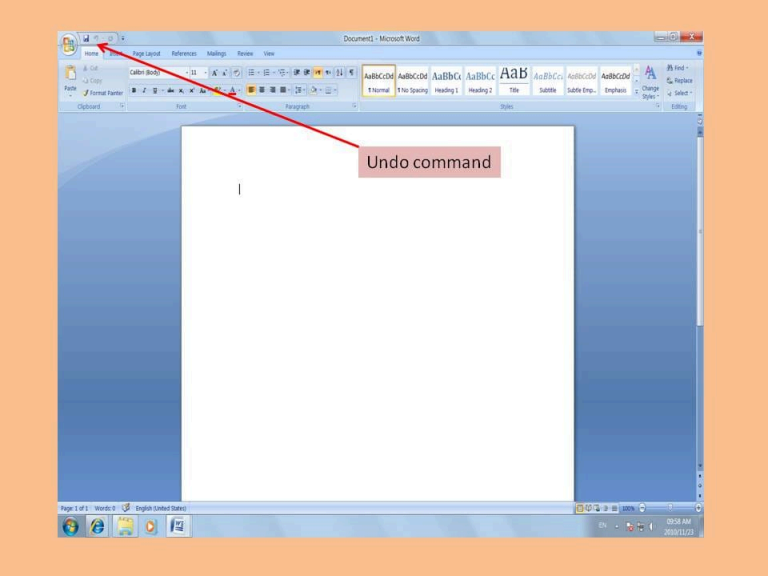
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1.22: Undo Command

Learning Objectives

- When and how to use the "undo" command when using word processing.

The undo command is used to quickly undo any recent key strokes. It is used when mistakes occur and the user wishes to undo it. For example when a user was typing some text then suddenly it disappears through pressing the wrong key, the easiest way to retrieve the data is through the undo command. The undo command is located next to the save button.



As shown in the image above you will have to press the undo command to commence undoing.

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1.23: Creating Files and Folders in Windows

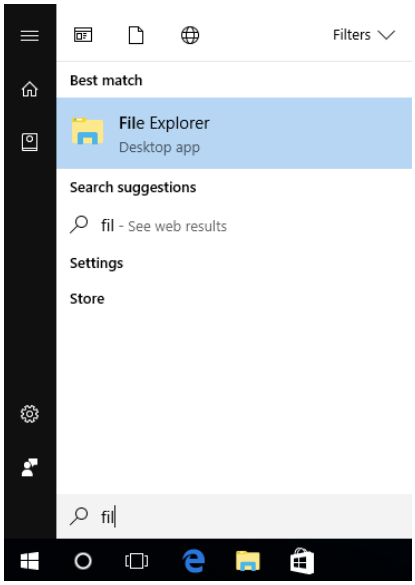
Learning Objectives

- Create files and folders.

File Explorer

In Windows, the primary way of interacting with files and folders is through the File Explorer application. (In older versions of Windows, this may be called Windows Explorer. In Macs, the equivalent would be Finder.)

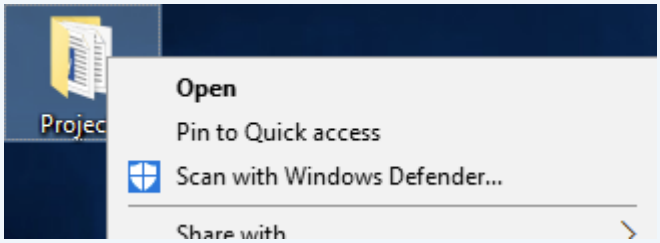
There are a couple of ways to open File Explorer. The shortcut Win+E will open File Explorer. It can also be opened by clicking the Start button and typing “File Explorer” or by right-clicking any folder and selecting Open. By default, File Explorer is pinned to the task bar (see below), and it can be opened from there.



Open the Start menu and type “File Explorer.”



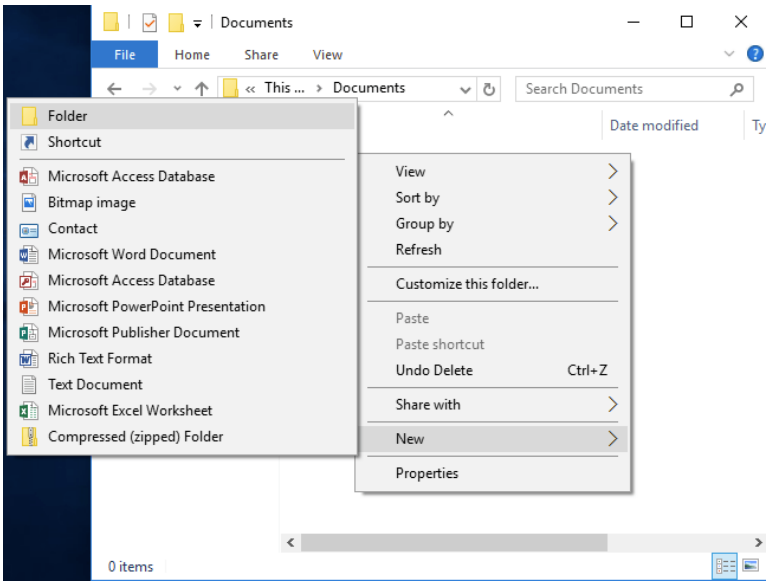
Find File Explorer pinned to the taskbar.



Right-click a folder and select Open.

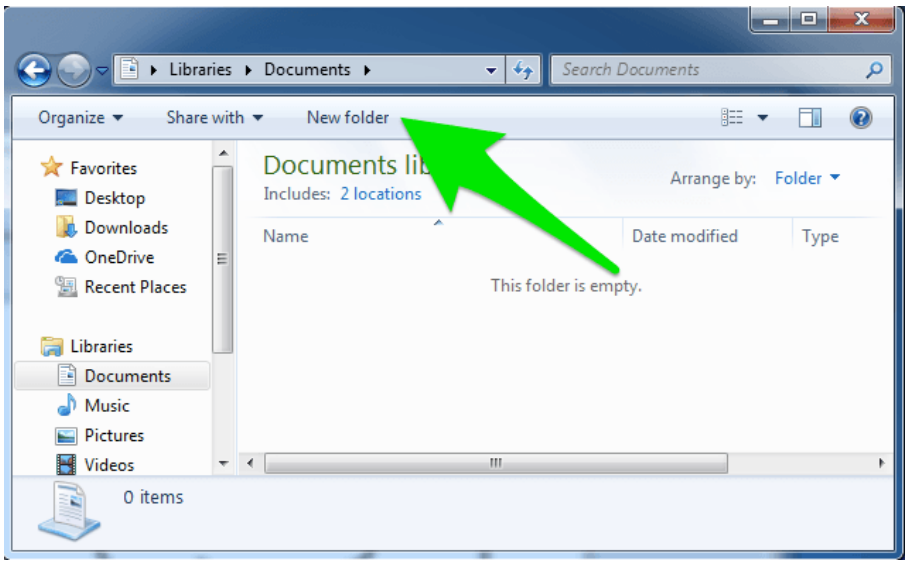
Some folders already exist in File Explorer, such as Documents, Desktop, and Downloads. (Documents may be called “My Documents” in older versions of Windows). You can create more folders or folders within folders to allow for better organization.

To create a folder, right-click, then select New>Folder.

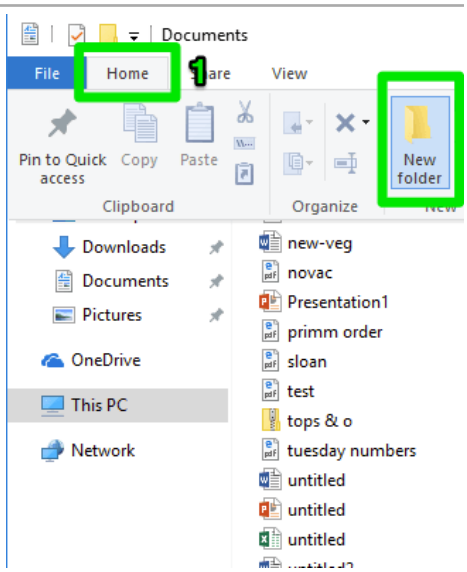


Right-click in File Explorer, then select New>Folder.

In Windows 7, there is a New folder button near the top of the window. In Windows 10, you can also click the Home tab, then the New Folder button.



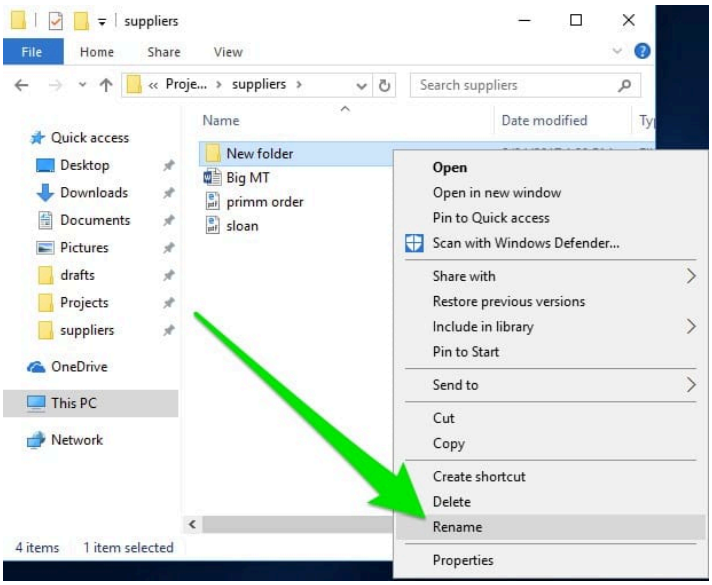
Windows 7 New folder button



Windows 10 New folder button

Renaming Files

To rename a file or folder, right-click the file or folder, then select Rename.



You can also click the name of the file or folder once, wait one second, then click the name of the file or folder again.

Note that in Windows, a file cannot contain any of the following characters: `\ / : * ? " < > |`. This is because those characters have special meaning in Windows. (For example \ is included in file paths.) If Windows encounters a file or folder with those symbols, it could potentially misread the file or folder name and cause problems. As a precaution, Windows will not let you save files or folders with those characters, so don't worry about saving a file with those characters in the name by mistake.

Macs are less stringent about what characters can be included in a file or folder's name; only the colon (:) cannot be used. However, it is a good practice to avoid using the Windows-prohibited characters in file names because the file name will be automatically changed when moved to a Windows computer.

Practice Question

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1.24: MANAGING WINDOWS APPLICATIONS

1.24.1: Using Applications
1.24.2: Windows Store
1.24.3: Uninstalling Applications
1.24.4: Window Management
1.24.5: Application Settings
1.24.6: Checking for Understanding

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1.24.1: Using Applications

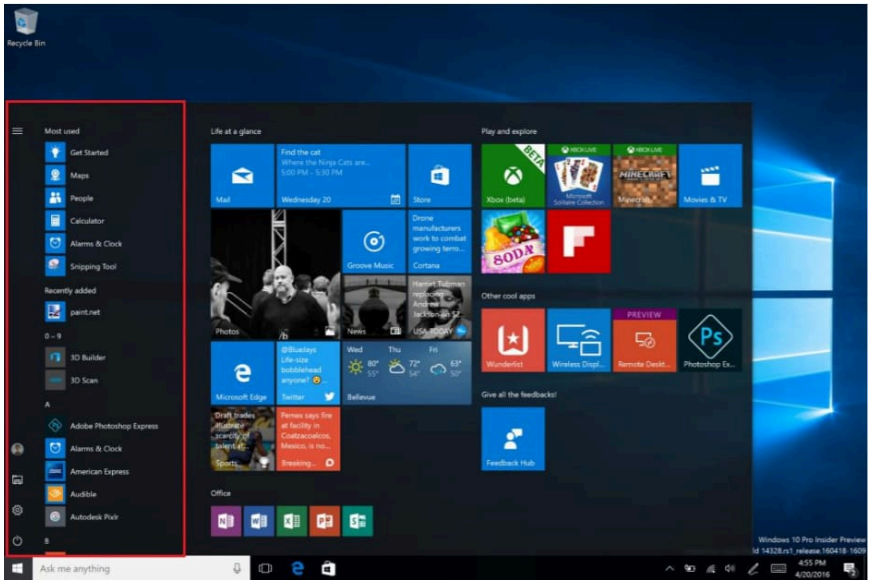


Figure 1.24.1.1: This Photo by Unknown Author is licensed under CC BY-SA

Applications are tools built by software developers to use the computing power of the computer to aid the user to accomplish tasks. Millions of distinct applications run on Windows every day. Windows 10 comes with a default set of apps, such as Mail, Photos, and WordPad, all developed by Microsoft. Millions of other applications are available to run on your computer by installing them via physical media like CDs/DVDs, downloading from the internet, or Microsoft store, or creating your own. Windows 10 permits applications to have a variety of permissions to run on the computer, so each application varies in its complexity, visual appearance, navigation, and control of the computer. It is important to understand and know what type of application you are installing on your computer as some applications (known as viruses) install software that is harmful to the computer or the user. More will be discussed in Chapter 6; Security. To improve security, Microsoft has created the Windows Store, which allows the user to view and download applications that have been reviewed and deemed safe for the end-user.

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1.24.2: Windows Store

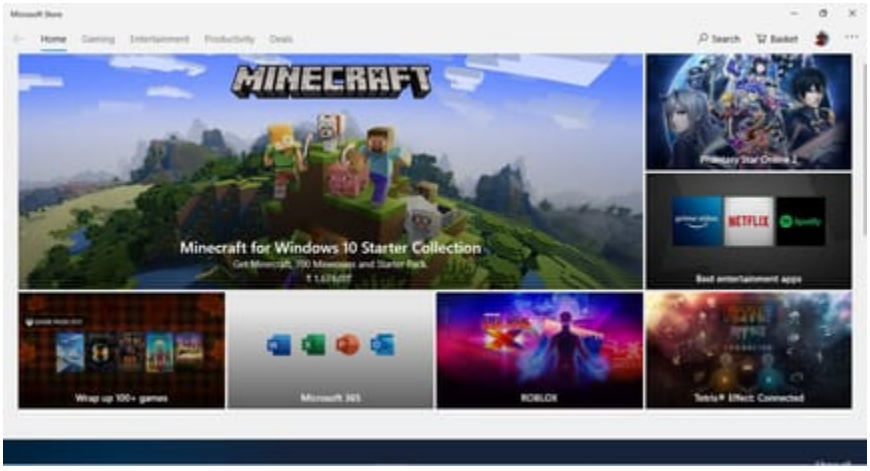


Figure 1.24.2.1: This Photo by Unknown Author is licensed under CC BY-SA

You can purchase and install applications from the Microsoft Windows Store, which is an application that is pre-installed in Windows 10. You can find applications to download in the Windows store by viewing applications by category or searching for the application of your choice. You may need to create/use a Microsoft Account and link your credit card information to your Microsoft Account to download applications. In the Windows Store, there are a variety of free and paid applications to download. Purchased applications can be downloaded on up to 10 other computers if the user is signed in with the same user account. Users can automatically update applications that have updates available in the Windows store.

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1.24.3: Uninstalling Applications

When you install an app, including the ones that come by default in Windows 10, it takes up storage space on your computer or mobile device. If space becomes limited or you just don't use an app anymore, you can uninstall it to free up storage space.

You can uninstall Windows Store Applications from the Start menu by navigating to the application, right-clicking on the application, and selecting uninstall. After uninstallation is complete, Windows will notify you.

Other older programs may be uninstalled by visiting the Control Panel, clicking on "Programs" and "Uninstall Program". Follow the directions on the screen to complete this process.

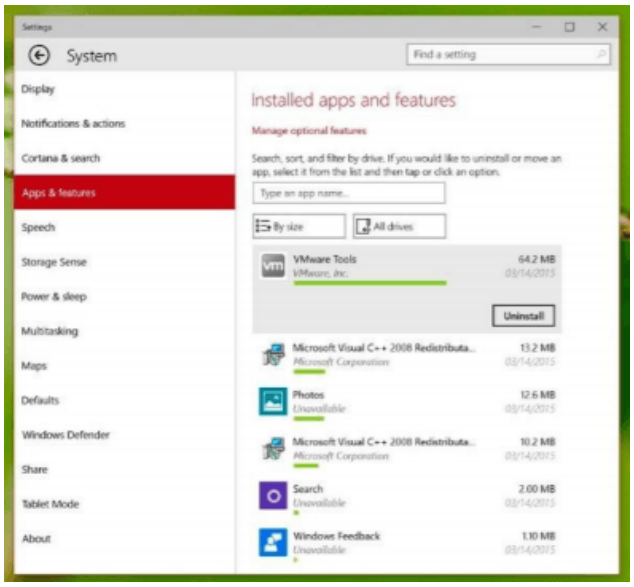


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1.24.4: Window Management

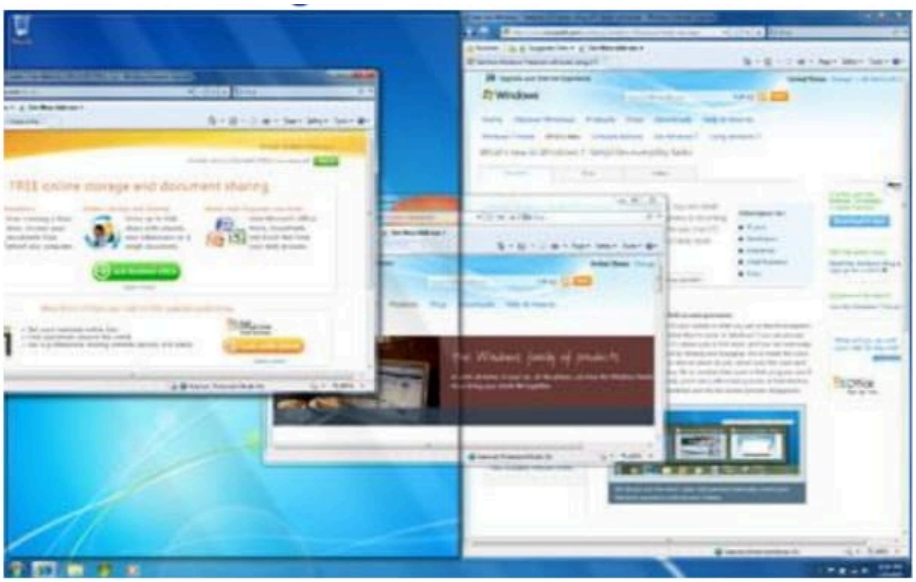


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Windows 10 has several features that make it easier to multi-task and work with multiple windows at the same time.

Windows Display options

Windows organizes every running application into its namesake- windows. Windows may overlap each other. Windows 10 provides many ways to size your windows accordingly. The top right corner of every running window provides display options of minimizing the window, resize window/maximize the window, and close window/. Minimizing a window removes the window from view. It can be returned to its current view by selecting the running application in the taskbar. Maximizing a Window makes it Fullscreen. The resize feature returns it to an open running window. Closing a window removes the program from active memory.

Windows Snap

Windows Snap allows you to resize windows quickly and display two windows side by side. To perform Windows Snap, click and drag the desired window to the left or right until the cursor reaches the edge of the screen, then release the mouse. The window will snap into place. To unsnap a window, simply click and drag the window down If you have more than one window open when snapping, you'll be able to choose a window to snap to the other side of the screen automatically.

Windows Flip

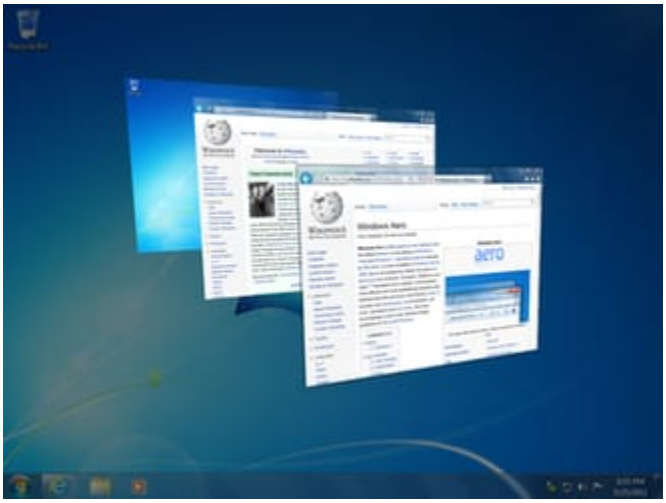


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Windows Flip can be used to switch between open windows. To do this, press and hold the Alt key on your keyboard, then press the Tab key. Continue pressing the Tab key until the desired window is selected.

Displaying the Windows 10 Desktop

Sometimes, a user can have so many windows open at once, they have trouble finding their desktop! To quickly see your desktop, click the bottom-right corner of the taskbar to minimize all open windows. You can do click the bottom right corner again to restore your windows (which were minimized) to their current location. In addition, there is a keyboard shortcut to do this. Simply press the Windows key  and the letter “D” on the keyboard to toggle between your open applications and the Windows Desktop.

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1.24.5: Application Settings

Because windows allow software developers so much flexibility in application design, developers have the flexibility to determine how they allow users to customize their applications. There are three main strategies developers use to allow users to navigate their application and customize application-specific settings:

1. The Ribbon/Control Menu: Located at the top of the screen with various settings organized into groups.
2. The settings “gear”  icon in the active window. Which brings you to the settings menu.
3. The “more settings” dots will display more settings related to the application.

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1.24.6: Checking for Understanding

1. Download a free application from the Windows Store. Now delete the application you successfully installed.
2. Launch two (2) applications. Place them in the Windows Snap view.
3. Launch four (4) applications. Practice minimizing them all at once to display the desktop.
4. Launch three (3) applications. Tab between them using Windows Flip
5. Enter the settings menu of the Microsoft News application. Practice Minimizing, Maximizing and Closing the application.

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1.25: How to Split Screen on Windows 10

- https://youtu.be/b3l5MJEuIpA

YouTube Video

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- https://www.windowschimp.com/split-screen-windows-10/

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1.26: Tips for Managing Multiple Windows

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1.27: Introduction to Snips and Screenshots

What you'll learn to do: take a screenshot.

A screenshot is a saved image of what is displayed on a computer screen. It is useful for showing others what is on your screen, and it is how you will submit some assignments in this course.

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1.28: Taking Screenshots

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1.29: Snips and Screenshots

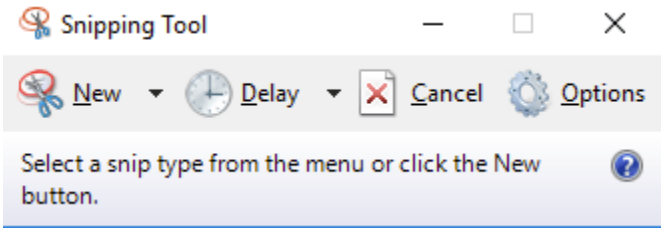
Learning Objectives

- Take a screenshot.

You can take a **snip**, or a screenshot that is of only part of the screen, with the Snipping Tool, or you can take a screenshot of the entire screen with the Print Screen button.

Snipping Tool

In Windows 10, you can open the snipping tool by going to Start>Windows Accessories>Snipping Tool, or by opening the Start menu and typing "Snipping Tool." In Windows 7, you can open the snipping tool by going to Start>All Programs>Accessories>Snipping Tool. Older versions of Windows might have the snipping tool in a similar location; however they may not have the snipping tool at all, in which case the Print Screen button should be used to take screenshots.

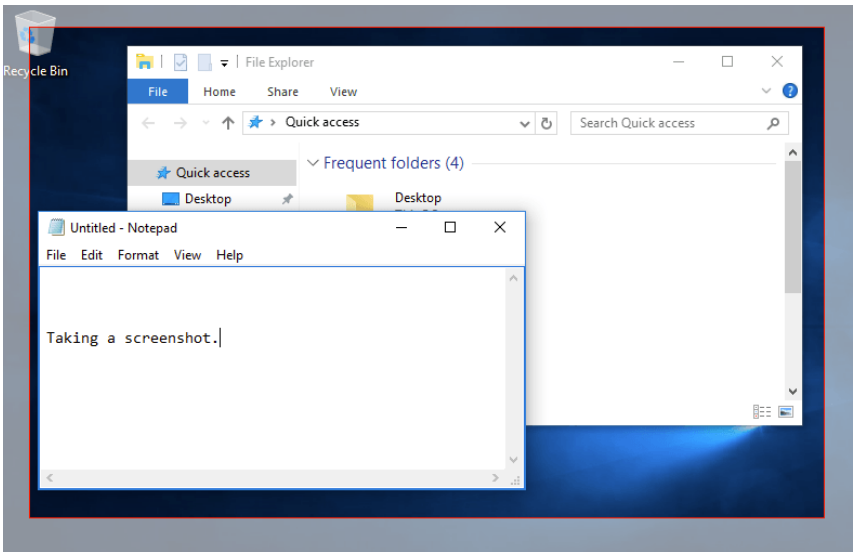


The Windows 10 snipping tool

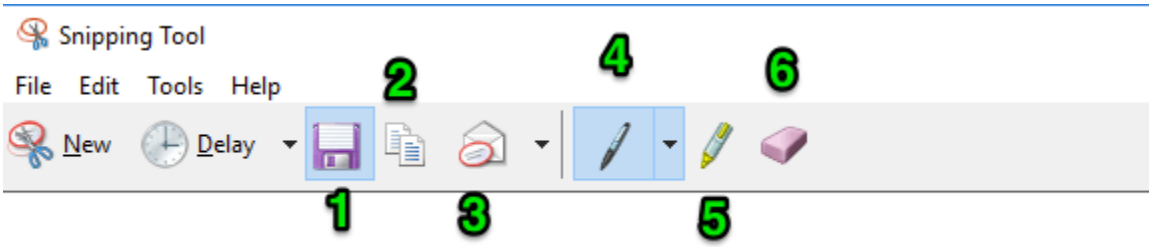
The snipping tool will open a small window with New, Cancel, and Options buttons. You can take rectangular, freeform, window, or full-screen snapshots. Windows 10's snipping tool also has a Delay button, which can be helpful for capturing menus or dialog boxes.

Take a Rectangular Screenshot with the Snipping Tool

Click New, then click and drag over the portion of the screen you want to screenshot. The snipping tool window will disappear as soon as you start clicking and dragging to take your screenshot. (If you hit New by mistake you can cancel the snip by clicking the cancel button before you click and drag.)



Once you've captured the screenshot, the snipping tool window will reappear with some new options available.



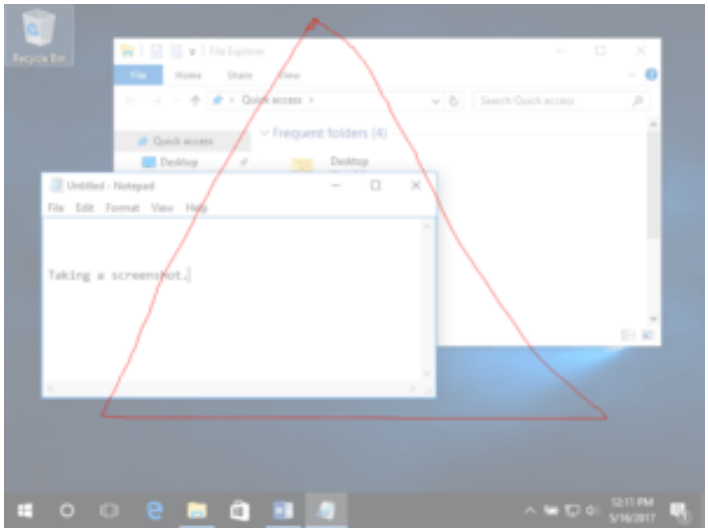
Save. Copy. Send to. Pen. Highlighter. Eraser.

1. **Save.** Saves the current screenshot. If you do not save the screenshot, it will be automatically deleted when you take a new screenshot or close the snipping tool.
2. **Copy.** Copies the current screenshot so you can paste it into an image editing program, like Paint, GIMP, or Photoshop.
3. **Send to.** Opens Microsoft Outlook so you can email the screenshot to someone. Clicking the dropdown arrow to the right of the button allows you to choose whether to send the screenshot in the email or as an attachment.
4. **Pen.** Allows you to draw on and mark the screenshot. Clicking the dropdown arrow to the right of the button allows you to change the color of the pen.
5. **Highlighter.** Allows you to highlight anything on the screenshot.
6. **Eraser.** Erases the effects of the pen and highlighter tools. (Note that Ctrl+Z does not work on the pen or highlighter tool; you must use the eraser to correct mistakes.)

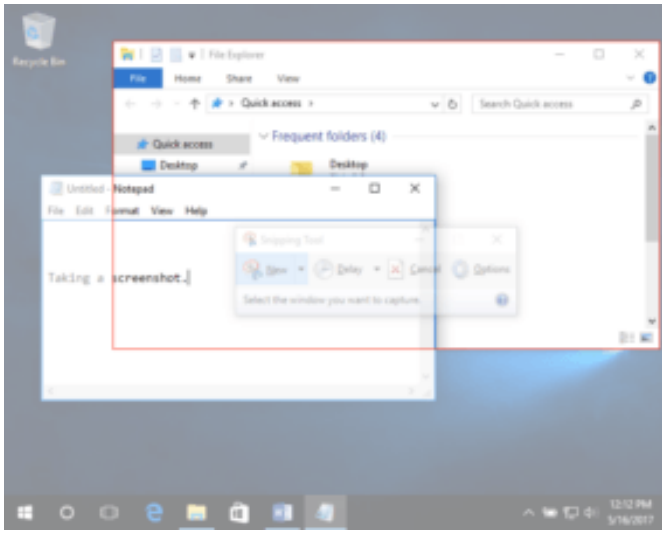
Don't forget to save your screenshot!

Other Screenshots with the Snipping Tool

By default, the snipping tool is set to take rectangular screenshots. You can change this by clicking the dropdown arrow to the right of the New button and choosing between free-form, rectangular, window, and full-screen snips.



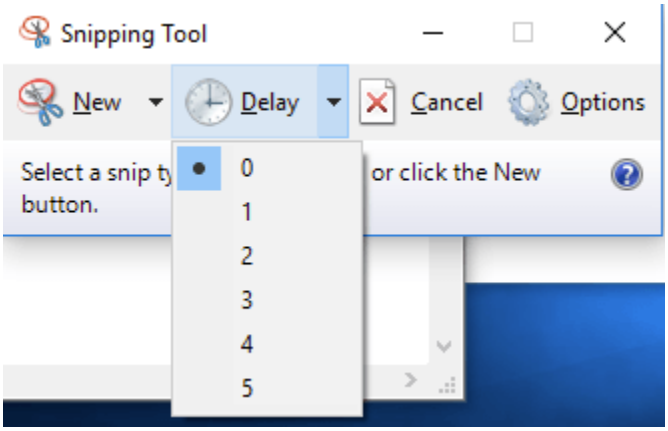
Free-form snip: Draw an irregularly shaped screenshot.



Window snip: Pick a window to take a screenshot of it

Timed Screenshots with the Snipping Tool

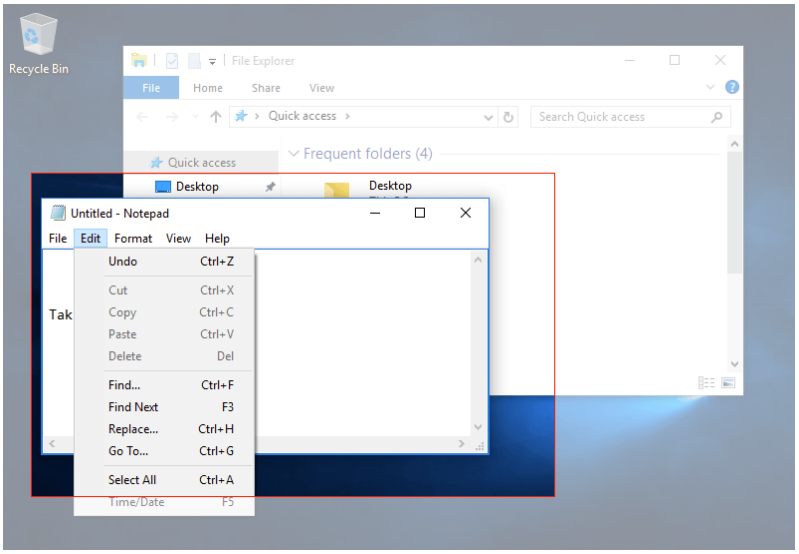
Some things, such as dialog menus, are hard to take a screenshot of. Timed screenshots are especially useful for taking screenshots of these dialog menus or other click-triggered items, since the delay gives you enough time to open those items.



To take a timed screenshot, click the arrow to the right of the Delay button, then select how many seconds you want the snipping tool to wait before taking the screenshot. The default setting is 0.

After setting the number of seconds to delay, click New to start the timer. For example, if you selected a 5-second delay, once you click the New button you have five seconds to get your screen ready for a screenshot. At the five-second mark, the screen will freeze in place and the snipping tool will reappear. You can then take a screenshot using whichever shape (free-form, rectangular, window, full-screen) you previously selected with the New dropdown menu.

Getting the timing right can be tricky, but don't worry—you can always try again by taking a new screenshot. Only the screenshots you save using the Save button are kept.



Taking a delayed screenshot

Practice Question

https://assessments.lumenlearning.co...essments/18556

NOTE

If you are running Windows 8 or older and do not have the Delay button, you can still take a screenshot of dialog menus or click-triggered items with the Print Screen button.

Print Screen

As previously mentioned in Keyboard Shortcuts, another way to take a screenshot is to use the Print Screen button (Prt Scn). Pressing just the Print Screen button will take a picture of everything visible on your computer screen; Pressing Prt Scn+Alt will take a picture of the currently active window (the window you last interacted with). Screenshots taken with the print screen button must be pasted (with Ctrl+V) into an image editing software such as Paint, GIMP, or Photoshop.

Screenshots on a Mac

On Mac computers, pushing Command+Shift+3 will take a full-screen screenshot. Pushing Command+Shift+4 then clicking and dragging will create a rectangular screenshot. Hitting Command+Shift+4+Space and then clicking a window will create a window screenshot. Mac users can also use the Grab tool, found in the Applications/Utilities folder. By default, Mac screenshots are saved to the desktop.

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1.30: Inserting a Screenshot with Ease

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1.31: Customizing the Start Menu

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1.32: Mac Keyboard Shortcuts

https://support.apple.com/en-us/HT201236

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1.33: Macintosh Grab tool - screenshot method

https://www.digitaltrends.com/computing/how-to-take-a-screenshot-on-a-mac/

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1.34: Assignment - Download Files

At the end of this course, you will submit a capstone assignment that will use everything you have learned and involve creating several documents.

For this portion of the assignment, you will download the files you will use in your final assignment.

Instructions

1. Create a folder on your desktop called Rowan. This is where you will save all of your assignments. To keep your computer better organized, you may want to move previous assignments into this folder.
2. Download **this Word template**. Save the file in the Rowan folder.
3. Download **this Excel workbook**. Save the file in the Rowan folder.
4. Download **this PowerPoint presentation**. Save the file in the Rowan folder.
5. Take a screenshot of the three files in the Rowan folder on your desktop. Save the snip as **BA132_LastName_RecycleBin.png**, replacing "LastName" with your own last name. (Example: BA132_Hywater_RecycleBin.png)

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1.35: Assignment - Identify Your OS

For this assignment, you will take and save a screenshot of the window that identifies your operating system. Follow the directions, then submit your assignment. If you get stuck on a step, review this module and ask your classmates for help in the discussion forum.

Instructions

1. Open the window that identifies your operating system using any of the methods discussed on the Identifying Your OS page.
2. Open the Snipping tool by using one of the methods discussed in the Snips and Screenshots page.
3. Take a rectangular or a window snip of the window displaying your operating system.
4. Save the snip as **BA132_LastName_OperatingSystem.png**, replacing "LastName" with your own last name. (Example: BA132_Hywater_OperatingSystem.png)
5. Submit your image in your course online.

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1.36: Assignment - Empty the Recycle Bin

For this assignment, you will empty your Recycle Bin. Follow the directions, then submit your assignment. If you get stuck on a step, review this module and ask your classmates for help in the discussion forum.

If you have a Mac, substitute “Trash” for “Recycle Bin” in the instructions (except for naming your screenshot).

Instructions

1. Open the Recycle Bin (or equivalent) by double-clicking the icon on the desktop (or using any other method discussed in the Deleting Files section of Organizing Files and Folders).
2. Check the Recycle Bin to see if there are any files you wish to keep. If so, restore those files.
3. Empty the Recycle Bin using the methods discussed in Organizing Files and Folders.
4. Open the Snipping tool by using one of the methods discussed in the Snips and Screenshots page.
5. Take a rectangular or a window snip of the Recycle Bin window.
6. Save the snip as **BA132_LastName_RecycleBin.png**, replacing “LastName” with your own last name. (Example: BA132_Hywater_RecycleBin.png)
7. Submit your image in your course online.

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2: COMMUNICATION AND THE INTERNET

2.1: Privacy

2.2: Internet Browsers

2.3: Basic Browser Tools

2.4: Ethical Research

2.5: Data and Customer Rights

2.6: Web Searching

2.7: Identifying Search Results

2.8: Web Browsers and the Internet

- 2.8.1: Web Browser Interface
- 2.8.2: Downloading Files
- 2.8.3: Internet Security
- 2.8.4: Bookmarks and Internet History
- 2.8.5: Checking for Understanding

2.9: Windows Security

- 2.9.1: Computer Viruses
- 2.9.2: Computer Malware
- 2.9.3: Phishing
- 2.9.4: Windows Defender Security Center
- 2.9.5: Launching Windows Defender Security Center
- 2.9.6: Using Windows Defender Scan
- 2.9.7: Viewing the Health/ Performance of your PC
- 2.9.8: Fresh Start
- 2.9.9: How to Manage Network Security with Windows Defender Firewall
- 2.9.10: How to Protect your PC against Malicious Code
- 2.9.11: User Account Control
- 2.9.12: Automatic Updates
- 2.9.13: Internet and Computer Safety Tips
- 2.9.14: Checking for Understanding

2.10: Web Literacy for Student Fact-Checker Topics

- 2.10.1: Four Strategies
- 2.10.2: Fact-checking Sites
- 2.10.3: Wikipedia
- 2.10.4: Activity- Verify a Twitter Account
- 2.10.5: Using Google Books to Track Down Quotes

2.11: Getting Started in Chrome - Bookmarking in Chrome and more

2.12: Introduction to Internet Safety

2.13: Creating Strong Passwords
2.14: Avast Academy – How to Open Incognito Mode in Chrome
2.15: Avast Academy – How to Clear Your Browser History
2.16: Avast Academy – What are cookies and how to clear them
2.17: Etiquette Issues
2.17.1: Netiquette 101
2.17.2: Emailing Your Professor - Ten Tips
2.17.3: Participating in Online Discussions
2.18: Email Basics

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2.1: Privacy

Learning Objectives

- Discuss the challenges to privacy in the business computing environment

Information privacy, or **data privacy**, is the relationship between collection and dissemination of data, technology, the public expectation of privacy, and the legal and political issues surrounding them.

Privacy concerns exist wherever personally identifiable information or other sensitive information is collected and stored—in digital form or otherwise. Improper or non-existent disclosure control can be the root cause for privacy issues. Data privacy issues can arise in response to information from a wide range of sources, such as:

- Healthcare records
- Criminal justice investigations and proceedings
- Financial institutions and transactions
- Biological traits, such as genetic material
- Residence and geographic records
- Ethnicity
- Privacy breach
- Location-based service and geolocation

The challenge in data privacy is to share data while protecting personally identifiable information. The fields of data security and information security design and utility software, hardware and human resources exist to address this issue. As the laws and regulations related to Data Protection are constantly changing, it is important to keep abreast of any changes in the law and continually reassess your compliance with data privacy and security regulations.

The Internet and Security

The ability to control the information one reveals about oneself over the Internet, and who can access that information, has become a growing concern. These concerns include whether email can be stored or read by third parties without consent, or whether third parties can continue to track the web sites someone has visited. Another concern is web sites which are visited collect, store, and possibly share personally identifiable information about users.

The advent of various search engines and the use of data mining created a capability for data about individuals to be collected and combined from a wide variety of sources very easily. The FTC has provided a set of guidelines that represent widely accepted concepts concerning fair information practices in an electronic marketplace called the Fair Information Practice Principles.

Everything is accessible over the Internet nowadays. A major issue with privacy relates back to social networking. For example, there are millions of users on Facebook, Twitter, and other social media platforms, and regulations have changed. People may be tagged in photos or have valuable information exposed about themselves either by choice or most of the time unexpectedly by others.

It is important to be cautious of what is being said over the Internet and what information is being displayed as well as photos because this all can searched across the web and used to access private databases making it easy for anyone to quickly go online and profile a person.

Practice Question

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2.2: Internet Browsers

Learning Objectives

- Identify three main browsers used to access the internet.

A web browser (commonly referred to as a browser) is a software application for retrieving, presenting, and traversing information resources on the World Wide Web (also known as the internet or the Net). The most popular web browsers are Google Chrome, Microsoft Edge (formerly Internet Explorer), Mozilla Firefox, and Apple's Safari. If you have a Windows computer, Microsoft Edge (or its older counterpart, Internet Explorer) are already installed on your computer. If you are running an Apple computer, you already have Safari installed on your computer. You may also have other browsers installed on your computer. If the browser you want to use is not installed on your computer, download links for Chrome and Firefox are in their respective sections below.

This course will focus first on the three primary browsers (Chrome, Firefox, and Edge) and then walk through a set of tools and skills which can be used in any browser.

Identifying Browsers

There are three primary browsers that are used to access the internet that you need to be able to identify and use. Each of these browsers is made by a separate company, and has a different look, but there are many tools and shortcuts that can generally be used on any of the browsers.

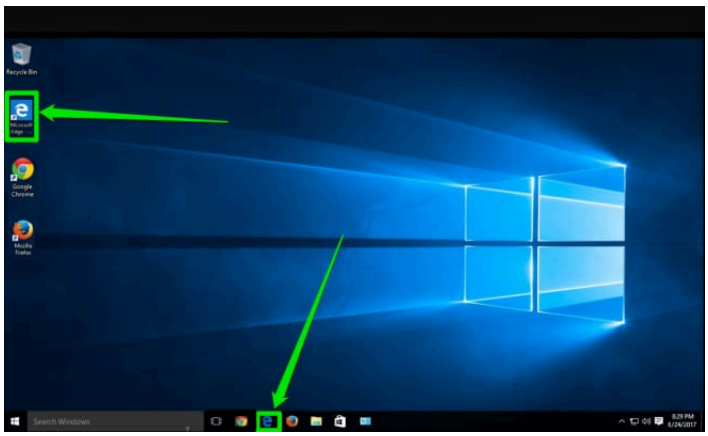
Microsoft Edge

You have most likely heard the name of one or more of these browsers, but let's first identify the Microsoft Edge browser.

This is the icon associated with the Edge browser. This is a recent change to the original Microsoft browser which was called Internet Explorer.	The older Internet Explorer (IE) icon may be on your desktop, but the Edge browser is the preferred browser for Microsoft now. For your reference, the older IE icon looked like this.

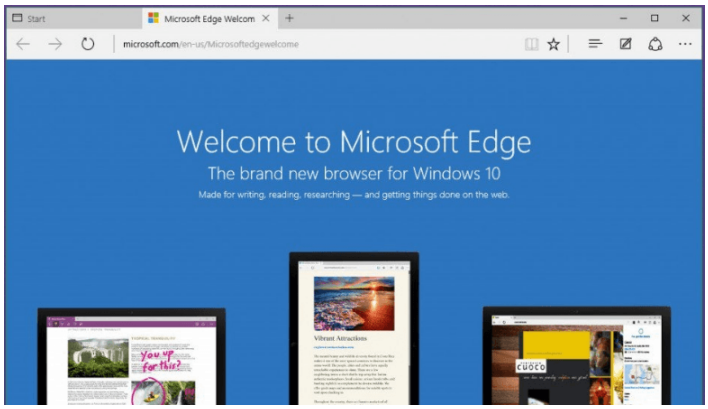
Unlike other browsers, which must be downloaded, Microsoft Edge (or Internet Explorer) comes with Windows. That means if you have a Windows computer, Edge (or Explorer) is already on your computer. The Edge icon on a Windows 10 computer system can be found either on the bottom taskbar or along the side. Click on the icon with the mouse and it will open the browser. The icon might be in slightly different places on your desktop, but look for the icon and double click on it to open the browser. Regardless of which version of Windows you have, you can also open the browser from the start menu. Select the start button, and when you

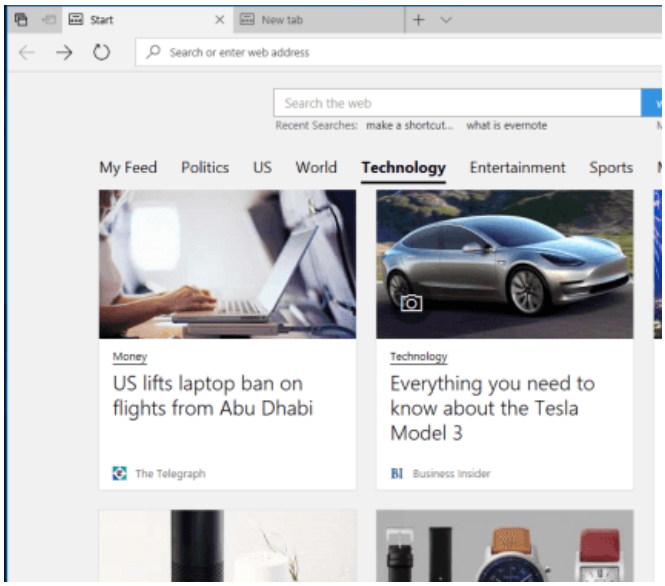
see the icon for Edge, select it and it will open.





After clicking with the mouse on the Edge icon, a window will open up and will look like this window if new (#1), or may have a news page displayed (#2), or it will open to the business default page that has already been established by the company's Information Technology (IT) department.





Practice Question

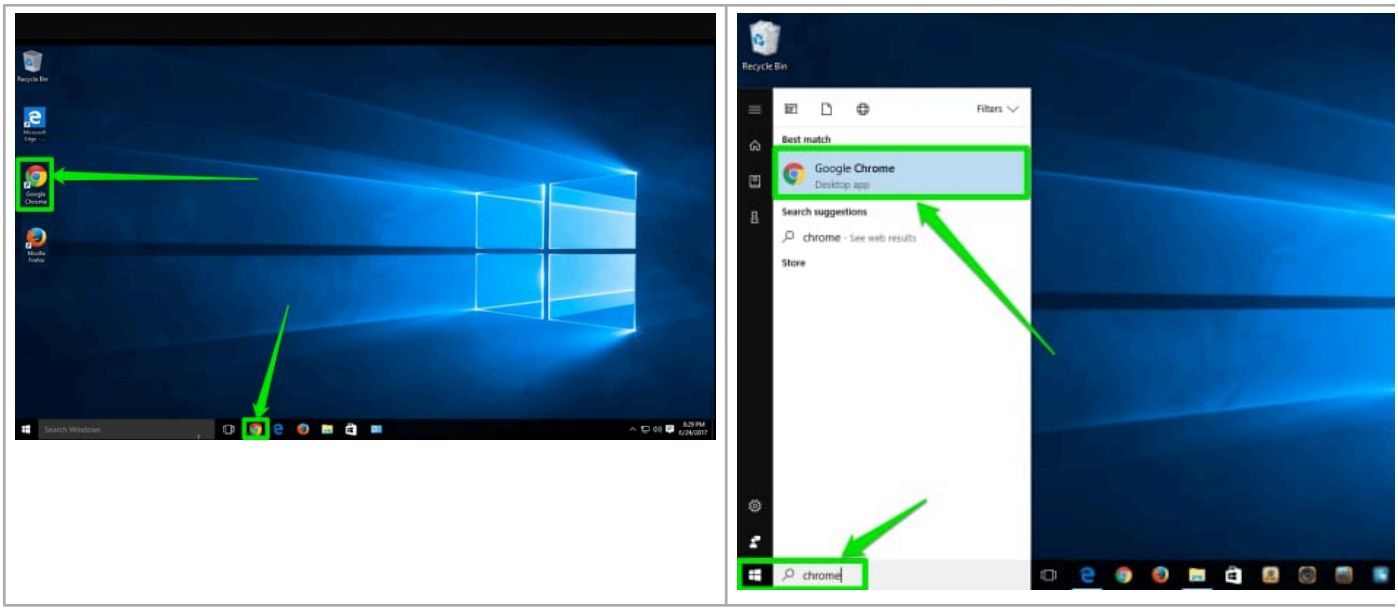
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Google Chrome

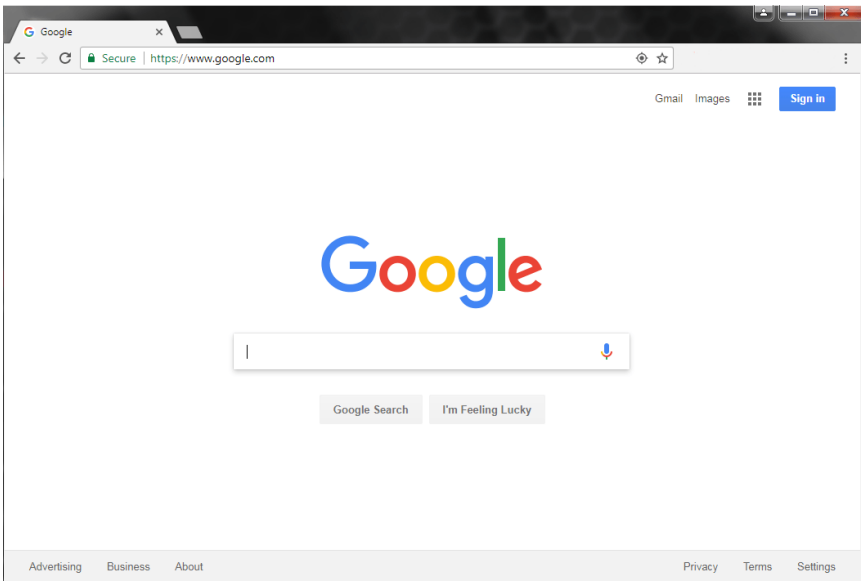
One of the most popular web browsers is Google Chrome (often simply referred to as Chrome). This icon is associated with the Chrome browser. This browser will be used as an example in this course in order to learn basic browser navigation skills and perform the other assignments and tasks associated with this module.

If Chrome is on your computer, the Chrome browser icon can be found on the Windows 10 desktop in the bottom task bar or along the side. Regardless of which version of Windows you have, you can also open the browser from the start menu. Select the start button and type in *Chrome*. If the Chrome browser is on your computer, it will be displayed in the menu, where you can now see the icon and select it to open.

If you wish to use this browser but do not have it on your computer, it can be downloaded and added by going to this website https://www.google.com/chrome/ and selecting the *Download* option from the top menu.



After clicking on the Chrome icon, a window will open up and look like this window, or it will open to the business default page that has already been established by the company's IT department. You may already notice that some of the features have similarities between the browser windows. Now to the final browser identification.



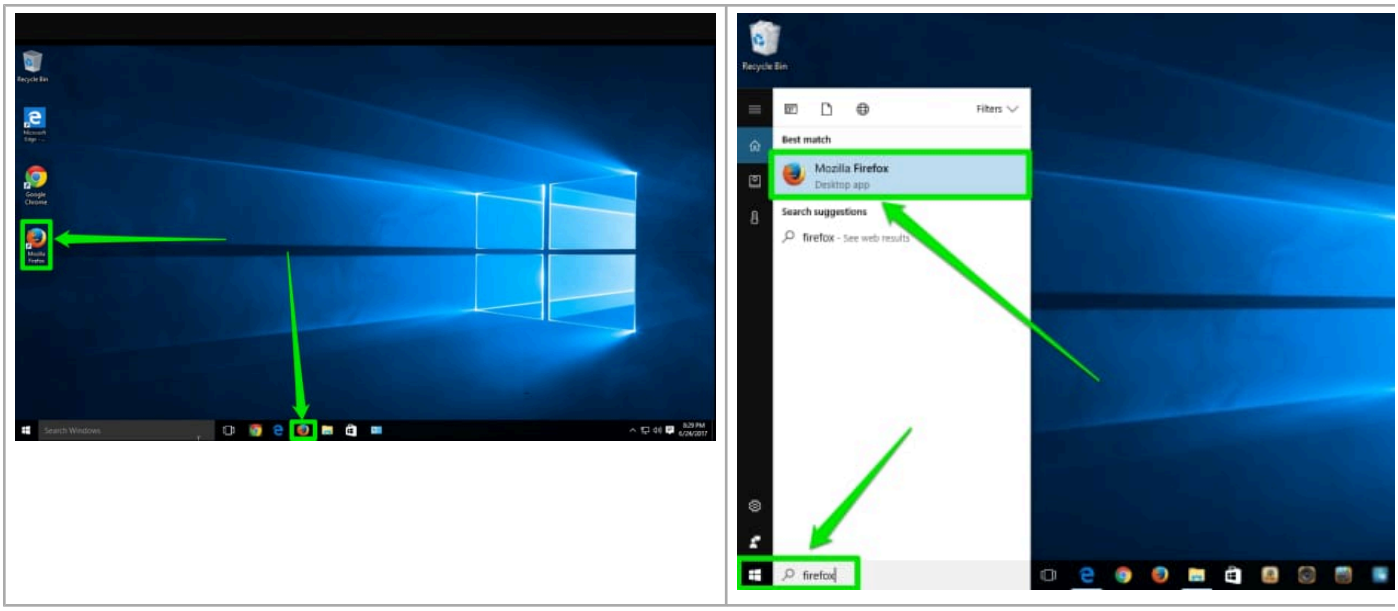
Mozilla Firefox



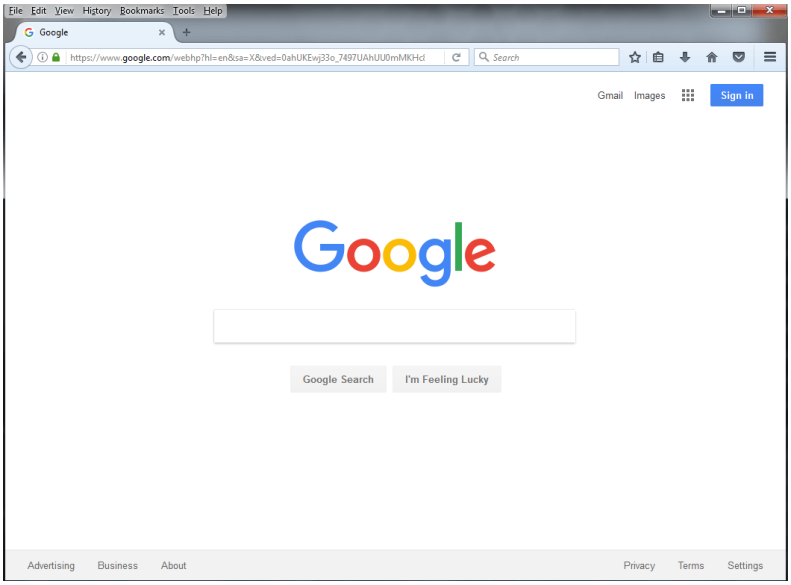
Mozilla Firefox (often simply referred to as Firefox) is a browser created by the company Mozilla and is another browser frequently used to “surf” or search the World Wide Web. This is the icon associated with the Firefox browser.

If Firefox is on your computer, the Firefox icon on your Windows 10 computer system can be found either on the bottom taskbar or along the side. The icon might be in slightly different places on your desktop, but look for the icon and click on it to open the browser. Just like the other two browsers, it may also be opened in the Start menu box by typing *Firefox*, then selecting the option to open it.

If you wish to use this browser but do not have it on your computer, you can open a browser that you do have and use this address to download the Firefox browser https://www.mozilla.org/en-US/firefox/ onto your computer.



After clicking on the Firefox icon, a window will open and look similar to this window, or will be on a default page that has been set up by the company.



Practice Question

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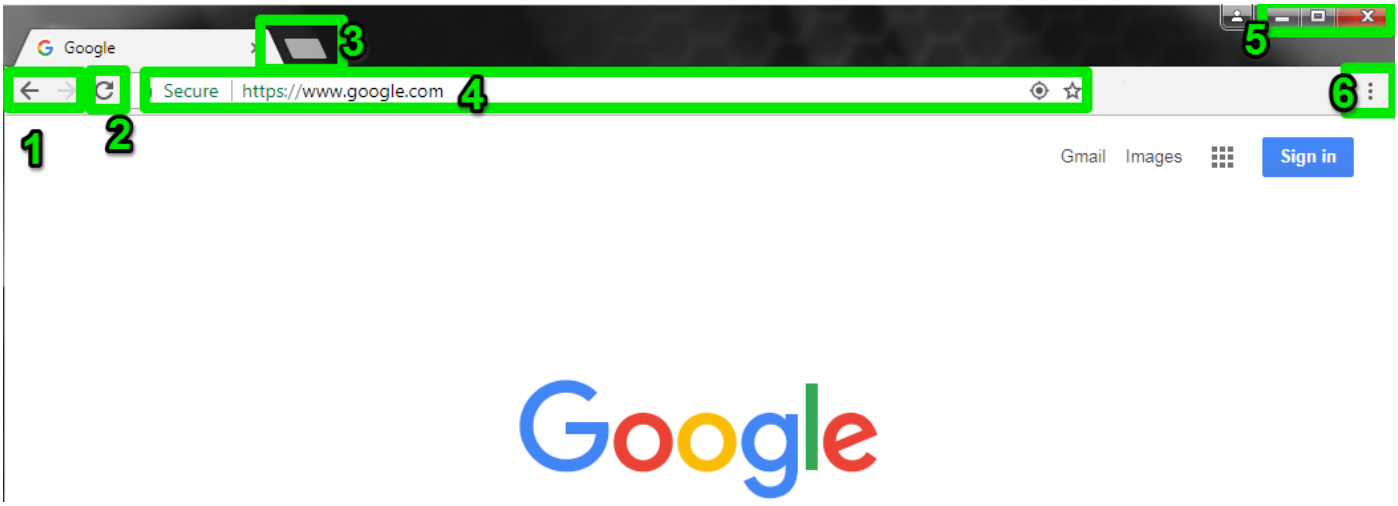
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2.3: Basic Browser Tools

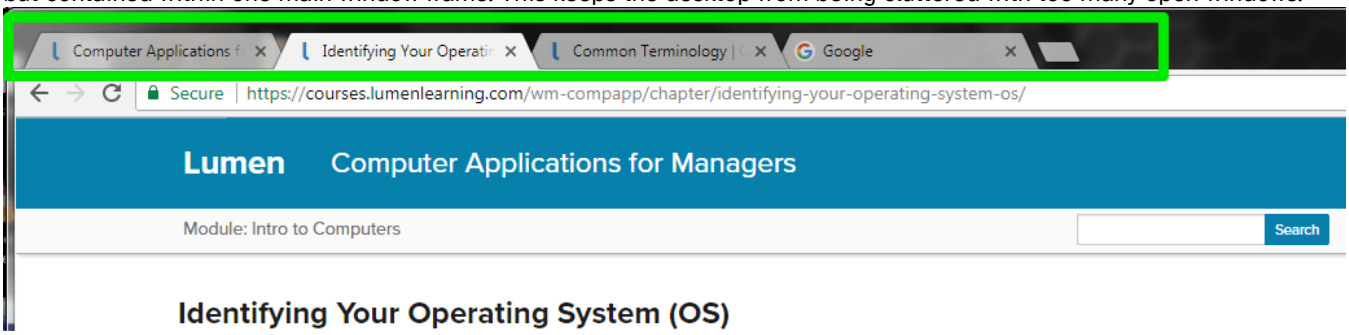
Learning Objectives

- Identify basic navigation tools used in a browser.

Now that you are familiar with what the three main browsers look like, where to locate them, and how to open them, it's time to learn a few of the basic tools to navigate and use a browser window. Even though we are the Chrome browser as an example to show these tools, they can be used in almost any browser.

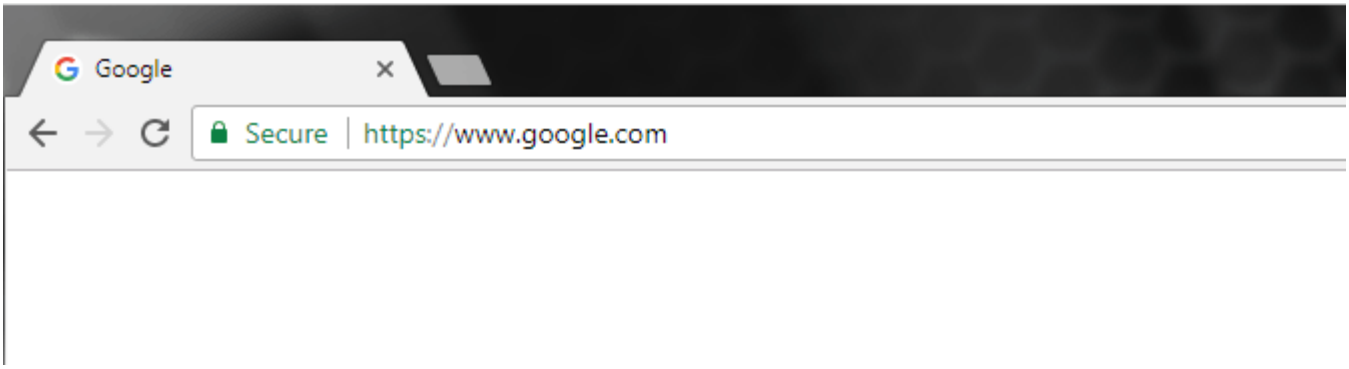


1. **Arrow Buttons.** These two arrows navigate the browser back (the left arrow) to a previously viewed webpage or forward (the right arrow) to more currently viewed webpages. These buttons can be pushed more than once to cause the browser to go back or forward further to web pages rendered in a browser session's history.
2. **Refresh Button.** This button reloads a webpage. Refreshing will update the information on a webpage if it has changed. If a webpage has not completely loaded, refreshing will reload the page so that it completely renders on the screen.
3. **New Tab Button.** Opens a new page in the same window when selected. This option allows for many websites to be open but contained within one main window frame. This keeps the desktop from being cluttered with too many open windows.

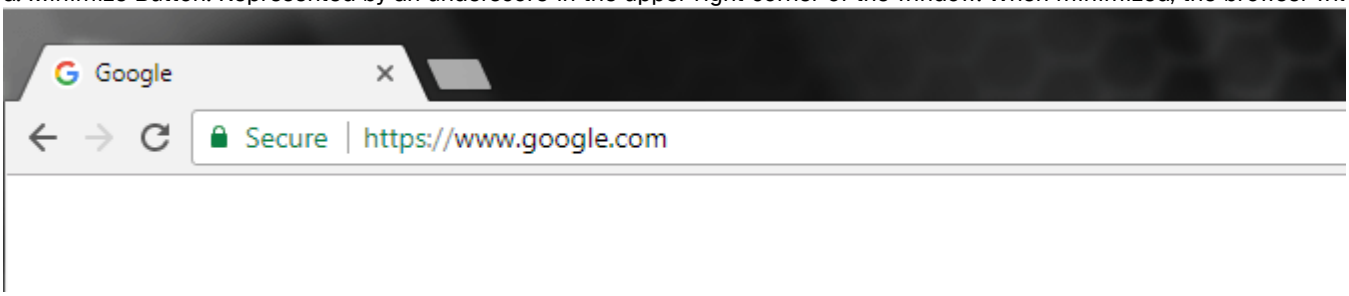


A browser with many tabs open will look to this.

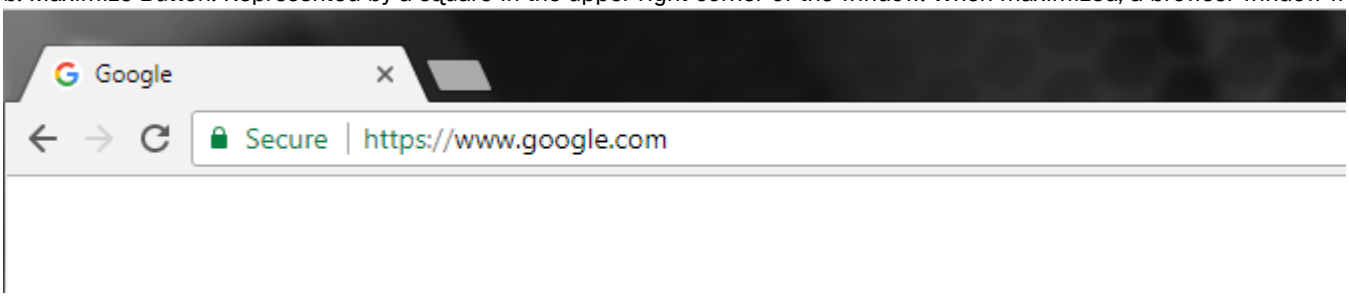
4. **Address Bar.** This text field on a browser that identifies the webpage currently being viewed in a browser window. All address bars are located at the top of the browser window. A user can type in a new address to navigate to a new webpage. Each website on the internet is reached by a web address known as a URL (Uniform Resource Locator) that references a specific location on the internet. Type a URL into the address bar of a browser, then press the Enter (Return) key on the keyboard to make the browser load the webpage associated with the URL. As browsers have gotten more sophisticated, most do not require for http:// or even the www to be typed in order for the webpage to be discovered.
5. **Resizing and Closing Buttons**. As covered in Common Terminology, these buttons allow a user to change the size of a browser window.



a. Minimize Button. Represented by an underscore in the upper right corner of the window. When minimized, the browser wil

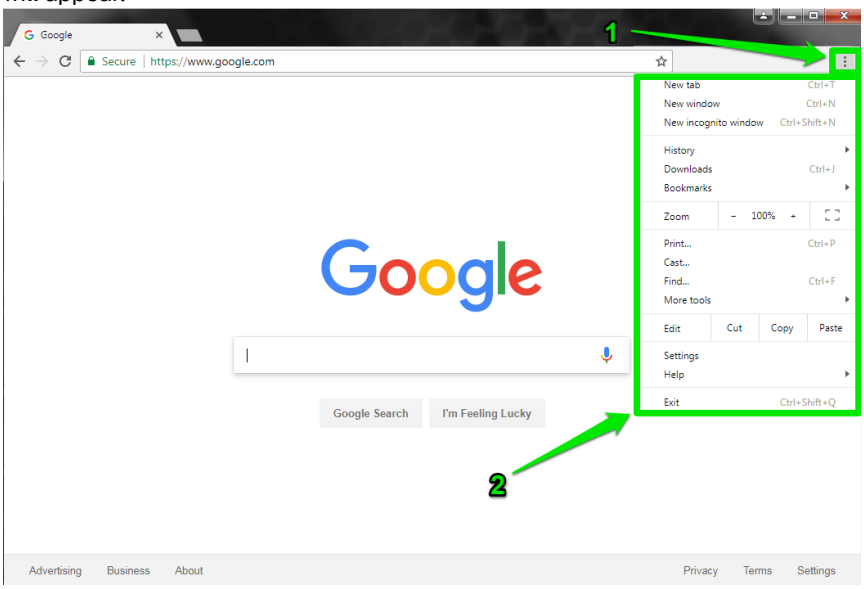


b. Maximize Button. Represented by a square in the upper right corner of the window. When maximized, a browser window w



c. Close Browser Button. The button in the upper right corner which is an X will terminate a browser session. This button al surfing the internet. Note: If there are multiple tab windows open a browser it will usually ask if you want to close all of the ta

6. **Menu Button.** In Chrome, the menu is indicated by three vertical dots in the upper right corner of the browser window (Edge uses three horizontal dots; Firefox uses three stacked horizontal lines). Once the menu button is selected a dropdown menu will appear.



Dropdown Menu. Once the menu button (#1) is clicked, it will display a dropdown menu (#2) with a variety of choices.

Practice Questions

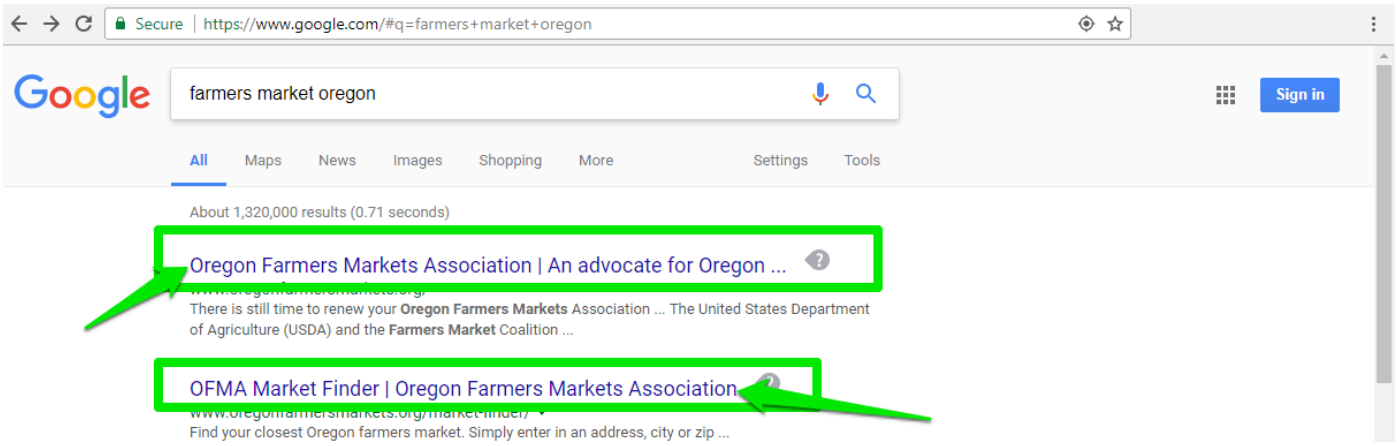
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Hyperlinks

A hyperlink (also called a link) is a section of text, an image, graphic or icon that is linked to a specific webpage, image, file or object. This is commonly seen in a browser as text, often a blue color.

Once the link is selected, the webpage automatically navigates to the linked webpage, icon, image, graphic or file. This is one of the main tools used when conducting a search on the web.

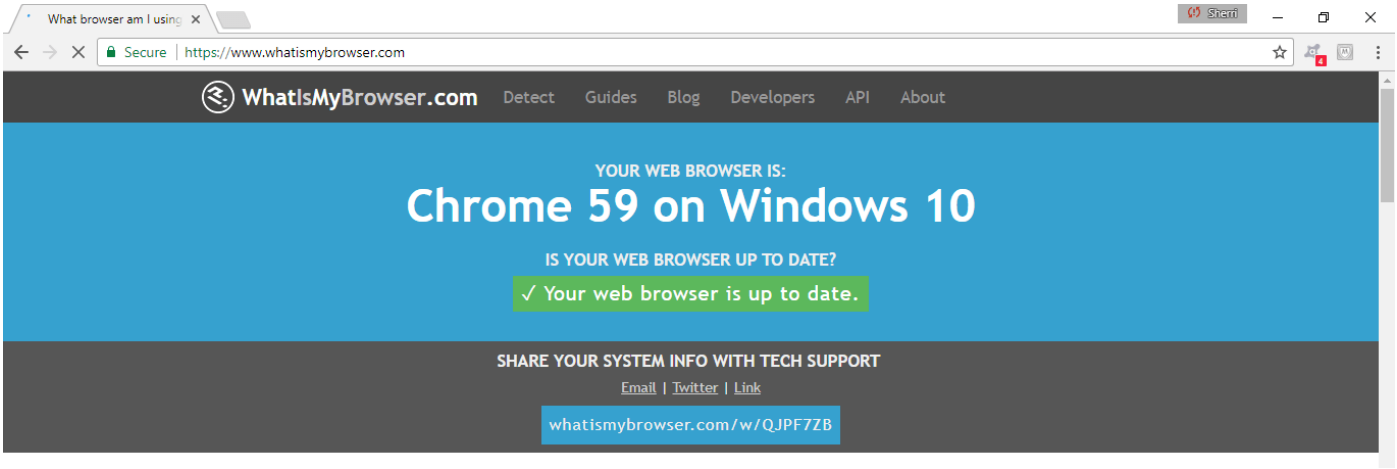


Practice Question

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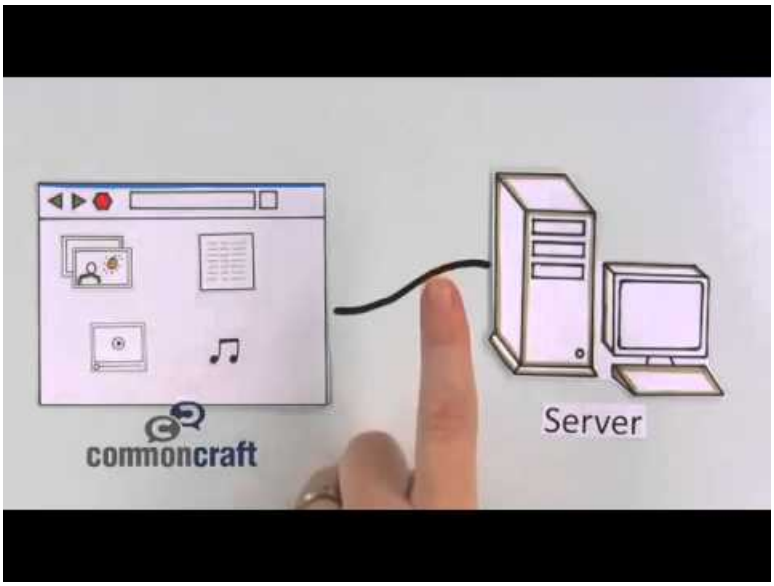
Bonus Tool

If you are ever asked by a support technician for the version of your browser, a quick way to discover your version is to go to this website http://www.whatsmybrowser.org/. It will tell you the browser type and additional information (like the operating system you are working with on your computer) so you know how your browser is configured.



Browsers and the World Wide Web

Now that you are more familiar with web browsers and their navigation, here is an explanation of the bigger picture about how they work. Watch this video to understand how browsers link you to the World Wide Web.



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2.4: Ethical Research

Learning Objectives

- Discuss the importance of ethical research

Today's advances in technology allow for collection of data, information and analysis of that information to depths and breadths like never before. As the technological world has changed, the business world has too. Business research and the ethical considerations in the collection, research and use of the results are now more important than ever. As the market calls for business to be conducted with more transparency and social responsibility, customers expect business research to be conducted ethically. This also means that if unethical research is used, technology makes it easier to discover and expose online which in turn diminishes social trust and may even decrease customer sales and retention for that business.

The world is now more connected than ever and even though a business may be in the United States, many customers or business partners may reside in countries all over the world. This increases the need to conduct ethical business research with this wider world connection in mind. Ethical research is one of the foundational components of business ethics to be aware of and to practice in order to create a competitive and sustainable business in today's world.

Ethical Research Principles

As a manager, part of your responsibility to a company and its employees is to ensure ethical research principles are understood and used when conducting research. It's important to know if those principles are clearly defined and stated within the company. If not, there are many resources to assist in defining ethical business research for you and your team.

Over time, various organizations have developed research principles as research guidelines for social, scientific, educational, and business research. Ethical research is important for fostering a trusting, relational connection between all parties connected with the research. So, what is the essence of these business research principles?

Ethical research principles include:

- **Respect for Persons and Their Autonomy.** A person's rights and decisions are respected.
- **Beneficence and Nonmaleficence.** Everyone involved is safe, considered and research ethically conducted.
- **Fidelity and Integrity.** Research is well designed, planned, process, outcomes, clear to everyone.
- **Justice.** Making sure the research is fair and inclusive.

Try It

Watch this video explaining the meaning of these principles. This video is regarding international development, but it is just as relevant for ethical business research.

A link to an interactive elements can be found at the bottom of this page.

You can also view a transcript for the video "Principles and Guidelines for Ethical Research and Evaluation in Development" here (opens in new window).

You still may be asking yourself why the need to conduct ethical business research? What is so important about following ethical standards? To answer those questions read through these next points and think through your own specific business scenario and how it benefits from conducting ethical business research.

It's important to follow ethical business research guidelines because they:

- Promote research to be truthful, inclusive, and minimize error or misrepresentation.
- Promote guiding standards of conduct for all people involved in the research.

- Promote accountability to businesses, customers, clients, and parties connected to the research.
- Promote public trust which can lead to public support of business.
- Promote compliance to laws, social responsibility, moral and ethical values, public health, etc.

What are ways to conduct ethical business research? Let's look at an example.

Example: Ethical Online Research

In today's world, billions of pieces of information are easily searched for online, but search engines do not determine what information is correct, useful, accurate, valuable, etc. Online searches return organized online data and information when search terms match the information, but search engines do not qualify that information. It is up to the researcher to validate and reference the source of the information being used.

How does a business researcher conduct ethical online research?

- Double checks information and sources used in business to account for its accuracy.
- Correctly attributes and sites data sources, reports, information, etc.
- Understands the copyright and fair use of images, content, audio, etc.
- Avoids plagiarism and taking credit for someone else's ideas

With all of the information available on the internet, it is especially important for business to maintain their ethical standards and not rely on incorrect information or misuse another business or person's work without the correct siting or payment for using images, ideas, audio, etc.

Practice Question

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But what potentially happens to a business if ethical methods aren't used? Let's look briefly at a different example.

Non-Ethical Research Consequences

What if a business fostered an environment where its research was not conducted with guiding ethical standards? Can you think of a few examples? Here are a few ways businesses use unethical activities with research:

- misrepresent research results;
- break respondent confidentiality;
- violate non-disclosure agreements;
- avoid legal liability;
- plagiarism;
- manipulate research data or participants for favorable outcomes.

Example: Tobacco Research

One very public and famous example of research manipulation occurred over decades in tobacco and cigarette companies. Even though the scientific research proved smoking caused lung cancer and did harm to those who used it and people who were around it, tobacco companies' manipulated the research results and denied the scientific facts thus endangering people's health in the pursuit of profit. Now millions of dollars have be spent in lawsuits and the true results have been exposed to the public.

Additional consequences for unethical business research mean faster exposure and customer reaction happen now because of the rise of the internet, citizen reporters, whistleblower laws, and informed customers, when shady research practices are discovered.

Try It

Technology and strengthened whistleblower laws have made it safer for customers or employees to expose unethical practices when discovered. Check out this article about one such instance: Duke University Agrees To Pay U.S. $112.5 Million To Settle False Claims Act Allegations Related To Scientific Research Misconduct.

The United States Department Of Labor also has a Whistleblower Protection Program, put in place to protect those who report.

As the world and business becomes more transparent, customers, clients and business partners can more easily find out if research has not been conducted ethically and the business backlash can be expensive and even cripple a company's revenue and public image. Yet one more reason it is important for a business to conduct its research ethically.

Practice Question

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Setting up ethical business research practices from the beginning and creating a company which adheres to those practices not only help a company to avoid social backlash for unethical practices, but continually foster customer trust and in turn can lead to better relations between business, customers and society.

Sources

Bryman, Alan, and Emma Bell. "Ethics in Business Research." In *Business Research Methods*, 3rd ed., 122–46. Oxford University Press, 2011.

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2.5: Data and Customer Rights

Learning Objectives

- Discuss customer rights regarding their personal data

As more mobile devices, social media, applications and ecommerce websites weave themselves ever tighter into customer's lives, more information is collected, and personal information shared to improve the consumer experience. This deeper infiltration into people's privacy and lives raises concerns about privacy and the potential for data leaks, unauthorized use of data and even malicious cyberattacks all which increase the likelihood of identity theft.

With the ever-increasing risks involved as the economy and world move forward with technology, we'll ask three questions: What constitutes personal data when it comes to customers? What is the current state of customer rights with regards to personal data? What is being done to have more protection and customer rights in the future?

Personal Data

Personal data means any information that can identify an individual person or customer. Sometimes it is called personal information or personally identifiable information (PII). In the U.S. according to the National Institute of Standards and Technology, which is a part of the U.S. Department of Commerce, personal data has been defined as:

any information about an individual maintained by an agency, including (1) any information that can be used to distinguish or trace an individual's identity, such as name, social security number, date and place of birth, mother's maiden name, or biometric records; and (2) any other information that is linked or linkable to an individual, such as medical, educational, financial, and employment information.[1]

Additional specific examples of PII include:

- Bank account numbers
- Passport numbers
- Credit Card numbers
- Driver's license number

This information also have the potential to be PPI because when combined they have the potential to disclose the identity of an individual.

- Full Name
- Home Address, City, State, Postcode, Country
- Telephone/Mobile number
- Age, birthdate, Gender or race
- Web cookies (cookies record actions taken on individual computers and repot back to cookie website)

As you can see, much of this type of information about individuals is disclosed daily when searching, shopping and working online. So, what kind of protections and rights do customers have when it comes to their own data? First, we'll look at the laws surrounding protection.

Practice Question

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Consumer Data Privacy Legislation and Laws

As of the start of 2020, there are no overreaching data specific federal law enacted in the U.S., but in 2018, legislation was enacted in a few U.S. states (California & Vermont) to give new rights to customers about the collection of their personal information. Those law are as follows:[2]

- California's Consumer Privacy Act of 2018 went into effect Jan. 1, 2020 and has one of the most extensive online privacy laws in the U.S. which not only effects companies within the state's borders, but also with any company doing business with CA residents. These consumer rights include the right to:
  - Know what personal information is being collected about them.
  - Know whether their personal information is sold or disclosed and to whom.
  - Say no to the sale of personal information.
  - Access their personal information.
  - Equal service and price, even if they exercise their privacy rights.
- Vermont's law which requires that data brokers disclose what data is being collected about individuals and allow them to opt out of data collection.

In 2019, some states introduced privacy and consumer data protection acts to the legislature and they are in various states of discussion. Those states included Maine, Nevada, Pennsylvania, Massachusetts, Hawaii, New York, and Maryland. It is important for a business to know the current laws surrounding consumer data protection as this is in constant flux and new laws may be passed in the future.

Try It

To read a comprehensive list of each state's legislation related to privacy and consumer data protection, follow this link to the National Conference of State Legislatures website.

European Union

Europe is taking the lead when it comes to consumer data privacy rights. In 2018, the E.U. enacted a more comprehensive consumer data privacy law called the General Data Protection Regulation (GDPR) law. The GDPR law clearly states how companies must protect personal data collected about E.U. citizens and extends its reach beyond the European boarders and encompasses any global business selling to or having EU customers. It also dictates the terms for violations of this law as fines that could cost 4 percent of a company's global profits. A steep penality that has companies taking this law very seriously. Watch this video to gain a more comprehensive understanding of GDPR.

A link to an interactive elements can be found at the bottom of this page.

You can also view a transcript for the video "What is GDPR?" here (opens in new window).

What rights is the GDPR enforcing for E.U. customers and consumers? It requires that:

- Simple language be used to explain how collected data is going to be handled by a company.
- Customers must give explicit consent to a company before it can do anything with the data.
- Customers must be given the opportunity to request copies of data held by the company.
- Customers must be given the opportunity to delete their company stored data entirely.
- Companies must report data breaches to consumers within 72 hours.

This type of overarching data rights law is being considered around the world as to what does seem to work, and how can it be improved or modified to fit specific countries or states.

Future of Customer Data Rights

Could something like the GDPR work if enacted in the U.S.? Many would like to adopt these standards but there is a long road to travel to make this fit with the U.S. economy.

Try It

The US wants to copy Europe's strict data privacy law—but only some of it. This video walks through exploring the possibility of having GDPR go global and some of the difficulties involved with doing so.

Practice Question

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What is apparent for the future, is that customer data rights are an ever-evolving issue that will need to be updated and new laws considered as new technology emerges and the consumer landscape continues to evolve.

Try It

Understand more how your personal data is being used by businesses and what the future may look like when it comes to your own data by watching this 17-minute TEDxBermuda talk given in 2015.

A link to an interactive elements can be found at the bottom of this page.

You can also view a transcript for the video "The Future of Your Personal Data" here (opens in new window).

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1. McCallister, Erika, Grance, Tim, Scarfone, Karen. *Guide to Protecting the Confidentiality of Personal Identifiable Information (PII)*. Special Publication 800–122. Gaithersbueg, MD: U.S. Department of Commerce, 2010. ↵
2. Nicastro, Dom. "Examining Where 8 US States Stand on Consumer Data Privacy Laws." CMSWire.com, August 30, 2019. ↵

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2.6: Web Searching

Learning Objectives

- Perform a web search using two different search engines.

The most productive way to conduct a search on the internet is through a search engine. A web search engine is a software system designed to search for information on the World Wide Web. The search results are generally presented in a line of results often referred to as search engine results pages (SEROs). The information may be a mix of web pages, images, and other types of files. Some search engines also mine data available in databases or open directories.

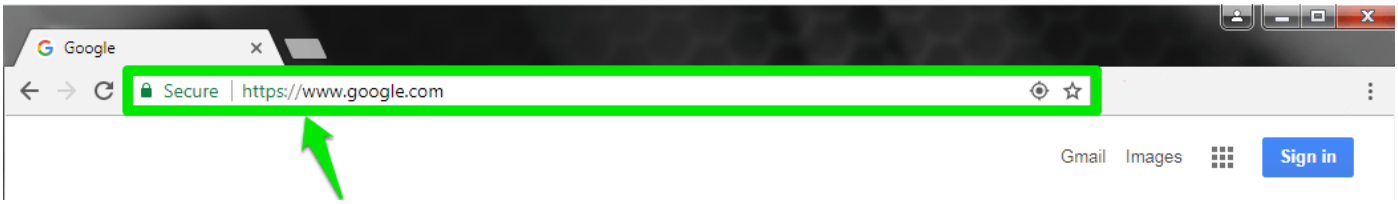
There are a number of various search engines available and some of them may seem familiar to you. The top web search engines are Google, Bing, Yahoo, Ask.com, and AOL.com. For the purpose of this course, we will be searching using the Google Chrome web browser, and search first with the Google search engine and then Microsoft's Bing search engine.



Searching on Chrome

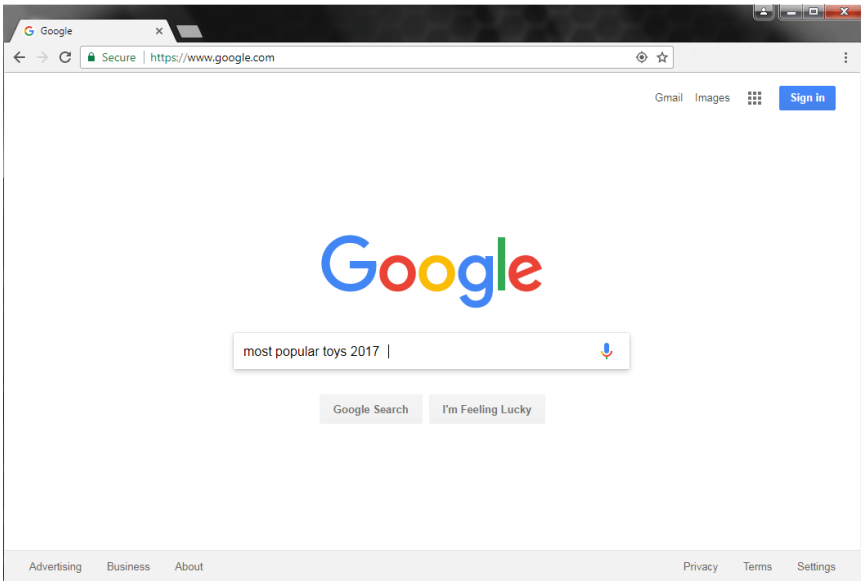
Your supervisor at Rowan Retail asked you to find out what the most popular kids toys are this year. He wants to have those toys stocked in the store for the upcoming holiday season. In order for you to find out that information, you turn on a computer and get ready to conduct a search on the internet.

The first step is to open a Chrome browser by clicking on the desktop icon or the icon on the computer desktop's taskbar. Once the browser window is open, type www.google.com into the address bar on the top of the browser window and press the Enter (or Return) key on the keyboard.

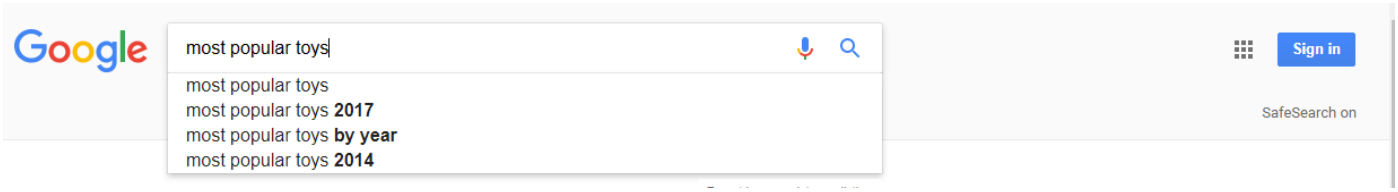


The browser now displays the large Google search bar. As you begin to enter the phrase *most popular toys of 2017* into the search

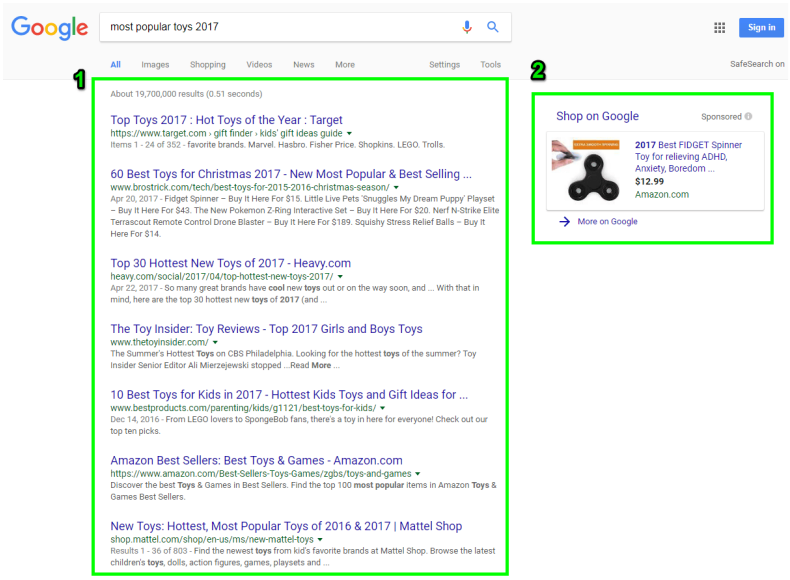
bar, notice how the search bar moves to the top of the screen as the words are typed. This movement is normal; continue to type the phrase.



As the words are typed, the search engine will display a dropdown list of suggested search options. At this point either continue typing the phrase or select the option of *most popular toys 2017*. Selecting a suggestion option is done in two ways; either by using the mouse to click on the desired option, or by using the down arrow key on the keyboard to select an option, then pushing the Enter (or Return) key.



The search is now entered and the webpage displays the results of your search. Notice how the results are displayed. Box #1 is the first page of the search results. Box #2 is an advertisement targeted to be relevant to the search. The search results in the list are titled by hyperlinks in a larger font and in a blue color. These links direct you to a website with information about the search. The advertisements on the right side are linked to something to buy. When conducting a search for information, the primary focus is on the list of search results, not the advertisements.



Read through the search results title and select the one most closely matching the information you are searching for to give your boss. Click on the results which seem most relevant to the search. Using these results, you can tell your boss what the top toys are for the season.

Practice Question

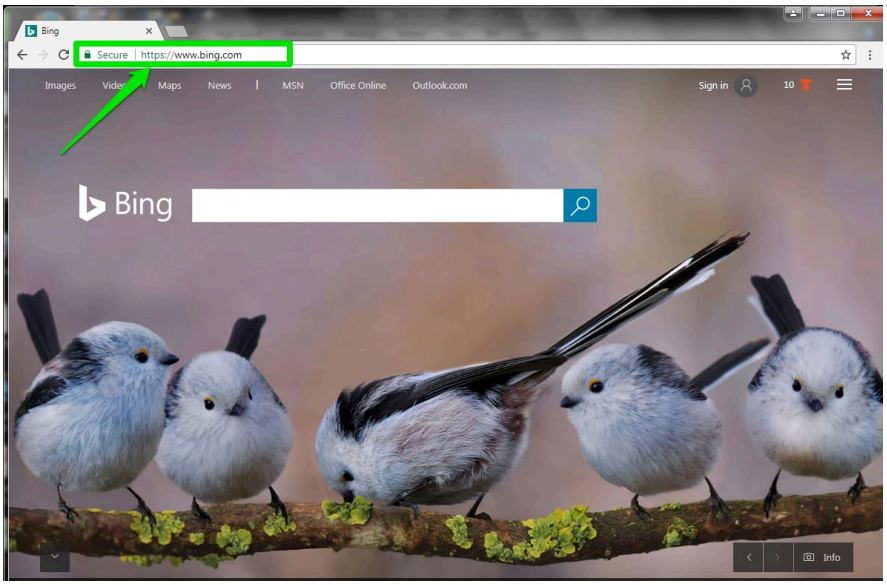
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Microsoft Bing Search

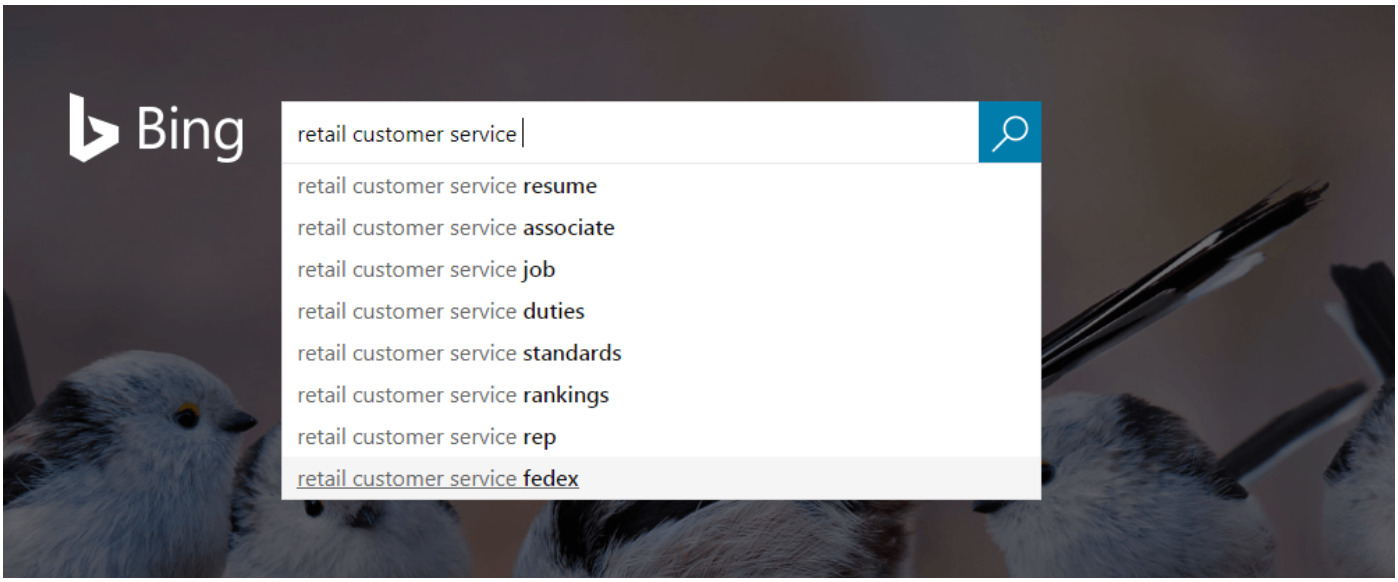
Now search in a different search engine—Bing.

The general manager of the Rowen Retail asks you for ideas to improve the store's customer service experiences. She wants to be able to hear about customers' experiences in a timely manner and address any service issues that are discovered. She would also like to generate ideas for creating delightful experiences for the store customers. You decide to try searching for ideas on the Bing search engine, so you turn on a computer and get ready to conduct search on the internet.

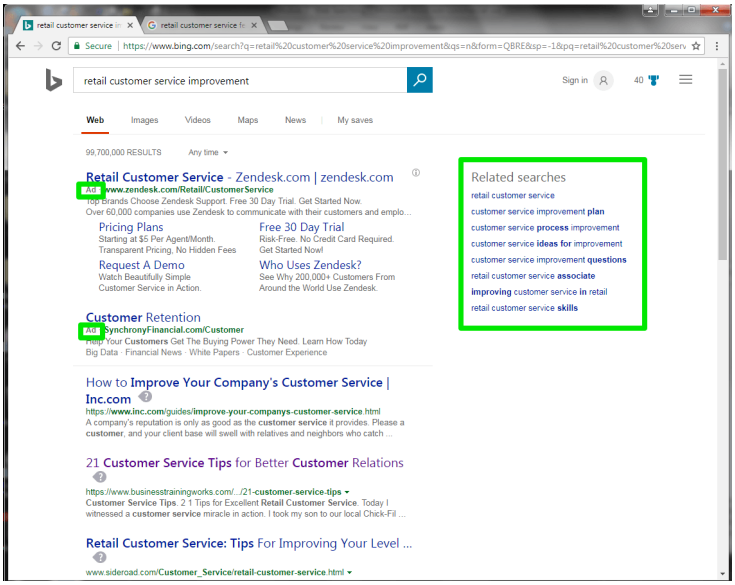
The first step is to open a Chrome browser by clicking on the desktop icon or the icon on the computer desktop's taskbar. With the browser window now open, type www.bing.com in the browser's address bar and press the Enter (or Return) key. Notice that with Bing, the main web page is always a photograph or picture.



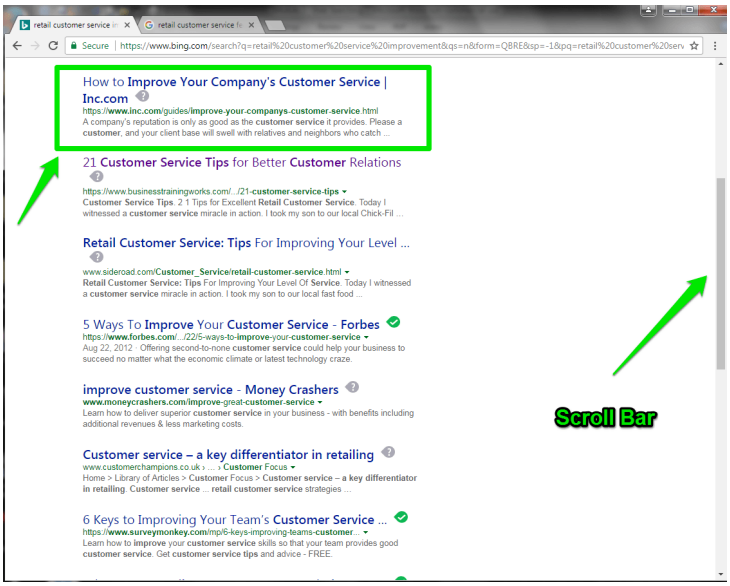
Now that the Bing search page is open, type in your key words, *retail customer service improvement,* into the search bar. You see suggestions begin to appear, but none of them are what you are searching for so keep typing.



Now that you have typed in your full search phrase, push the Enter (or Return) button or click on the blue magnifying glass to the right of the search box. The search results will look like this:



This search displays similarity to the Google search display, with one difference. To the right on the page are suggestions for related searches which you can click on to search with similar yet different keywords and phrases. Like the Google search, the first few search results are ads for companies or software related to your search. These are indicated by the “Ad” label placed before the web address. In order to discover more results, pull the scroll bar down the page.



If you select the top result it links to an article from Inc. Magazine about improving the customer service experience. Reading through this article will give you information and ideas which you can research further and present to your boss. Scan through the other results on this page. There are many additional articles, ideas, and search results to discover as you continue to research more ideas.

Practice Questions

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https://assessments.lumenlearning.co...essments/18567

You have now seen two different search engines, two different searches, and a few different ways to begin searching. Keep reading

through the next sections to learn additional ways to become more effective when searching on the web.

For more information about URLs and the information within web addresses, watch the video below.



A YouTube element has been excluded from this version of the text. You can view it online here: pb.libretexts.org/cafm/?p=116

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2.7: Identifying Search Results

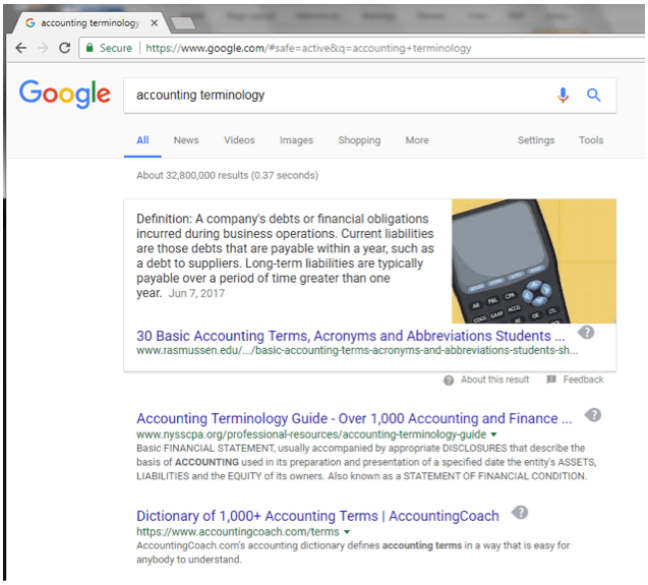
Learning Objectives

- Identify number of results from each search.

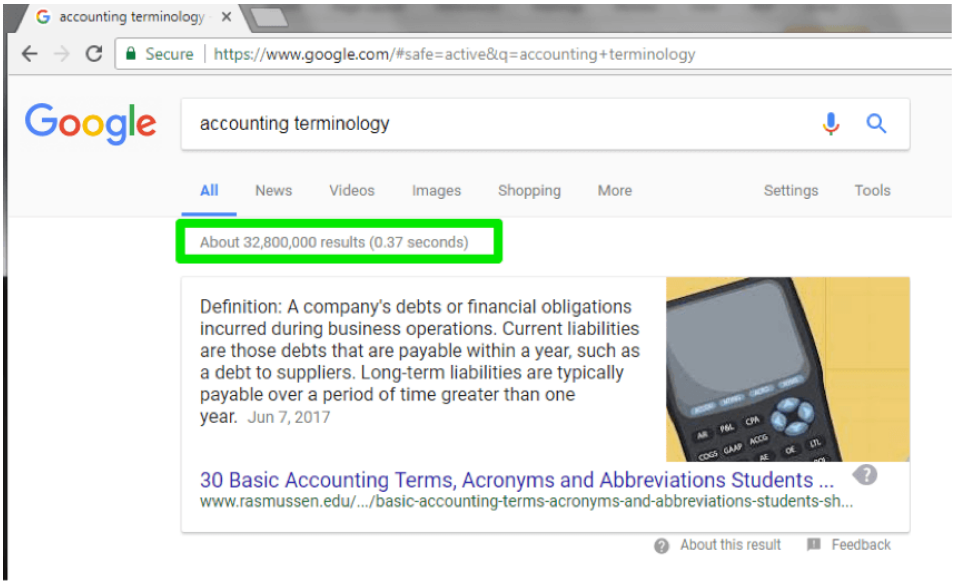
Number of Search Results

In the previous section, you learned how to conduct a web search in a search engine. How do you know how many results from a search you received? Let's go take a look.

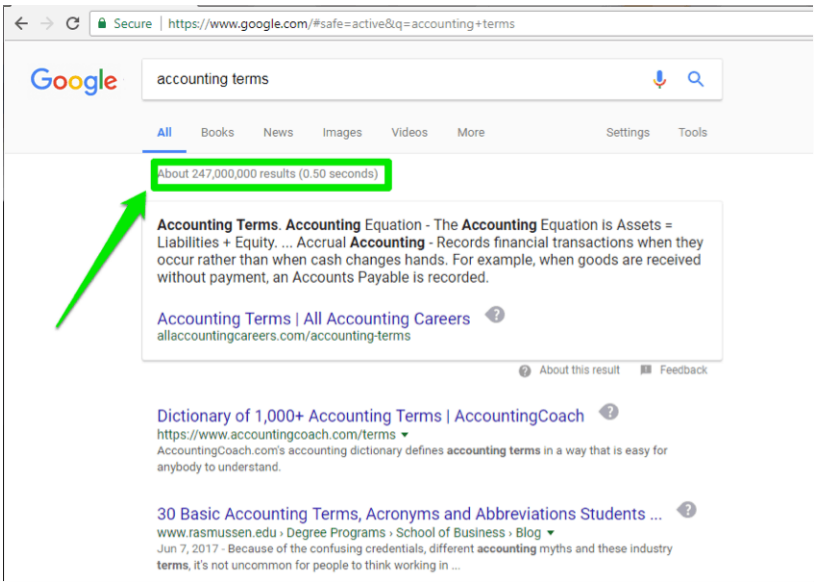
First, open the Chrome browser; make sure you use the Google search box and type in a search for *accounting terminology*. The results will look similar to this page:



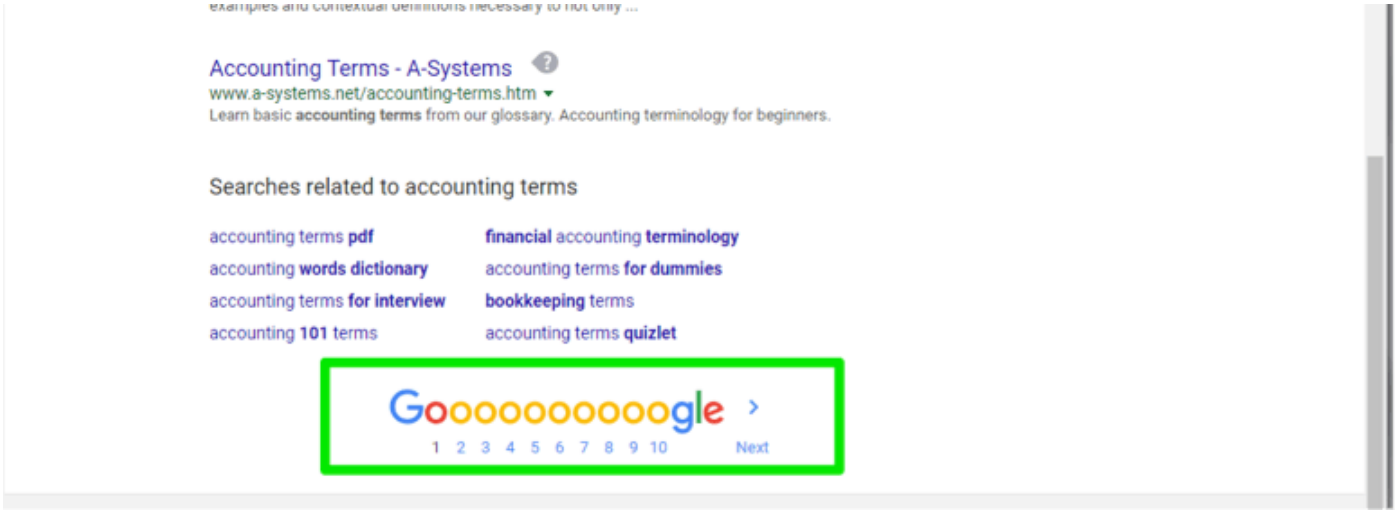
Look just above the definition box to see a large number: 32,800,000. This is the total number of accessible webpages and images about accounting terminology. It also took the search engine only 0.37 seconds to find all of this information. Amazing!



Change the search key words just a bit to see how the number of results changes. Type in accounting terms and see how many results are displayed.



The small change in keywords decreased the results to 247,000,000. Any keyword search conducted will return a number of results which you can see displayed like these examples. Often when there are so many search results it may become more difficult to conduct effective research on a topic. There are ways to narrow down the results and conduct a more focused search which we will go over a little later. Before we leave this subject however, there is one more way in Google search to visually see the size of the search results. Scroll down to the bottom of the search results page.



The larger the number of *O*s in the Google logo, the more results from the search you just created.

Now you know how to discover the number of your search results. This number changes for each search result. Have some fun and play around with searches to see the numbers change.

Practice Questions

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https://assessments.lumenlearning.co...essments/18570

Bonus Search Navigation Tools

Here are a few bonus tools for navigating through search results.



1. Under the Google logo there are numbers. If the number 3 is selected, the third search result page will be displayed. If the number 6, then the sixth search result page is displayed, and so on.
2. Selecting the right arrow button takes the browser window to the very next search result page (page 2) and continues to go page by page (3, 4, 5, etc.) as long as you click the arrow button.
3. Clicking on the *Next* word navigates the browser window to the very next search result page (page 2) and continues to go page by page (3, 4, 5, etc.) as long as you click the arrow button.
4. Once past the first results page a *left arrow* and *Previous* option appear. Use either of these to navigate to previous search result pages.

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2.8: WEB BROWSERS AND THE INTERNET

A web browser is a type of software that allows you to find and view websites on the Internet. There are many different web browsers, but some of the most common ones include Google Chrome, Internet Explorer, Safari, Microsoft Edge, and Mozilla Firefox.

2.8.1: Web Browser Interface

2.8.2: Downloading Files

2.8.3: Internet Security

2.8.4: Bookmarks and Internet History

2.8.5: Checking for Understanding

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2.8.1: Web Browser Interface

Web Browser Interface

Every web browser contains a different interface, however, there are some common attributes of all of them.

URLs and the address bar

Each website has a unique address, called a URL (short for Uniform Resource Locator). URL's are street addresses for computers, letting your computer know where to connect to on the internet. URLs are entered on the browser's address bar. The address bar is usually located at the top of the website window. Sometimes, address bars also have built-in search features, to search for the address if you do not know the exact website address. Website addresses usually contain **HTTP://** or **https://** which stands for *Hypertext Transfer Protocol or Hypertext Transfer Protocol Secure*. https:// addresses are more secure. The next letters are usually **www** which stands for *World Wide Web*. After *www*, the website address is displayed. Usually, website addresses end in **.com** (commercial), **.org** (organization), or **.edu** (educational institution) depending on their classification. In the address bar, please type or www.clcmn.edu to take you to the CLC website.

Hyperlinks

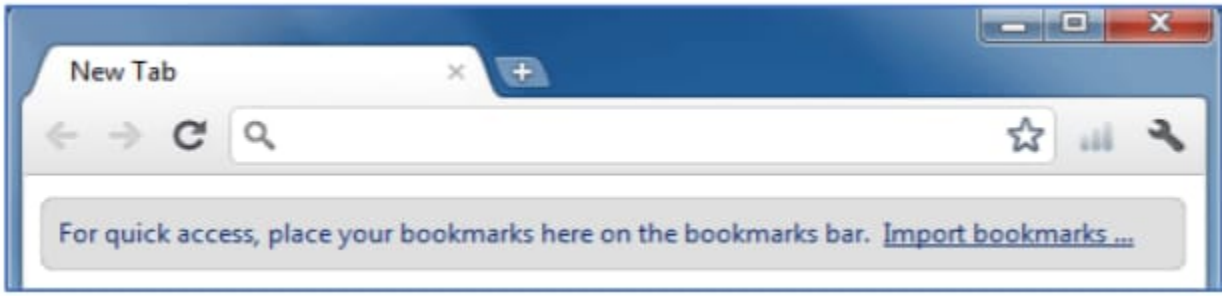
The website www.clcmn.edu displayed above that is underlined in blue is an example of a hyperlink, which provides the user with a direct address to a location on the web. Usually, the mouse pointer icon will switch to a  indicating the text is a hyperlink.

Navigation buttons



The Back and Forward arrow buttons allow you to move backward and forward through websites you've recently viewed. You can also click and hold either button to see your recent history. The Refresh button  will load the current website you are viewing a second time. Often a user will click on the refresh button when a website stops working to correct the error or to view new information because the website was updated while the user was viewing the information.

Browser Tabs



Many browsers allow you to open links in a new tab. Each tab is a new instance of the browser to help you manage your applications more efficiently. The more browser tabs that you open, the more system resources you consume. To open a link in a new tab, right-click the link and select Open link in a new tab (the exact wording may vary from browser to browser). You can close a tab by clicking the "X" on the particular tab, and open a new tab by clicking the "+" button on the particular tab.

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2.8.2: Downloading Files

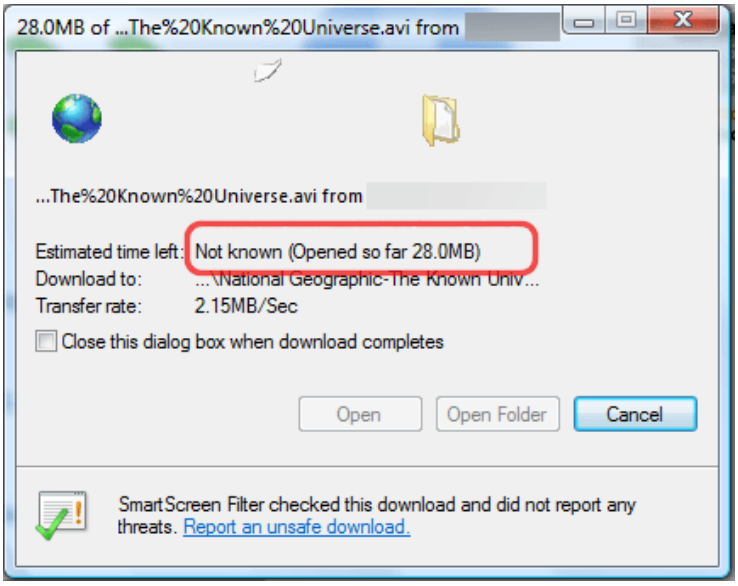


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Links don't always go to another website. In some cases, they point to a file that can be downloaded, or saved, to your computer. If you click a link to a file, it may download automatically, but sometimes it just opens within your browser instead of downloading. To prevent it from opening in the browser, you can right-click the link and select Save link as (different browsers may use slightly different wording, like Save target as). Files downloaded from the internet are often downloaded to your download folder, which is a quick access folder accessible on the left navigation pane of windows explorer. Sometimes you may want to save an image from a website to your computer. To do this, right-click the image and select Save image as (or Save picture as). Make sure you trust the file that you downloaded to your computer, as downloading any file or program to your computer contains security risks to your computer (links).

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2.8.3: Internet Security

The internet provides many opportunities for the user to learn, collaborate with others, participate in eCommerce, and improve the quality of their work. However, with all these benefits, there are risks associated with Internet use as well. It is important that users understand those risks and take measures to practice safe internet use and maintain their PC to prevent against Internet threats.

Internet Cookies



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When you browse the Internet, you can access and gather information from websites, but websites can also gather information about you without your knowledge. You can set Internet privacy options to protect your personal identity from unauthorized access. When you visit a website, the site creates a cookie file, known as a first-party cookie, which stores information on your computers, such as your website preferences or personally identifiable information, including your name and email address. The next time you visit that site, it can access the cookie to collect this information. Not all cookies are harmful, many first-party cookies save you time re-entering information on a return visit to a website. However, there are also third-party cookies, which are created by advertisers and can track your web browsing, even from sites you are not currently viewing. Once a cookie is saved on your computer, only the website that created it can read it. You can change how cookies are handled in your web browser and block pop up messages in the website settings menu. It is good practice to delete your cookies and internet history on a weekly basis and review your internet security settings in your web browser regularly. Many web browsers support custom security modes that delete all internet cookies and history upon exiting a browser (also called incognito mode) and other functions to eliminate exposures on websites. Many web browsers also display a lock  on the address bar indicating the website is secure.

Practicing Internet Security

In addition, it is important for the user to be careful about disclosing personal information (Name, Birthdate, Social Security Number, banking information, location, etc.) online unless they are sure of the authenticity of the website. A sophisticated cyber scam, known as “phishing” attempts to convince the internet user of the authenticity of a fake website to attempt to trick the user into disclosing personal financial information online. A good security technique is to view the website address in the browser address bar and search the web for information about the website to ensure it is reputable. When in doubt, you can usually call the company to ensure it is a real operation.

Cyberbullying

Cyberbullying can be defined as writing mean or inappropriate things online. Examples of cyberbullying include sending unwelcome emails or text messages, making threats, sexual harassment, hate speech, posting lies, rumors, or encouraging others to share this misinformation that may harm another. Instances of cyberbullying have increased significantly as more users spend more time online. Cyberbullying should be handled in a similar way to traditional bullying-if you are being bullied, ask for help! No one deserves to be bullied. Cyberbullying is easy to prosecute as it is very difficult to delete the evidence.

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2.8.4: Bookmarks and Internet History

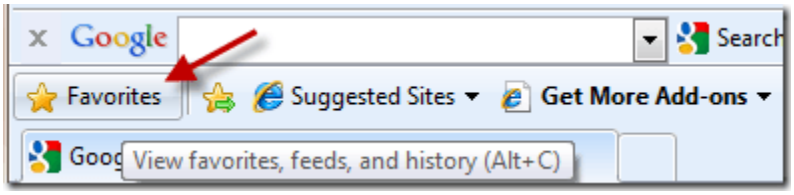


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If you find a website you want to access later, it can be difficult to remember all of the websites you want to visit. Bookmarks or favorites allow your computer to remember your favorite website URLs so you do not have to. To create a bookmark, select the Star icon to bookmark the current website. In addition to bookmarks, your browser will also keep track of every website you visit through your internet history. To view your history, open your browser settings—usually by clicking the icon in the upper-right corner—and select History.

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2.8.5: Checking for Understanding

1. Demonstrate how to download and retrieve a file.
2. Save a picture from the web to your computer.
3. Please demonstrate how to clear browser history and internet cookies.
4. Navigate to the website www.clcmn.edu. Create a bookmark.
5. List methods to prevent yourself from online.
6. Identify Cyberbullying and share strategies to get help if you are being cyberbullied.

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2.9: WINDOWS SECURITY

Protecting your PC and your personal information while using your computer is very important. Every year, thousands of individuals have their personal and financial information compromised and suffer tragic consequences. Ensuring your computer is updated to the latest version and is protected is a vital part of using a computer. Three common attacks on computers include computer viruses, malware, and phishing.

2.9.1: Computer Viruses

2.9.2: Computer Malware

2.9.3: Phishing

2.9.4: Windows Defender Security Center

2.9.5: Launching Windows Defender Security Center

2.9.6: Using Windows Defender Scan

2.9.7: Viewing the Health/ Performance of your PC

2.9.8: Fresh Start

2.9.9: How to Manage Network Security with Windows Defender Firewall

2.9.10: How to Protect your PC against Malicious Code

2.9.11: User Account Control

2.9.12: Automatic Updates

2.9.13: Internet and Computer Safety Tips

2.9.14: Checking for Understanding

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2.9.1: Computer Viruses

A computer virus, much like a flu virus, is designed to spread from host to host and can replicate itself. In more technical terms, a computer virus is a type of malicious code or program written to alter the way a computer operates and is designed to spread from one computer to another. A virus operates by inserting or attaching itself to a legitimate program or document that supports macros in order to execute its code. In the process, a virus has the potential to cause unexpected or damaging effects, such as harming the system software by corrupting or destroying data (Norton.com, n.d.).

How does a computer virus attack?

Once a virus has successfully attached to a program, file, or document, the virus will lie dormant until circumstances cause the computer or device to execute its code. For a virus to infect your computer, you must run the infected program, which in turn causes the virus code to be executed. This means that a virus can remain dormant on your computer, without showing major signs or symptoms. However, once the virus infects your computer, the virus can infect other computers on the same network. Stealing passwords or data, logging keystrokes, corrupting files, spamming your email contacts, and even taking over your machine are just some of the devastating and irritating things a virus can do. While some viruses can be playful in intent and effect, others can have profound and damaging effects. This includes erasing data or causing permanent damage to your hard disk. Worse yet, some viruses are designed with financial gains in mind. (Norton.com, n.d.)

How do computer viruses spread?

In a constantly connected world, you can contract a computer virus in many ways, some more obvious than others. Viruses can be spread through email and text message attachments, Internet file downloads, and social media scam links. Your mobile devices and smartphones can become infected with mobile viruses through shady App downloads. Viruses can hide disguised as attachments of socially shareable content such as funny images, greeting cards, or audio and video files. To avoid contact with a virus, it's important to exercise caution when surfing the web, downloading files, and opening links or attachments. To help stay safe, never download text or email attachments that you're not expecting, or files from websites you don't trust. (Norton.com, n.d.)

What are the signs of a computer virus?

A computer virus attack can produce a variety of symptoms. Here are some of them: (Norton.com, n.d.)

- Frequent pop-up windows. Pop-ups might encourage you to visit unusual sites. Or they might prod you to download antivirus or other software programs.
- Changes to your homepage. Your usual homepage may change to another website, for instance. Plus, you may be unable to reset it.
- Mass emails being sent from your email account. A criminal may take control of your account or send emails in your name from another infected computer.
- Frequent crashes. A virus can inflict major damage on your hard drive. This may cause your device to freeze or crash. It may also prevent your device from coming back on.
- Unusually slow computer performance. A sudden change in processing speed could signal that your computer has a virus.
- Unknown programs that startup when you turn on your computer. You may become aware of the unfamiliar program when you start your computer. Or you might notice it by checking your computer's list of active applications.
- Unusual activities like password changes. This could prevent you from logging into your computer.

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2.9.2: Computer Malware

Malware is an abbreviated form of “malicious software.” This is software that is specifically designed to gain access to or damage a computer, usually without the knowledge of the owner. There are various types of malware, including spyware, ransomware, viruses, worms, Trojan horses, adware, or any type of malicious code that infiltrates a computer. Generally, the software is considered malware based on the intent of the creator rather than its actual features. Malware creation is on the rise due to money that can be made through organized Internet crime. Originally malware was created for experiments and pranks, but eventually, it was used for vandalism and destruction of targeted machines. Today, much of malware is created to make a profit from forced advertising (adware), stealing sensitive information (spyware), spreading email spam or child pornography (zombie computers), or extorting money (ransomware). Various factors can make computers more vulnerable to malware attacks, including defects in the operating system (OS) design, all the computers on a network running the same OS, giving users too many permissions, or just because a computer runs on a particular operating system, such as Windows, for example. The best protection from malware — whether ransomware, bots, browser hijackers, or other malicious software — continues to be the usual, preventive advice: be careful about what email attachments you open, be cautious when surfing by staying away from suspicious websites, and install and maintain an updated, quality antivirus program. (Norton.com, n.d.)

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2.9.3: Phishing

Phishing is a cyber-attack that uses disguised email as a weapon. The goal is to trick the email recipient into believing that the message is something they want or need — a request from their bank, for instance, or a note from someone in their company — and to click a link or download an attachment. What really distinguishes phishing is the form the message takes: the attackers masquerade as a trusted entity of some kind, often a real or plausibly real person, or a company the victim might do business with. It's one of the oldest types of cyberattacks, dating back to the 1990s, and it's still one of the most widespread and pernicious, with phishing messages and techniques becoming increasingly sophisticated. (Norton.com, n.d.)

While there are several paid-for and free applications that protect against viruses and malware, Windows has built-in applications to monitor the health of your PC and protect it against hostile threats.

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2.9.4: Windows Defender Security Center

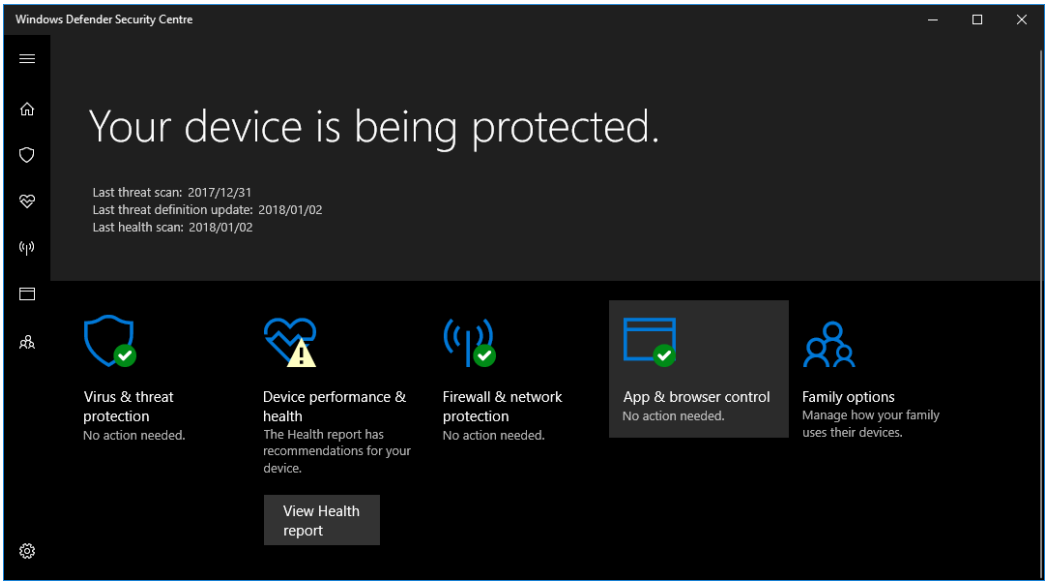


Figure 2.9.4.1: This Photo by Unknown Author is licensed under CC BY-SA

Windows 10 Defender Security Center is built into Windows 10. It combines the most common security features of Windows into an easy-to-use app allowing technical and non-technical users to view and protect their devices and data against many types of malware, including viruses and ransomware, hacker attacks, security threats, and more. Windows Defender Security Center is an application that provides a unified experience to view status and control security features, such as firewall, antivirus, performance monitor, and other products. Windows Defender Antivirus is the default anti-malware engine of Windows 10 that offers real-time protection against viruses and security threats. Installing a third-party antivirus will disable the Windows Defender Antivirus automatically, but it'll not affect the functionality of the Windows Defender Security Center. In the same way, disabling Windows Defender Antivirus or Windows Defender Firewall will not disable Security Center.

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2.9.5: Launching Windows Defender Security Center

To get started, you can launch the app from the Start menu, or you can double-click the shield icon from the notification area in the taskbar. Although "Home" doesn't include any setting that you can manage, it's a good place to get started, as it provides an overview of the protection of your device. On this page, you can view the status of all the security features and alerts of any action that needs to be taken to keep your computer secure. Also, at the top of the page, you'll be able to find antivirus information, such as when the last scan was performed and when the last definition was installed. The shield icon in the notification area is also capable of alerting you when an action needs to be taken. If there is more than one alert, only the most severe warning will be displayed (Windows Central, n.d.). Windows Defender Security Center includes five areas of protection that you can manage and monitor.

- Virus & threat protection: includes the Windows Defender Antivirus settings, and it allows you to monitor the malware protection, scan your device for threats, and set up its advanced anti-ransomware feature.
- Device performance & health: allows you to check the health and performance of your computer and provides a mechanism to clean up your device to fix errors and slowdown problems.
- Firewall & network protection: lets you monitor the status of network connections, and you can configure various Windows Defender Firewall settings.
- App and browser control: help you to protect your device and data from malicious code hidden on apps, files, and websites.
- Family options: offers easy access to manage your devices and kids' online experience using a Microsoft account.

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2.9.6: Using Windows Defender Scan

To scan your PC for viruses and malware using Windows Defender Antivirus, complete either a quick scan or full scan. To perform a Quick Scan, complete the following:

1. Open Windows Defender Security Center.
2. Click on Virus & threat protection.
3. Click the Quick scan button.

To perform a Full Scan or Custom Scan, complete the following.

1. Open Windows Defender Security Center.
2. Click on Virus & threat protection.
3. Click the link of the Advanced scan.
4. Select the Full Scan or Custom Scan option and select the appropriate folders to scan.

Sometimes if you're dealing with a tough virus or another type of malware, the antivirus may not be able to remove it while Windows 10 is running. If this is the case, save your work, close any running application, and run an offline scan using the following steps:

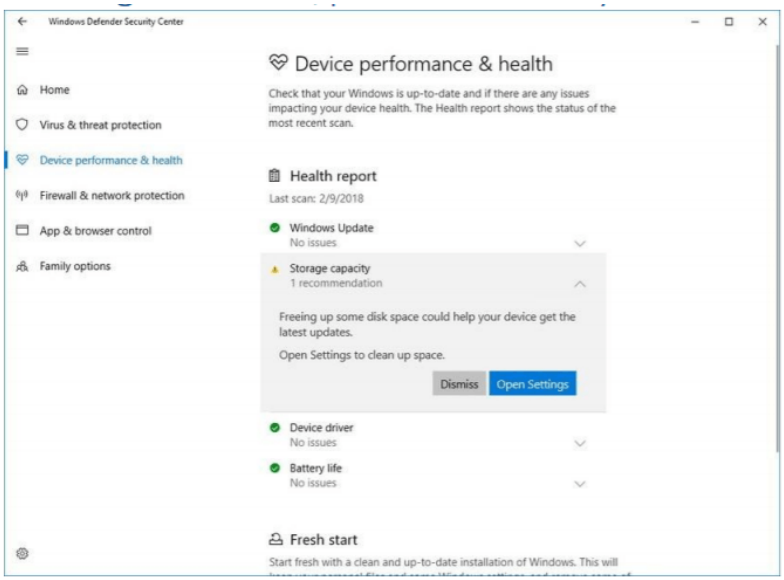
1. Open Windows Defender Security Center.
2. Click on Virus & threat protection.
3. Click the link of the Advanced scan.
4. Select the Windows Defender Offline scan option.
5. Click the Scan now button.
6. Click the Scan button to continue.

When you start an offline scan, your device will restart and boot using the Windows Defender Antivirus environment. The latest definition update will be installed (if an internet connection is available), a scan will be performed, and if malicious software is detected, it'll be removed or quarantined automatically.

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2.9.7: Viewing the Health/ Performance of your PC



Windows Defender Security Center also includes an area that surfaces information about the health and performance of your computer. To view your PC health and performance report, do the following:

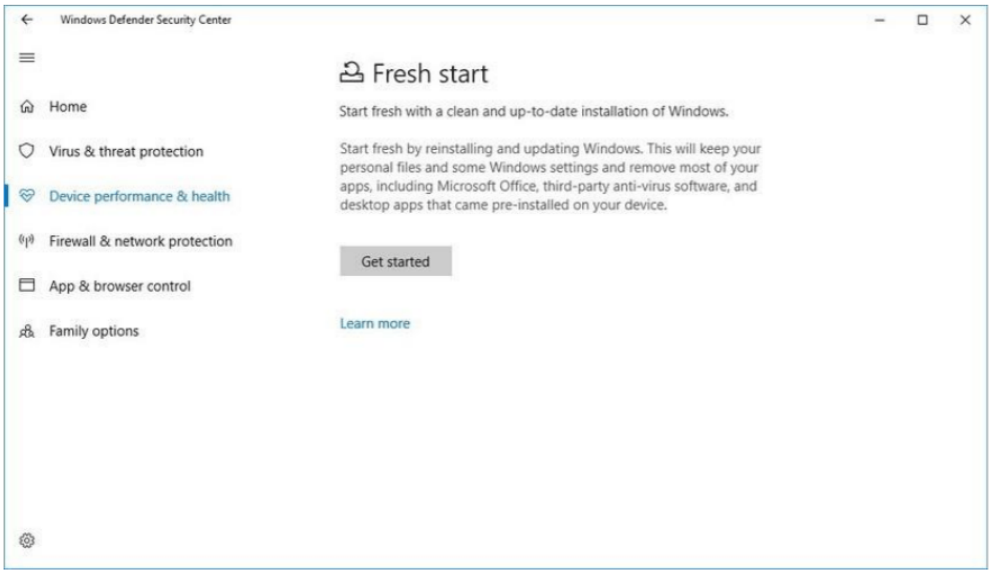
1. Open Windows Defender Security Center.
2. Click on Device performance & health.

The report includes a status for Windows Update, storage, device driver, and battery. If action needs to be taken, you'll see an alert with a recommendation on how to remedy the issue (Windows Central, n.d.).

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2.9.8: Fresh Start



If your PC is having performance problems, such as issues with memory, shutting down, or everything is working very slow, you can click the Additional info link under "Fresh start" to re-install Windows 10 with the latest updates.

To perform a Fresh Start, perform the following:

1. Click the Get started button
2. Click the Next button.
3. Review the apps that will be removed.
4. Click the Next button.
5. Click the Start button to begin the process.

This process won't delete your files, it'll keep some Windows settings, but it'll remove everything else to help fix performance issues with your device (Windows Central, n.d.).

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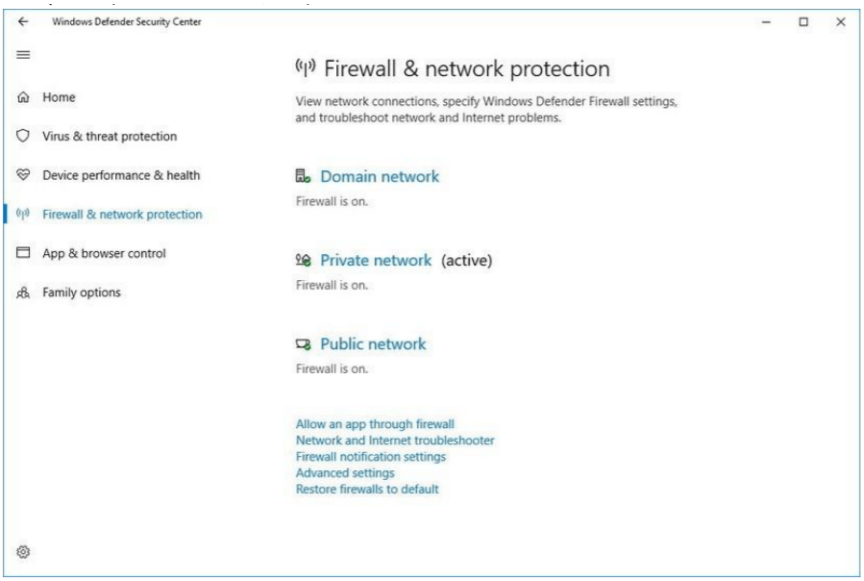
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2.9.9: How to Manage Network Security with Windows Defender Firewall

The experience also includes an area to monitor and manage Windows Defender Firewall settings, which you can access with the following steps:

1. Open Windows Defender Security Center.
2. Click on Firewall & network protection.
3. On the page, you can view at a glance in which network profile the firewall is currently enabled and protecting you from unauthorized access.

The one marked as "active" is the network profile currently in use. You can also click any of the networks to disable the firewall and block all incoming network connections for a profile (Windows Central, n.d.).



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2.9.10: How to Protect your PC against Malicious Code

The "App & browser control" page is the place to configure the Windows Defender SmartScreen settings that can help you to protect your computer against sites, apps, and files that may contain malicious code. The default settings are the recommended configuration you should be using. Of course, that is unless you have a specific reason to change them.

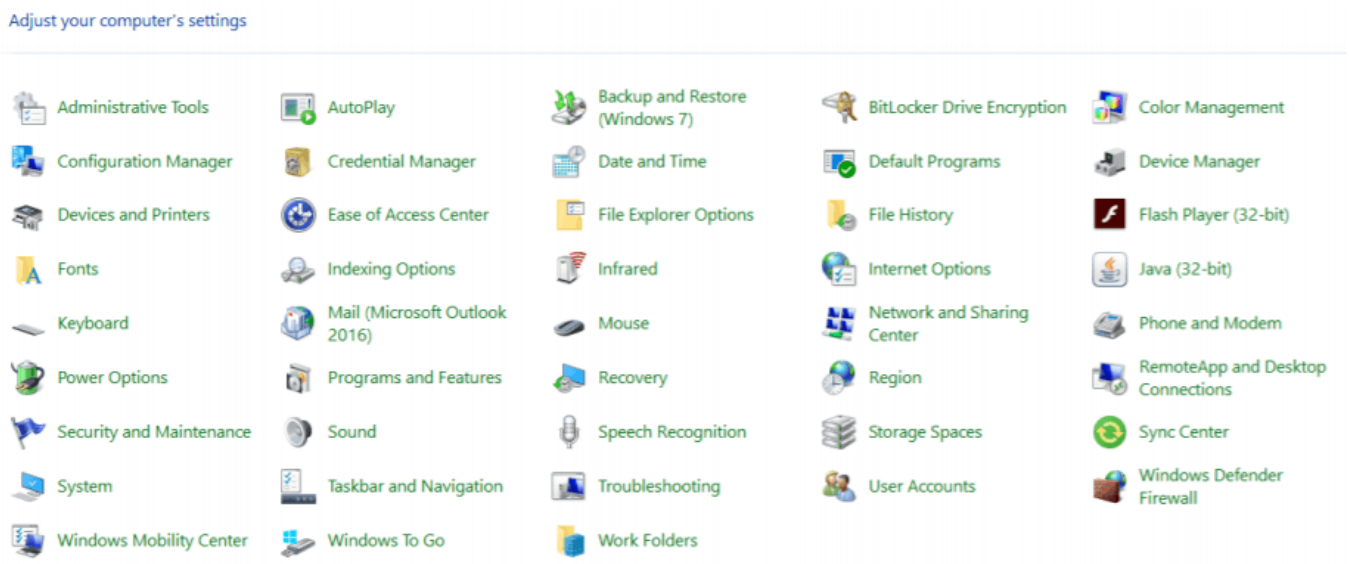
1. To change the default SmartScreen settings, do the following:
   a. Open Windows Defender Security Center.
   b. Click on App & browser control.
   c. Select the level of protection you want for apps and files, Microsoft Edge, and Microsoft Store apps.

You'll also notice Exploit protection at the bottom of the page. This is an advanced feature that can help to mitigate malware and vulnerabilities without having to wait for a malware or system update.

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2.9.11: User Account Control



The Windows User Account Control is a tool that warns you when someone or something attempts to change your computer system settings. When this happens, the screen will alert you until an Administrator can confirm the change. This helps protect your computer against accidental changes or malicious software altering your settings. Initially, this User Account Control is set at a moderate to a high level, which means it will notify you only when an application tries to make changes to your computer. However, you can change this setting to your desired level by following these steps – (Tutorialspoint.com, n.d.)

1. Open the Control Panel by searching for it in the search bar.
2. After the Control Panel is open, choose User Accounts.
3. After choosing User Accounts, click on “Change User Account Control settings”.
4. In the User Account Control Settings, you can move the slider to the desired position.

Windows 10 will give you a summary of how your system will behave under that level.

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2.9.12: Automatic Updates

By default, Windows 10 is set up to automatically download the latest updates for the Windows Operating system as soon as they are available. It is important to allow those updates, as often crucial errors or “bugs” that may make your computer susceptible to a computer virus or malware are fixed or “patched” by updates. When updates are installing, it is important to not turn off your computer until they are completed.



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2.9.13: Internet and Computer Safety Tips

The following article was retrieved from usa.kapersky.com (Kapersky.com, n.d.)

A 19-year-old running for public office in New Hampshire found out about the importance of following Internet safety rules the hard way. As Seacoast Online reports, his opponents found images in his social media posts that were sexually suggestive and referenced past drug use. Just like that, his political career crashed and burned upon takeoff. But, unfortunately, he isn't the only one, as careless Internet habits have left others exposed to scams, identity theft and physical harm at the hands of people they met online. With more users accessing the Internet through mobile devices, these risks are changing and growing quickly. Even though apps loom larger in most people's daily online interactions than traditional websites do, that does not mean that the basic Internet safety rules have changed. Hackers are still on the lookout for personal information they can use to access your credit card and bank information. Unsafe surfing can also lead to other threats—from embarrassing personal comments or images that, once online, are nearly impossible to erase, to getting mixed up with people you'd rather have had nothing to do with.

Here are the Top 10 Internet safety rules to help you avoid getting into trouble online (and offline).

1. Keep Personal Information Professional and Limited: Potential employers or customers don't need to know your personal relationship status or your home address. They do need to know about your expertise and professional background, and how to get in touch with you. You wouldn't hand purely personal information out to strangers individually—don't hand it out to millions of people online.
2. Keep Your Privacy Settings On: Marketers love to know all about you, and so do hackers. Both can learn a lot from your browsing and social media usage. But you can take charge of your information. As noted by Lifehacker, both web browsers and mobile operating systems have settings available to protect your privacy online. Major websites like Facebook also have privacyenhancing settings available. These settings are sometimes (deliberately) hard to find because companies want your personal information for its marketing value. Make sure you have enabled these privacy safeguards and keep them enabled.
3. Practice Safe Browsing: You wouldn't choose to walk through a dangerous neighborhood—don't visit dangerous neighborhoods online. Cybercriminals use lurid content as bait. They know people are sometimes tempted by dubious content and may let their guard down when searching for it. The Internet's demimonde is filled with hard-to-see pitfalls, where one careless click could expose personal data or infect your device with malware. By resisting the urge, you don't even give the hackers a chance.
4. Make Sure Your Internet Connection is Secure. Make sure your device is secure, and when in doubt, wait for a better time (i.e., until you're able to connect to a secure Wi-Fi network) before providing information such as your bank account number.
5. Be Careful What You Download: A top goal of cybercriminals is to trick you into downloading malware—programs or apps that carry malware or try to steal information. This malware can be disguised as an app: anything from a popular game to something that checks traffic or the weather. Don’t download apps that look suspicious or come from a site you don't trust.
6. Choose Strong Passwords: Passwords are one of the biggest weak spots in the whole Internet security structure, but there's currently no way around them. And the problem with passwords is that people tend to choose easy ones to remember (such as "password" and "123456"), which are also easy for cyber thieves to guess. Select strong passwords that are harder for cybercriminals to demystify. Password manager software can help you to manage multiple passwords so that you don't forget them. A strong password is one that is unique and complex—at least 15 characters long, mixing letters, numbers and special characters.
7. Make Online Purchases from Secure Sites: Any time you make a purchase online, you need to provide credit card or bank account information—just what cybercriminals are most eager to get their hands on. Only supply this information to sites that provide secure, encrypted connections. As Boston University notes, you can identify secure sites by looking for an address that starts with https: (the S stands for secure) rather than simply Http: They may also be marked by a padlock icon next to the address bar.
8. Be Careful What You Post: The Internet does not have a delete key, as that young candidate in New Hampshire found out. Any comment or image you post online may stay online forever because removing the original (say, from Twitter) does not remove any copies that other people made. There is no way for you to "take back" a remark you wish you hadn't made or get rid of that embarrassing selfie you took at a party. Don't put anything online that you wouldn't want your mom or a prospective employer to see.
9. Be Careful Who You Meet Online: People you meet online are not always who they claim to be. Indeed, they may not even be real. Be as cautious and sensible in your online social life as you are in your in-person social life.
10. Keep Your Antivirus Program Up to Date: Internet security software cannot protect against every threat, but it will detect and remove most malware—though you should make sure it's to date. Be sure to stay current with your operating system's updates and updates to the applications you use. They provide a vital layer of security.

Keep these 10 basic Internet safety rules in mind and you'll avoid many of the nasty surprises that lurk online for the careless

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2.9.14: Checking for Understanding

1. Students will list 7 out of 10 internet safety rules.
2. Students will adjust Windows 10 User Account Control Settings
3. Students will perform a Windows Defender Security Scan
4. Students will find the location in Windows 10 settings to perform a Fresh Start

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2.10: WEB LITERACY FOR STUDENT FACT-CHECKER TOPICS

2.10.1: Four Strategies
2.10.2: Fact-checking Sites
2.10.3: Wikipedia
2.10.4: Activity- Verify a Twitter Account
2.10.5: Using Google Books to Track Down Quotes

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2.10.1: Four Strategies

Four Strategies

What people need most when confronted with a claim which may not be 100% true is *things they can do to get closer to the truth*. They need something we have decided to call strategies.

Strategies represent intermediate goals in the fact-checking process. They are associated with specific tactics. Here are our strategies:

- **Check for previous work:** Look around to see if someone else has already fact-checked the claim or provided a synthesis of research.
- **Go upstream to the source:** Go "upstream" to the source of the claim. Most web content is not original. Get to the original source to understand the trustworthiness of the information.
- **Read laterally:** Read laterally.[1] Once you get to the source of a claim, read what other people say about the source (publication, author, etc.). The truth is in the network.
- **Circle back:** If you get lost, or hit dead ends, or find yourself going down an increasingly confusing rabbit hole, back up and start over knowing what you know now. You're likely to take a more informed path with different search terms and better decisions.

In general, you can try these strategies in sequence, and at each stage if you find success your work might be done.

When you first see a claim you want to check, your first move might be to look to see if sites like Politifact, or Snopes, or even Wikipedia have researched the claim. (Check for previous work).

If you can't find previous work on the claim, the real work begins. It starts by trying to trace the claim to the source. If the claim is about research, can you find the journal it appeared in? If the claim is about an event, can you find the news publication in which it was originally reported? (Go upstream).

Maybe you get lucky, and the source is something known to be reputable — some recognizable source such as the journal Science, or the newspaper *The New York Times*. Again, if so, you can stop there. If not, you're going to need to *read laterally*, finding out more about this source you've ended up at. Is it trustworthy? (Read laterally).

And if at any point you fail — if the source you find is not trustworthy, complex questions emerge, or the claim turns out to have multiple sub-claims — then you circle back, and start a new process. Rewrite the claim. Try a new search of fact-checking sites, or find an alternate source. (Circle back).

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1. We are indebted to researcher Sam Wineburg for this language. ↩

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2.10.2: Fact-checking Sites

Some Reputable Fact-Checking Organizations

The following organizations are generally regarded as reputable fact-checking organizations focused on U.S. national news:

- Politifact
- Factcheck.org
- Washington Post Fact Checker
- Snopes
- Truth be Told
- NPR Fact-Check
- Lie Detector (Univision, Spanish language)
- Hoax Slayer

Respected specialty sites cover niche areas such as climate or celebrities. Here's a few examples:

- Climate Feedback
- SciCheck
- Quote Investigator

There are many fact-checking sites outside the U.S. Here is a small sample.

- FactsCan (Canada)
- TrudeauMetre (Canada)
- El Polígrafo (Mexico)
- The Hound (Mexico)
- Guardian Reality Check (UK)
- BBC Reality Check (UK)
- Channel 4 Fact Check
- Full Fact (UK)

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2.10.3: Wikipedia

Wikipedia is broadly misunderstood by faculty and students alike. While Wikipedia must be approached with caution, especially with articles that are covering contentious subjects or evolving events, it is often the best source to get a consensus viewpoint on a subject. Because the Wikipedia community has strict rules about sourcing facts to reliable sources, and because authors must adopt a neutral point of view, articles are often the best available introduction to a subject on the web.

The focus on sourcing all claims has another beneficial effect. If you can find a claim expressed in a Wikipedia article, you can almost always follow the footnote on the claim to a reliable source. Scholars, reporters, and students all can benefit from using Wikipedia to quickly find authoritative sources for claims.

Each footnote leads to a reliable source. The article as a whole contains over 160 footnotes. If you are researching a complex question, starting with the resources and summaries provided by Wikipedia can give you a substantial running start on an issue.

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2.10.4: Activity- Verify a Twitter Account

Activity: Verify a Twitter Account

Kellogg's Rant

General Kellogg was promoted by President Trump as acting head of the National Security Council on February 13, 2017. Is this Twitter account his?

https://twitter.com/GenKeithKellogg/...254940009638912

Explain your reasons.

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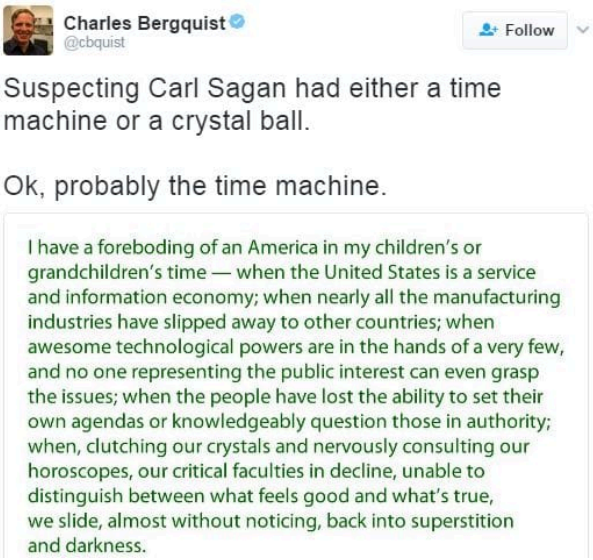
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2.10.5: Using Google Books to Track Down Quotes

Using Google Books to Track Down Quotes

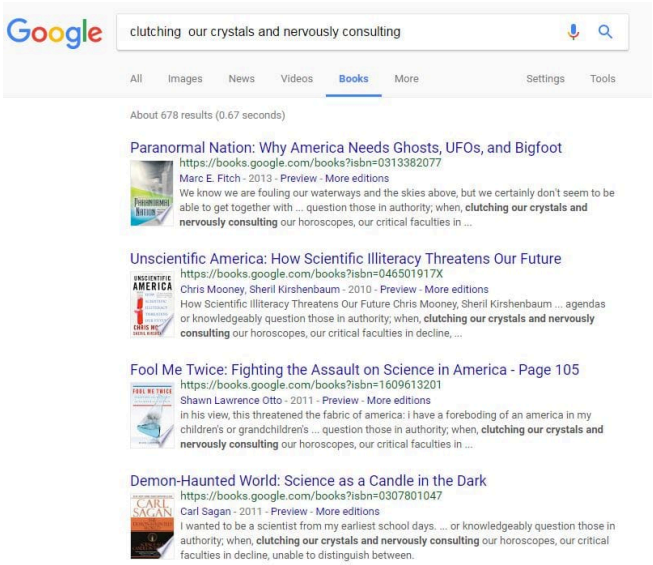
Did Carl Sagan say this?



Quotes are the internet are some of the most commonly faked content. People misattribute quotes to give them significance, or fabricate controversial quotes to create controversy. (For some examples of fact-checking historical quotes, check out Quote Investigator).

In our case, if we know that Carl Sagan is an author of many books, rather than start in Google or Duck Duck Go's general search we might start in Google Books, which will likely get us to the source of the quote faster. Additionally, even if we cannot find the source, we might find a someone quoting this in a book from a major publisher, which is likely to have a more developed fact-checking process than some guy on Twitter.

So we go to Google Books and we pick out just a short snippet of unique phrasing. I'm going to choose "clutching our crystals and nervously consulting":



Down there at the bottom, the fourth result, is a book by Carl Sagan. It says its from 2011, but don't be fooled by this date: this is just the date of the edition here indexed. Let's click through to the book to check the quote and then sort out the date later.

Clicking through the book we find the quote is accurate. More importantly we find the surrounding context and find that this quote is not being taken out of context. Sagan was truly worried about this, and his prediction was very much that a media obsessed with sound bites combined with a sort of celebration of ignorance would drag us backwards. Understanding the world was becoming more difficult at the same time the ways that understanding was communicated were becoming more shallow.

United States is a service and information economy; when nearly all the key manufacturing industries have slipped away to other countries; when awesome technological powers are in the hands of a very few, and no one representing the public interest can even grasp the issues; when the people have lost the ability to set their own agendas or knowledgeably question those in authority; when, clutching our crystals and nervously consulting our

Copy

horoscopes, our critical faculties in decline, unable to distinguish between what feels good and what's true, we slide, almost without noticing, back into superstition and darkness.

The dumbing down of America is most evident in the slow decay of substantive content in the enormously influential media, the 30-second sound bites (now down to 10 seconds or less), lowest common denominator programming, credulous presentations on pseudoscience and superstition, but especially a kind of celebration of ignorance. As I write,

You can find out the original publication date of this work a number of ways — there's a "more versions" option on the Google Books interface. You could go look for the book's article on Wikipedia, as they will usually give you the publication date. But the easiest way is usually to turn to the front pages of the book and find the date, just as you would with a physical book.

A Ballantine Book
Published by The Random House Publishing Group

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2.11: Getting Started in Chrome - Bookmarking in Chrome and more

https://edu.gcfglobal.org/en/chrome/bookmarking-in-chrome/1/

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2.12: Introduction to Internet Safety

https://edu.gcfglobal.org/en/internetsafety/introduction-to-internet-safety/1/

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2.13: Creating Strong Passwords

https://edu.gcfglobal.org/en/internetsafety/creating-strong-passwords/1/

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2.14: Avast Academy – How to Open Incognito Mode in Chrome

https://www.avast.com/c-incognito-mode-chrome

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2.15: Avast Academy – How to Clear Your Browser History

https://www.avast.com/c-how-to-clear-browser-history

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2.16: Avast Academy – What are cookies and how to clear them

https://www.avast.com/c-delete-browser-cookies

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2.17: ETIQUETTE ISSUES

2.17.1: Netiquette 101
2.17.2: Emailing Your Professor - Ten Tips
2.17.3: Participating in Online Discussions

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2.17.1: Netiquette 101

It's never been easier to connect with professors and classmates online, but along with ease and convenience comes a certain level of responsibility when you are posting or mailing information. Keep in mind this basic rule: don't do anything online that you wouldn't like someone else to do to you (i.e. sending an aggressive email, posting an overly critical reply, forwarding messages to third parties without permission). Remember, your online activity leaves a permanent digital trail. Here are some "netiquette" tips to remember in an academic setting:

Act Within the Law:

- Never send a message that threatens, harasses, or blatantly offends any member of the KCC community.
- Always give credit for words or ideas that belong to someone else.
- Identify yourself by name. Don't pretend to be someone else.

Be Courteous and Respectful:

- Avoid using profanity in an email or discussion forum.
- Keep personal matters between you and your classmates and/or professors private—both in online and face-to-face courses.
- Before you press "send" or post something in an online discussion forum, re-read your text to make sure it won't be misunderstood. Your readers will not necessarily know your mood or be able to read your body language.
- If you decide to send a message via cellphone, take the time to punctuate your text properly.
- Don't write in all lowercase letters.
- YOU'RE SHOUTING when you write in all capital letters!
- Abbreviations and emoticons can help convey tone or mood, but keep in mind that they wear thin on some readers. LOL

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2.17.2: Emailing Your Professor - Ten Tips

1. Put your class/section in the subject line, followed by the nature of the communication. (ENGL 151:004 Illness)
2. Use an appropriate standard greeting, such as “Dear Professor Shaw” or “Good Morning.” Never “Hey.”
3. Keep the message on point. “My question about today’s assignment is this:”
4. Write in standard English—no “textspeak” or slang.
5. Always sign your name at the end (full name if you are unknown to the recipient or first name if you are known).
6. Never ask your professor if you missed anything important; of course you have.
7. Don’t share too much personal detail if you miss class. An absence is an absence.
8. If you will be missing class, always ask what you need to do to keep current.
9. Never forward jokes, memes, or chain letters to your professor.
10. Make readers want to respond. Your email is a reflection of you, your work habits, and your professionalism.

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2.17.3: Participating in Online Discussions

Many college courses provide students with opportunities to exchange ideas with their peers and professors in online forums. If you are required to participate in online discussions, make sure your posts are civil, thoughtful, and well-edited.

The student exchange on the next page comes from an online sociology course. The students were asked to define sociological concepts. In addition, students were required to refer to the textbook to support their points.

You'll notice the students included references for their textbook. Usually references have a hanging indent. Because this was posted in a Moodle discussion board, however, hanging indents were not required. Otherwise, APA citations are correct.

Exercise/Discussion:

1. Where do these students use specific examples to support their ideas?
2. Is there evidence that these students have learned anything from this reading assignment?
3. How do these writers exhibit civility or promote further discussion?
4. In what ways do these students personalize the course material?
5. How is this discussion different from forums in which you've participated?

Sociology Concepts

By Jennifer L.—Wednesday, 15 February 2017, 1:26 PM

I chose to explain social construction, microsociology, and the sociological imagination for this assignment. These terms were all new to me. I find them interesting and think they are important to understanding sociology.

Social construction is "an idea or practice that a group of people agree exists. It is maintained over time by people taking its existence for granted" (Giddens, Duneier, Appelbaum, & Carr, 2016, p. 7). Many people believe that the ideas we accept are natural truths. However, according to Giddens et al. (2016), sociology teaches us that "in many ways we are freer than we think" (p. 7). Sociology points out that many behaviors thought of as biological, are actually a result of social construction (Giddens et al., 2016).

According to Introduction to Sociolog , microsociology focuses on everyday behavior during small group or individual interactions, whereas macrosociology analyzes patterns in large-scale groups, organizations, or social systems (Giddens et al., 2016). A macrosociologist and a microsociologist would analyze different settings, e.g. a food court, differently.

The textbook, Introduction to Sociology , discusses the work of C. Wright Mills, who stated in The Sociological Imagination , that "each of us lives in a very small orbit," limited by the social situations of our daily encounters (as cited in Giddens et al., 2016, p. 5).

Reference

Giddens, A., Duneier, M., Appelbaum, R. P., & Carr, D. (2016). Introduction to sociology (10th ed.). New York, NY: W.W. Norton & Company.

Re: Sociology Concepts

By Steven R. – Thursday, 16 February 2017, 4:15 PM

Your explanation helped me understand these concepts better, Jennifer. I also wrote about the sociological imagination. I had not thought about this whole idea before taking this class and find it interesting. Sociologists believe that we can understand problems like poverty, unemployment, and money troubles by looking at the social structure in our society. If we develop a sociological understanding, we stop looking at these types of troubles as simply personal, and instead start to understand them as larger, public issues, perhaps resulting from policies, and applying to many people in society (Giddens, Duneier, Appelbaum, & Carr, 2016).

Reference

Giddens, A., Duneier, M., Appelbaum, R. P., & Carr, D. (2016). Introduction to sociology (10th ed.). New York, NY: W.W. Norton & Company.

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2.18: Email Basics

https://edu.gcfglobal.org/en/email101/

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3: WORD PROCESSING SOFTWARE

3.1: Downloadable Word Quick Start Guide as pdf

3.2: Introduction to Microsoft Word

3.2.1: Introduction to Word Processing Software

3.2.2: Starting a Document

3.2.3: Saving a Document

3.2.4: Selecting Text

3.2.5: Formatting Text using the Mini-toolbar and Ribbon

3.2.6: Using a Document Template

3.2.7: Checking for Understanding

3.3: Why It Matters- Microsoft Word Basic Skills

3.4: Creating a New Blank Document and Finding Your Way Around

3.5: Saving Files

3.6: File Extensions

3.7: Introduction to Basic Text Formatting

3.8: Selecting and Moving Text

3.9: Bold, Italics, Underline

3.10: Fonts

3.11: Alignment, Justification, and Indentation

3.12: Line and Paragraph Spacing

3.13: Getting Started with Word

3.14: Creating and Opening Documents

3.15: Saving and Sharing Documents

3.16: Text Basics

3.17: Formatting Text

3.18: Line and Paragraph Spacing

3.19: Page Layout

3.20: Paragraph Concept

3.21: Insert versus Overtype

3.22: Auto Correct and Auto Text

3.23: Spelling and Grammar Checker

3.24: Spell Check and Dictionaries

3.25: Find and Replace

3.26: Assignment - Create Basic Document

3.27: Selecting Text and Applying Effects

3.28: Styles

3.29: Using the Thesaurus
3.30: Introduction to Images
3.31: Adding Images
3.32: Text Wrap
3.33: Internet and Word
3.34: What is a Business Letter?
3.35: Headers and Footers
3.36: Print Preview and Printing
3.37: Word Tips Tutorials

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3.1: Downloadable Word Quick Start Guide as pdf

https://support.microsoft.com/en-us/office/office-quick-starts-25f909da-3e76-443d-94f4-6cdf7dedc51e?ui=en-us&rs=en-us&ad=us

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3.2: INTRODUCTION TO MICROSOFT WORD

Microsoft Word provides users with a balanced approach to usability- the application is easy to use so the user can begin working on a document immediately, or sophisticated enough to write complex textbooks, professional business reports, and novels using its features. This chapter provides an overview of using the basic features of Microsoft Word to construct a document.

3.2.1: Introduction to Word Processing Software

3.2.2: Starting a Document

3.2.3: Saving a Document

3.2.4: Selecting Text

3.2.5: Formatting Text using the Mini-toolbar and Ribbon

3.2.6: Using a Document Template

3.2.7: Checking for Understanding

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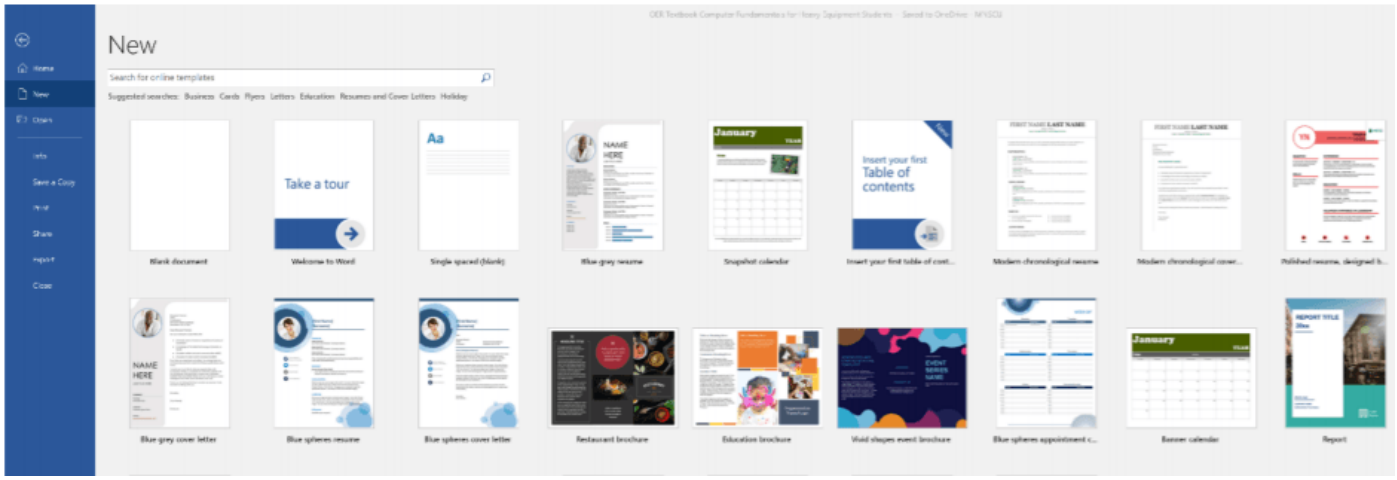
- 10: Introduction to Microsoft Word by Nick Heisserer is licensed CC BY 4.0.

3.2.1: Introduction to Word Processing Software

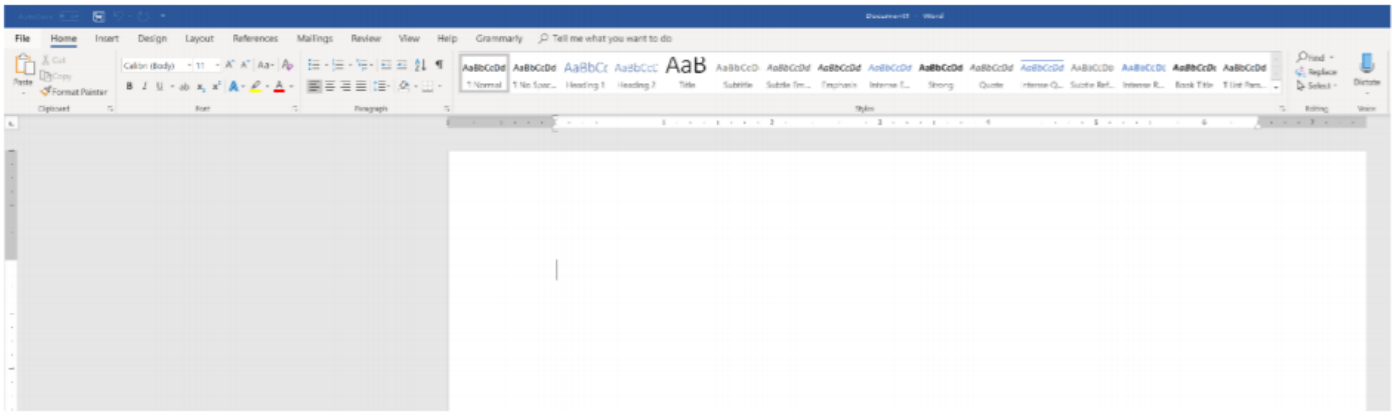
A word processing program is a software program that includes tools for entering, editing, and formatting text and graphics. The electronic files you create using Word are called documents. One of the benefits of using Word is that document files can be stored in a variety of places on your computer, or in the cloud using one drive, and easily shared with others via disks, emails, or online file storage. Microsoft Word allows users to accomplish the following tasks.

- Type and edit text.
- Copy and move text from one location to another in the document, or to other documents.
- Format text and paragraphs with fonts, colors, pictures, tables, and many other tools.
- Design pages for specific purposes- from personal letters to sophisticated memos and reports.
- Enhance documents for readability with pictures, charts, graphics, etc.
- Use mail merge features to quickly and easily send customized communications to customers.
- Share documents securely to others.
- Communicate clearly and professionally with others by using the built-in tools of Word.

Now that you are aware of some of the uses for Microsoft Word, let's get started by creating a new document. Launch Microsoft Word and click on “Blank Document”.



Take some time to explore the user interface. A few notable features of Word include:



- Title bar: displays the name of the document and the name of the program. Until you give a new document a different name, its temporary name is Document 1. The left side of the title bar contains the Quick Access toolbar, which includes buttons for saving a document and undoing, redoing, and repeating a change. The right side of the title bar contains the Ribbon Display Options button, which you use to hide or show the Ribbon and tabs, the resizing buttons, and the program Close button.

- The File Tab provides access to Backstage view where you manage files and the information about them.
- The Ribbon contains the Word tabs. Each tab on the Ribbon includes buttons for commands related to editing and formatting documents. The commands are organized in groups. For example, the Home tab includes the Clipboard, Font, Paragraph, Styles, and Editing Groups. The Ribbon also contains the "Tell me what you want to do" box, which you can use to find a command or access help. The ribbon also contains the share command, which you can use to easily share documents.
- The document window displays the current document. This is the space you are working inside.
- The rulers only appear in the Print Layout view. The horizontal ruler displays left and right document margins as well as the tab settings and paragraph indents, if any, for the paragraph. The vertical ruler displays the top and bottom button margins.
- The vertical and horizontal scroll bars are used to navigate inside your document. They contain arrows to help you navigate the document.
- The status bar displays the page number of the current page and the total number of pages and words in the document. It also displays spelling and grammar checking.
- The view buttons on the status bar allow you to adjust the view, toggling between print layout, read mode, or web layout view. The Zoom slider allows you to zoom in and out of the document.

In the document window, you should see a blinking cursor. This is known as your "insertion point". Your insertion point is where text or objects we are placed in the document. You can change the insertion point using your arrow keys or mouse.

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3.2.2: Starting a Document

Before beginning to use Microsoft Word, your first step should be to take some time to plan your document. Better document planning will save you time and ensure your document is written to the correct audience with the right message and visual appearance. Some aspects to consider before writing a document include:

- Purpose of the message- why are you sending the message?
- Who is your audience? What type of writing or visual style will appeal to them?
- What type of communication will you send? Will it be a newsletter, professional letter?
- Will you need outside information like graphics or charts?
- Is there any research you need to conduct before beginning to write?

Now that you have a plan, let's write a document.

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3.2.3: Saving a Document

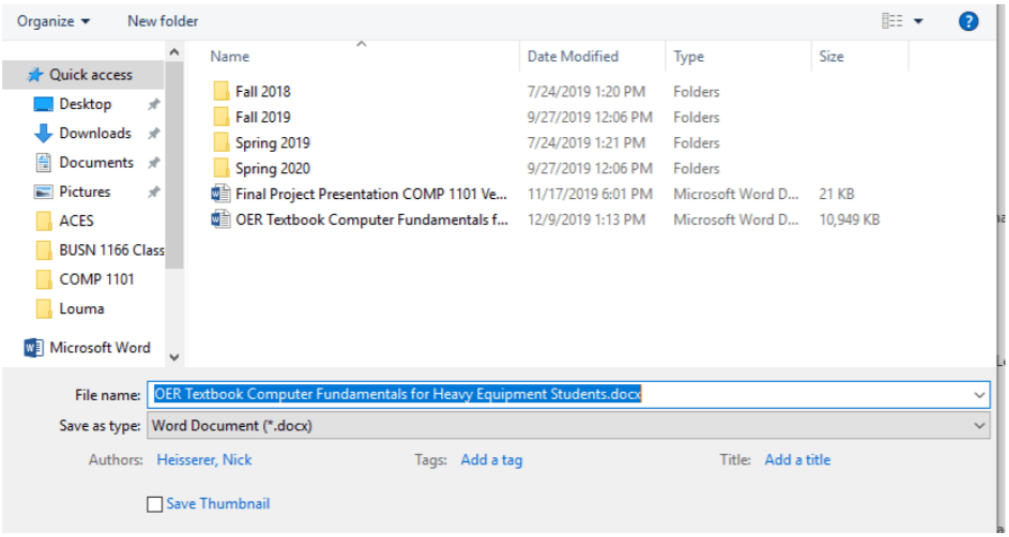
Once you have successfully entered text into your document, you should get into the habit of saving work. Saving your work often is a good idea in the event of a computer error or power outage that could cause you to lose your progress. While Word does have an Autosave feature that can be helpful to recover most of your document, saving your work regularly is the sure-fire way to make sure your work is not lost.

To save your work in word, you can do one of the following:

- Keyboard Shortcut: “Control + “S”
- Quick Access Toolbar: Use the Disk/icon in the upper left-hand corner of the screen.
- Backstage View: Click on “File” in the Ribbon and navigate to “Save” on the left side of the backstage view.

Difference between “Save” and “Save As”

Microsoft Word has two different Save commands: “Save-As” allows you to name the file and save it in a location of your choosing. “Save” keeps the same file name and location. If you have never saved a file before, pressing “Save” will take the user to the “Save-As” menu of options. When completing the “Save As” command, Word will also allow you to save the document as another file type, like a portable document format (pdf) file, or other types.



1EXAMPLE OF THE "SAVE-AS" DIALOG BOX.

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3.2.4: Selecting Text

Microsoft Word allows the user to manipulate text by “left-clicking” on the insertion point and continuing to hold the left click and moving the mouse around the document to the selected text. When text is highlighted, you can perform multiple actions with the selected text using the ribbon & minitoolbar by “right-clicking” on the selected text. When text is selected, a blue highlight will be displayed over the text.



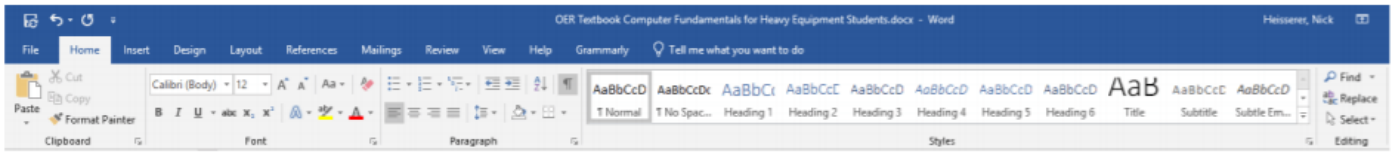
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3.2.5: Formatting Text using the Mini-toolbar and Ribbon

Selected text can be manipulated by using the mini-toolbar or ribbon. The mini-toolbar is displayed when you “right-click” on the selected text. “Right-clicking” in Microsoft Word provides the user with quick actions like “Copy”, “Cut”, “Paste”, Changing the Font, Paragraph Settings, Synonym Tools, and many other quick actions.

The most common and powerful methods available to users is the Ribbon in Microsoft Word.



The Ribbon in Microsoft Word provides the user with organizational groupings of many different commands and controls to change and manipulate text. The various groupings are below:

Home Tab

The Home Tab contains the most commonly used document controls; actions in the Home Tab can change the font and size of the text, paragraph, and line spacing, copy and paste, change the organizational structure of the document.

Insert Tab

The insert tab allows the user to insert any number of items that were not originally included in the Word document and that cannot be entered by keyboard entry. Examples include page breaks, pictures/shapes/icons, charts, links, bookmarks, comments, headers and footers, page numbers, Word Art, Drop Caps, Equations, Symbols, Signatures, Dates, and Other Objects (like other office documents).

Design Tab

The Design Tab has features that allow the user to change the overall appearance and structure of the document with Themes. Creating customized colors, fonts, and paragraph spacing is also on this tab. Finally, this tab allows the user to create Watermarks, adjust the Page Color and Page Borders.

Layout Tab

The Layout tab provides the user with edit controls to the physical characteristics of the document when it is printed. Examples of tools available on the Layout Tab include margin adjustment, orientation (Portrait or Landscape), changing the size of the page to accommodate other paper sizes, inserting columns or line numbers, changing indentation or position of text, and aligning text with other graphics/figures.

References Tab

The References Tab is utilized especially for research papers and long word documents. The Reference tab allows the user to build tables of contents, inserting citations, managing a bibliography, inserting captions, or creating indexes. Research papers often require sources to be cited in a specific way, and the Reference Tab in Word makes this easy.

Mailings Tab

The mailings tab is used to make it easy for the user to send out customized documents to individuals via mail. The tab has a

wealth of features for this activity, like a mail merge feature, custom text blocks that can be changed depending on the database they are pulled from. It is possible to use Word in conjunction with an address list in excel to create customized documents with individual characteristics (like the person's name, title, address, etc." that are printed.

Review Tab

The Review Tab provides essential features to use in Word after a first draft has been created. The Review Tab contains Spelling and Grammar Review, Thesaurus, Word Count, Text to Speech, accessibility checker, translation functions, document comment and review features, and comparing versions. Finally, the Review Tab may also be used to "Ink" the page by drawing on it and restricting editing to the document.

View Tab

The View Tab allows the user to change how they may view the document. In addition, they can choose what type of features are viewable in Microsoft Word. Users can change the view mode between reading Mode, Print Layout Mode, Web Layout, Draft and Outline views. In addition, they can choose whether to display one page or multiple pages at a time and adjust how large or small documents are. Finally, they can create Macros, which are user-programmed shortcuts that can be used in specific documents in the View Tab.

Help Tab

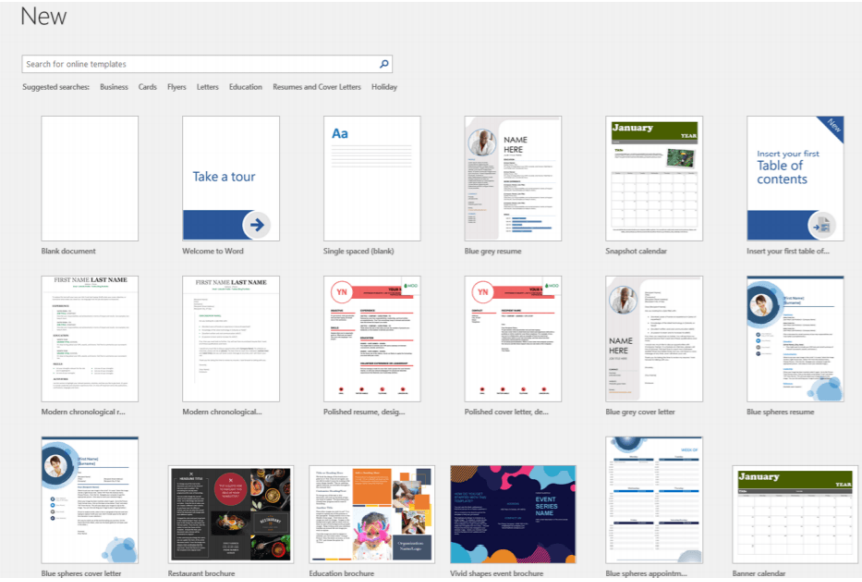
Couldn't find what you were looking for? If nothing else works, clicking on the Help Tab will allow the user to show training and search for the related topics.

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3.2.6: Using a Document Template

While many users prefer to begin their work with a blank web page, word has many templates or preformatted documents that make it easy to create a Résumé or a Flyer. To create a template, click on the File tab of the Ribbon, and then “New”.



Word will then showcase all the available templates. Users may also search online for templates in different styles or formats. There are so many templates available, the most important aspect for the user is to find one that meets their needs.

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3.2.7: Checking for Understanding

1. Describe the main features and purposes of Microsoft Word
2. Create a New Blank Document, Format text in the document, and Save the document as a .pdf
3. Create a document from Template and Save the document as a new file.
4. Describe three (features) of each organizational tab in Microsoft Word.

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3.3: Why It Matters- Microsoft Word Basic Skills



Why learn to complete basic skills in Microsoft Word?

Communication in the workplace is very important. Whether you run a one-person freelance business or work for a company with thousands of employees, reading and writing documents on a computer is a vital skill.

Microsoft Word is the most popular word processing program and is considered the standard word processor for most businesses. Word can help you create documents, save them, print them, and share them with others.

Reports, brochures, flyers, and memos are all examples of documents you can create in Microsoft Word.

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3.4: Creating a New Blank Document and Finding Your Way Around

Learning Objectives

- Create a new Word document.

Opening a New Document

You can open Word from the Start menu (or the Applications folder on a Mac) by clicking on the Word icon. The Word icon comes in a variety of forms depending on your OS and version of Word, but it always features the color blue and the letter W.

Some examples of Word icons

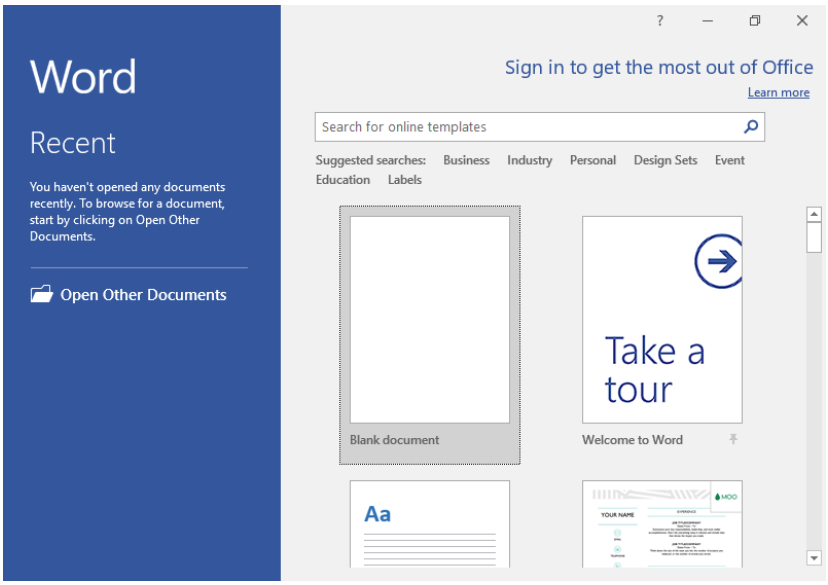


Note: Microsoft Office Versions

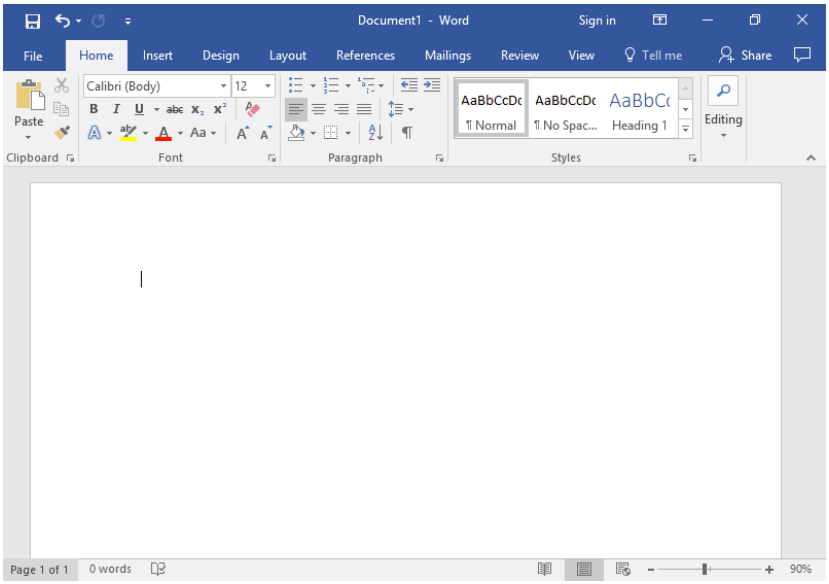
While this course is based on Office 2019, it's important to note that while Microsoft offers the purchase of Office 2019, that version is constantly updating to match the latest updates in Office 365. If Tom purchases and downloads a copy of "Office 2019" on Friday, and Sally purchases and downloads a copy of "Office 2019" on Monday, they may have different versions because there was a point release over the weekend.

Because of this model, Microsoft is more incremental in their updates to the products. While there was a fairly noticeable difference between Office 2007 and Office 2010, Office 2016 and Office 2019 are comparably similar.

When you open Word, some versions of Word may take you straight to a new blank document. Newer versions such as Word 2019 will take you to a menu called **backstage view** to choose to open a new blank document or open a new document from a template. If you already have a file open in Word, you can create a new document by clicking File>New. You can also use the shortcut Ctrl+N (Command+N for Mac).



To open a blank document, double-click the blank document option.



Practice Questions

https://assessments.lumenlearning.co...essments/18579

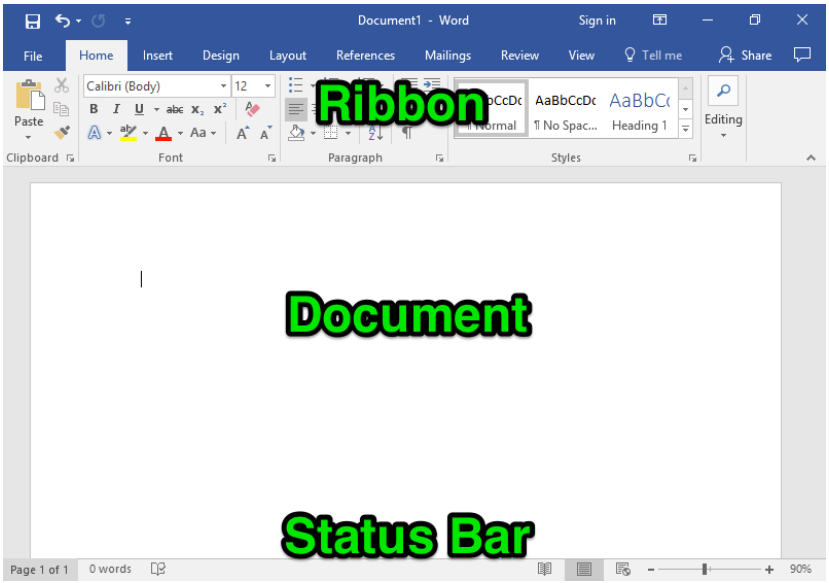
https://assessments.lumenlearning.co...essments/18580

https://assessments.lumenlearning.co...essments/18581

Overview of Word Controls

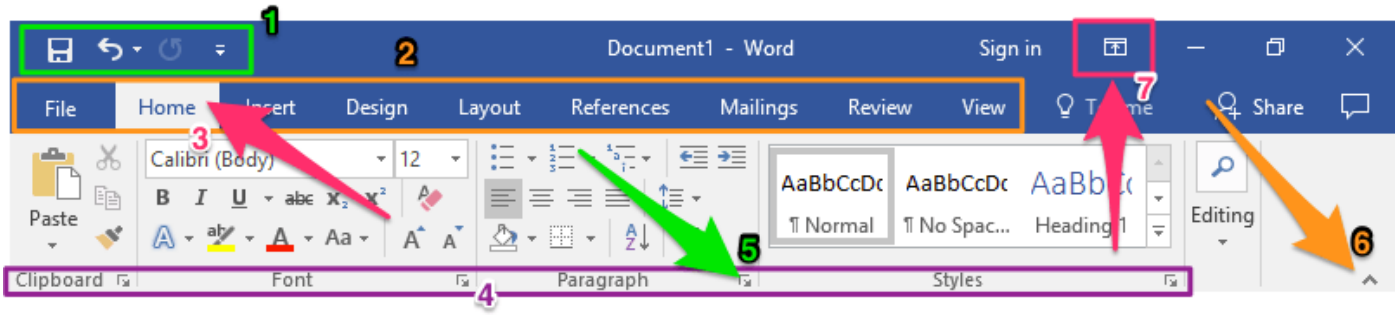
We will cover what many of these buttons and toolbars do in the pages to come. In the meantime, here is a general overview of what you can see in the program. Many of these features are also in other Office products like Excel and PowerPoint, so it's a good idea to get a handle of the terminology.

The Word window has three main sections: the ribbon, the document, and the status bar.



Ribbon

The ribbon is at the top of the Word window and includes the window title bar. The ribbon below is for Word 2019. If you have a different version, your ribbon may not look exactly the same. However, most features will look similar and be near a similar area. **If you have a different version of Word and you cannot find the feature you need, run a web search for *where is feature/button wordversion*,**replacing *feature/button* with the feature or button you are trying to find and *version* with your version number. For example, if you are using Word 2010 and can't find the controls for adding a column, run a web search for *where is column word 2010*.



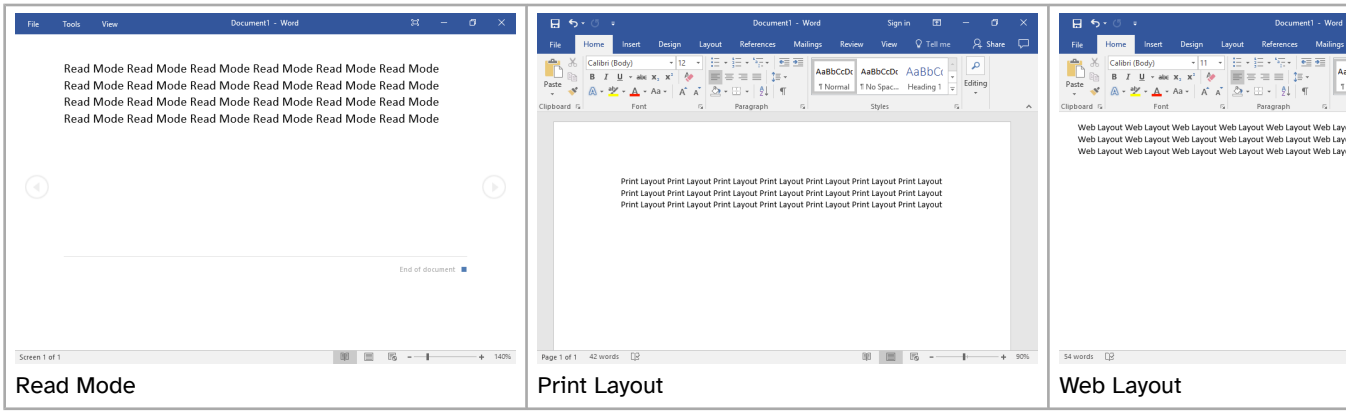
1. **Quick access toolbar.** The quick access toolbar shows commonly used commands so that you can execute those commands with one button instead of a couple. By default, the quick access toolbar has (from left to right) Save, Undo, and Redo. You can customize which commands are available in the quick access toolbar by clicking the arrow to the right of the Redo button.
2. **Tabs.** The tabs on the ribbon are a way of organizing the many tools and options Word has. Clicking each tab provides a whole new set of options. The tabs you will most frequently use are the File tab and the Home tab.
3. **Currently selected tab.** The Home tab is selected by default when you open Word. The currently selected tab is white, while the other tabs are blue.
4. **Group names.** Within each tab, commands are grouped according to type. Those type names are near the bottom of the ribbon. For example, the Font group contains all the font tools and options.
5. **Dialog box.** Clicking the small, boxed-in arrow at the bottom right-hand corner of each group opens a dialog box with more options for each group.
6. **Hide ribbon.** If you find the array of buttons too distracting, you can hide the ribbon by pushing the arrow at the bottom-right corner of the ribbon. You can reopen the ribbon with the ribbon display options.
7. **Ribbon display options.** The ribbon display options allow you to hide or reveal all or parts of the ribbon.

Status Bar

The status bar is at the bottom of the Word window. Again, your status bar may look different or not even be visible, but here is an explanation of what many icons on the status bar mean.



1. **Page count.** The page count shows the total number of pages in the document and which page is currently visible in the window.
2. **Word count.** The word count displays the total number of words in the document.
3. **Spelling/grammar check.** A tiny checkmark on the book icon indicates that there are no spelling or grammar errors. When there are spelling or grammar errors, the checkmark becomes an X. Clicking the icon then will show options for correcting each mistake.
4. **View options.** From left to right: Read Mode, Print Layout, and Web Layout. By default, the document is in Print Layout. This changes how the document appears in the Word window; it does not affect how the document appears when sent to others, viewed on a different computer, or printed. (Click each image to enlarge.)



Read Mode | Print Layout | Web Layout

5. **Zoom.** By moving the bar to the left or right, you can zoom in and out of the document. This allows you to see the entire page at once or to magnify a small part of the document.

To customize the status bar, right-click on it to see a dialog menu that allows you to check and uncheck tools you want displayed.

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3.5: Saving Files

Learning Objectives

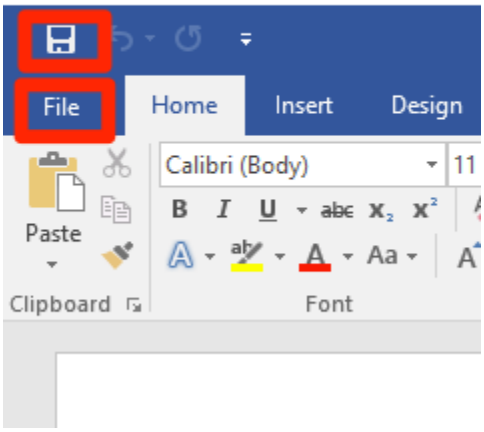
- Save a file in Word.

Saving a file is critical for editing, preserving, and sharing your work. If the program closes or your computer shuts down unexpectedly while you are using Word, don't worry. By default, Word automatically saves your work every 10 minutes and will reload that save upon reopening the program. However, it is still a good idea to save every once in a while.

Practice Question

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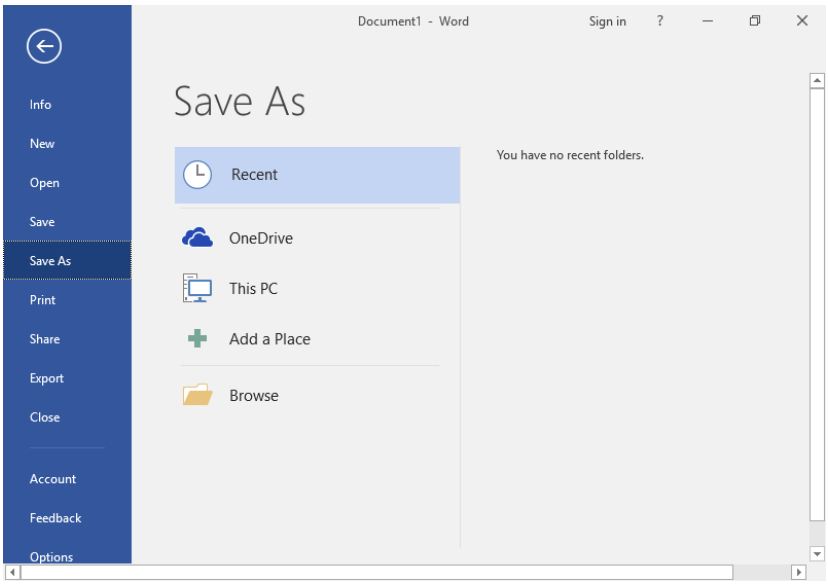
To save a file, you can click the Save icon in the top-left corner, click File>Save, or use the shortcut Ctrl+S (Command+S for Macs).



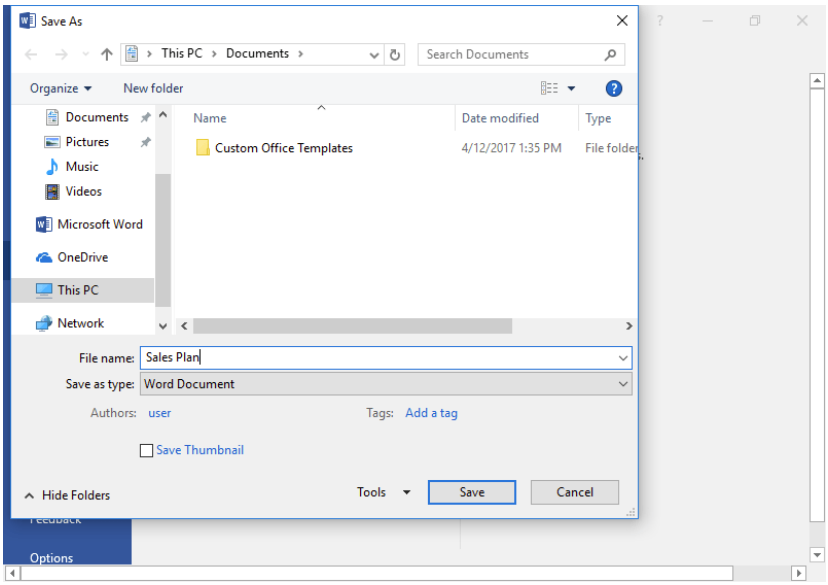
Click the save icon (above) or File>New (below).

Whichever method you choose, you will see the backstage view with some option about where to save your file. (Pre-2016 versions of Word will skip straight to the dialog box—If this applies to you, skip ahead to the Save dialog box.) First, you must choose where you want to save your file.

- **OneDrive**—This is Microsoft's cloud computing storage system. If you have a Microsoft account and sign in, you can use OneDrive for free to store your documents.
- **This PC**—This lets you save your file directly to your computer. By default, the save folder is called Documents with the file path This PC/Documents.
- **Add a Place**—If you save a lot of documents to a particular folder, you can add that folder as a Save As option here.
- **Browse**—To save a different folder not listed above, click Browse. This will take you to a dialog box that lets you search your computer for the folder you want to store your document in.

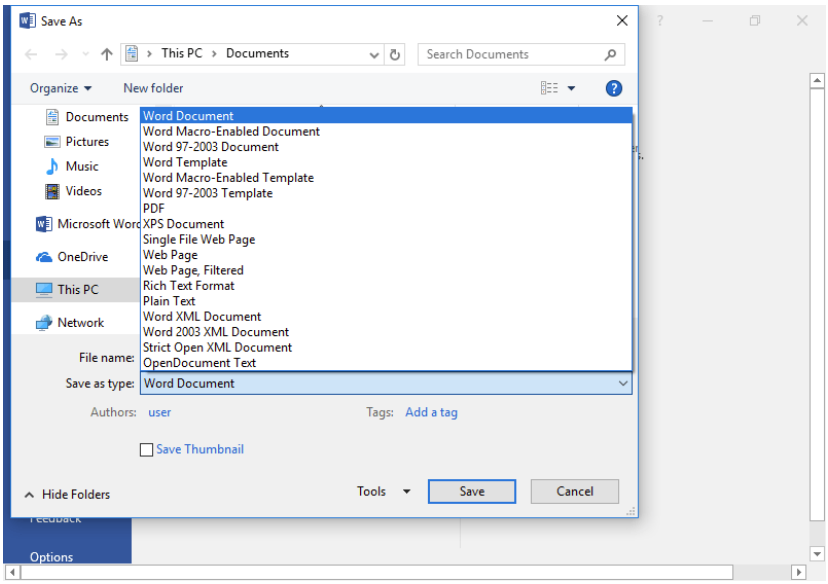


Once in the Save dialog box, you can choose the folder you want to save your file in. Select that folder, then type a name for your file in the File name field.



Ensure that you are saving the document as the correct file type. There are a variety of options to choose, but you will almost always choose Word Document (which is the default).

Click Save in the bottom-left corner next to the Cancel button. Congratulations! Your file is saved! As you continue to edit your file, you can click the save icon, select File>Save, or use the shortcut Ctrl+S (Cmnd+S for Macs) to save the file again.



Practice Question

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Save As

If you have already saved a file, you can save another copy of it in a different location or with a different name or file extension. Click File>Save As and the Save dialog box will once again appear.

Practice Question

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3.6: File Extensions

Learning Outcomes

- Distinguish different file types in Word and when to use them.

Let's start by taking a look at the following scenario:

> Roy is working on a report that needs to be done before noon so his coworker Salomé can present the data to some prospective customers. Roy just barely manages to finish formatting the final draft. Quickly he saves the file in Microsoft Word, emails the file to Salomé, and leaves to have a well-deserved lunch. When he gets back, Salomé tells him she couldn't open his file, and as a result she didn't have the data the customers wanted and lost the sale.
>
> Roy tries to figure out what went wrong and learns that Salomé is running a different version of Microsoft Word than he is, but he's not sure how that caused the problem.

What can cause this kind of problem? Using the wrong file extension.

A file extension is a shortened form of the file type at the end of a file name. These extensions determine your document's file type, and the file type determines what programs can open the file. While most programs can read most file types, not every program can read every file type.

The default file type is **.docx** (Word Document). This file extension works in most Microsoft Word programs. However, there may be times when you want to save a different file type. For example, older versions of Microsoft Word and computers without Microsoft Word installed cannot read .docx file types. If you create a .docx file and send it to someone who has an old version of Word or no Word at all, that person probably won't be able to read your file. If you have an old version of Word (2003 or older), you can open .docx files if you download Microsoft's compatibility package.

Because of the variation in file type compatibility, it's important to be mindful of what file types are readable by the programs other people have.

Practice Question

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Below the field for the file name is the Save as type field, which has a dropdown menu with file extensions.

Common File Extensions in Word Processing

- **.docx (Word Document)**—default Microsoft Word file, works with Microsoft Word 2007 and later. Improved scripts, macros, and other features from the older .doc.
- **.doc (Word 97–2003 Document)**—default Microsoft Word file from Microsoft Word 2003 and older.
- **.txt (Plain Text)**—also known as plain text format. This file type saves only the words you type—no images, no formatting, just raw text.
- **.rtf (Rich Text Format)**—Like plain text, RTF saves only words, but it does save some basic formatting (like bold and italics)
- **.pdf (PDF)**—PDF files are readable with Microsoft Edge (which comes with Windows 10), the free program Adobe Acrobat, and other image-viewing programs. Viewers cannot edit PDF files, but they will be able to view them regardless of their operating system or what programs they have.

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3.7: Introduction to Basic Text Formatting

What you'll learn to do: format text in Microsoft Word for clarity.

Knowing how to use Word's formatting tools can help you do your work faster and make your documents more attractive and easy to read.

Compare the documents below. Which one communicates more clearly?

To: All Employees **From:** Sierra Rowan, Store Manager **Date:** September 1, 2019 **Subject:** New Shelves Some of you may have noticed in recent weeks that the shelves in the home goods section are beginning to sag. We will be replacing those shelves with new, reinforced metal shelves starting next week. The shelves will be replaced 1:00–4:00 a.m., during our least busy hours. Several aisles will be off-limits to customers during that time as a safety precaution. The following aisles will be affected: • Kitchen appliances • Kitchen & dining furniture • Kitchen storage • Home goods clearance Please direct customers looking for items in the affected aisles to the Outdoor Furniture and Patio Accessories areas.	To: All Employees From: Sierra Rowan, Store Manage 1, 2019 Subject: New Shelves Some of you may have noticed in recent weeks that home goods section are beginning to sag. We will be shelves with new, reinforced metal shelves starting r shelves will be replaced 1:00–4:00 a.m., during our le Several aisles will be off-limits to customers during tl precaution. The following aisles will be affected: Kitc Kitchen & dining furniture, Kitchen storage, Home gc Please direct customers looking for items in the affec Outdoor Furniture and Patio Accessories areas.

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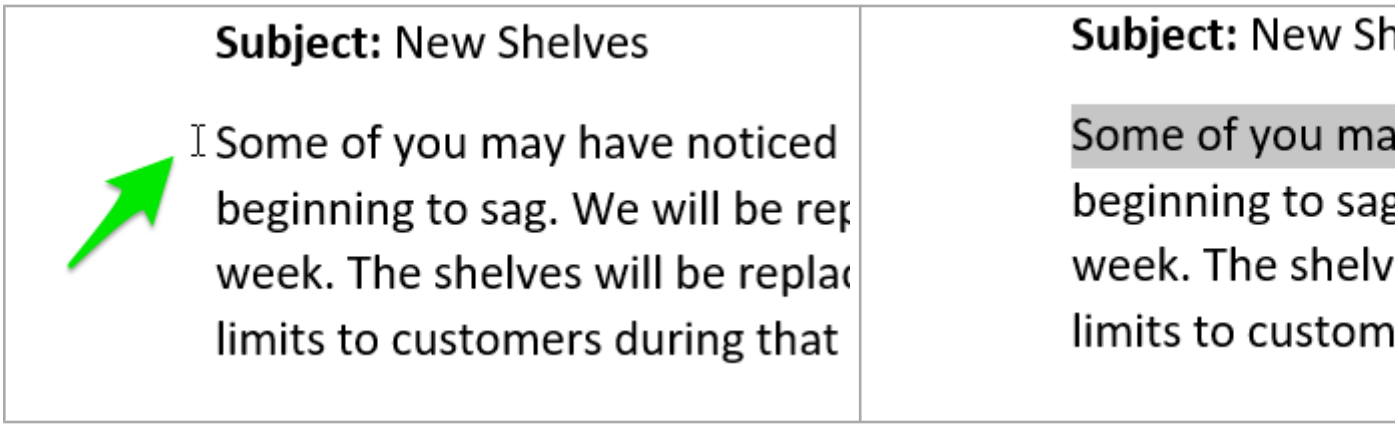
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3.8: Selecting and Moving Text

Learning Objectives

- Reorganize text within a paragraph.

To select text, click and drag your cursor across the text.



The text that is highlighted in gray is selected text. Selected text can be copied, cut, or pasted. Many features and settings in Microsoft Office are applied only to text that is selected.

Moving Text

Like files and folders, there are many ways to move text once it is selected:

- Cut using Ctrl+X (Cmnd+X), move your cursor to the new location of text, then paste to the new location with Ctrl+V (Cmnd+V)
- Copy using Ctrl+C (Cmnd+C), move your cursor to the new location of text, then paste to the new location with Ctrl+V (Cmnd+V)
- Right-click selected text, select either Copy or Cut, then right-click the new location of text and select Paste

You can move text between pages, between paragraphs, or even between programs or windows. For example, you can cut text you typed in a Word document and paste it into an email, or you can copy text from the internet and paste it into a PowerPoint presentation.

In many programs, you can also drag text to a new location within the same program. For example, in Microsoft Word, you can select text, then click and drag it to a new location within the Word document.

Practice Question

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Review

A link to an interactive elements can be found at the bottom of this page.

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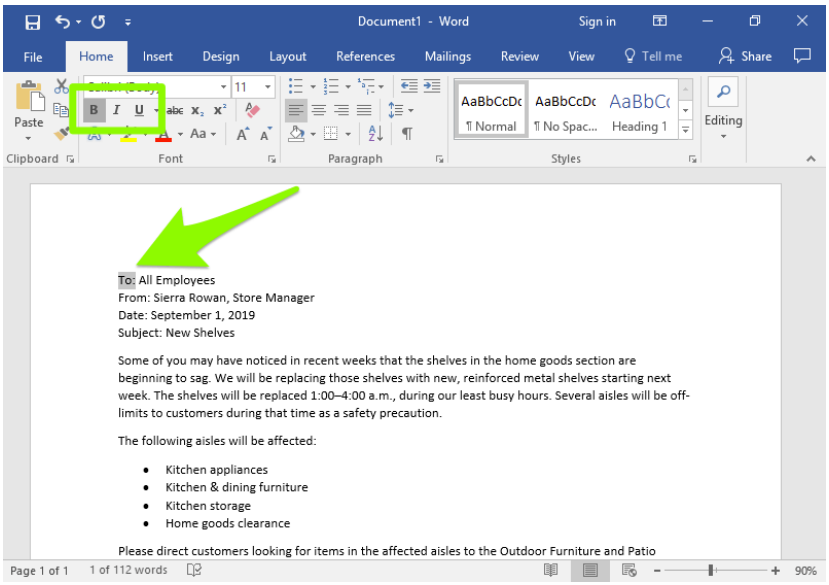
3.9: Bold, Italics, Underline

Learning Outcomes

- Make text italic, bold, or underlined.

When formatting a document, you may need to emphasize or distinguish words. You can do this with **bold**, *italics*, underline, or ***all three***.

To bold, italicize, or underline, select the text you want to change. Then, select the Bold, Italics, or Underline button in the Home tab as shown below.



You can also select the text, then use a shortcut:

Bold	Ctrl+B (Command+B for Macs)
Italics	Ctrl+I (Command+I for Macs)
Underline	Ctrl+U (Command+U for Macs)

Applying the formatting twice removes the formatting. For example, selecting bolded text and then clicking the Bold button will remove the bold formatting.

Practice Questions

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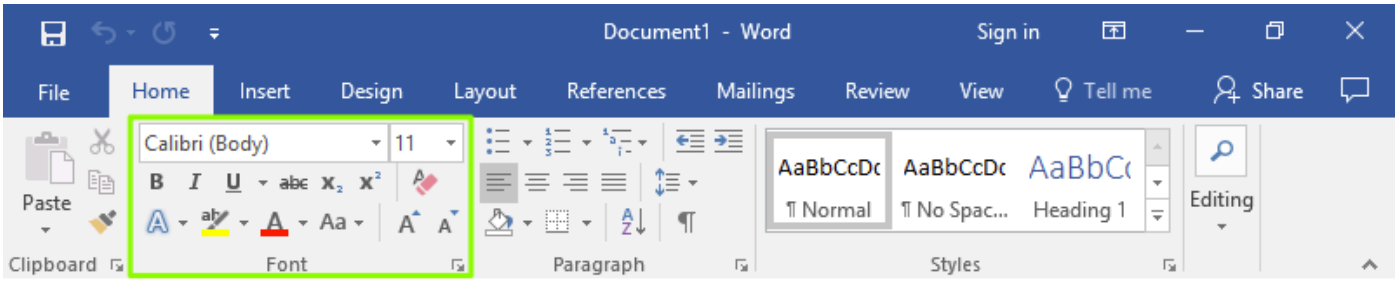
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3.10: Fonts

Learning Objectives

- Change the size, font, and color of text.

Changing the font and adding color can make your document much more attractive—and more likely to attract people to your message. The font options can all be found in the Home tab on the left.



Older versions of Word may have font options in the top-left corner or in the Format menu. If you have an older version of Word, search the internet for where to find the font options in your specific version.

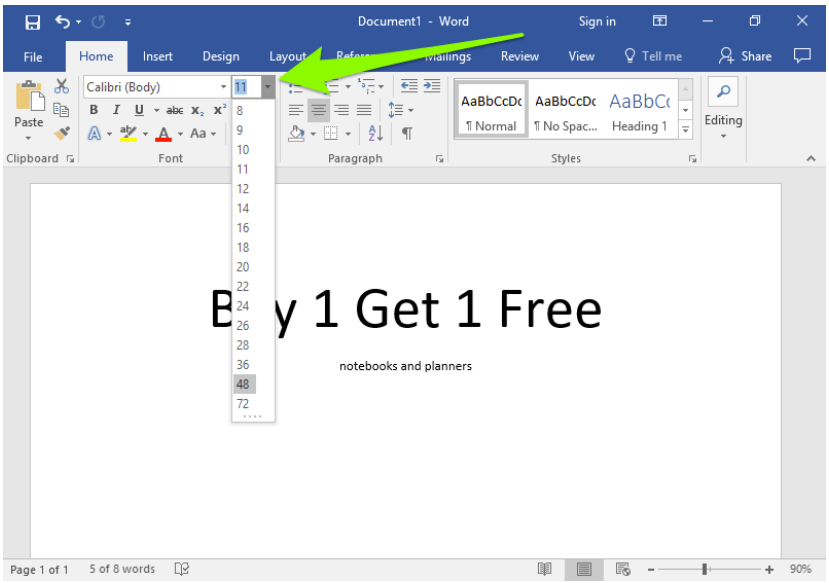
Font Size

The font size is a number that indicates how many points are in the height of the text, or high tall the text is in points. A point is 1/72 of an inch, so a 12-point font would be 12/72 of an inch. Most people are comfortable reading 10-point fonts or higher, so a 10- or 12-point font is a good choice for writing a paragraph of text. However, many situations call for larger or smaller text.

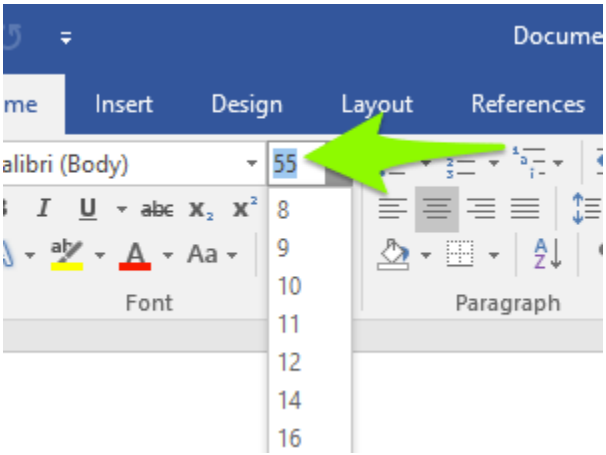
Practice Question

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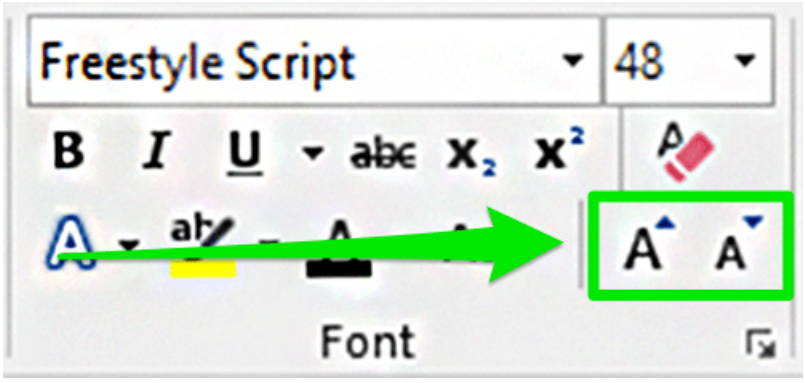
To change the font size in Word, go to the Home tab and click on the dropdown menu for the number in the font ribbon. You can pick a number and then start typing in that size. For a preview, select the text you want to change, then open the font size dropdown menu and hover your cursor over each number to see the text change. Finalize that size change by clicking the size number.



You can also choose a custom size by typing a number and hitting enter.



You can also increase or decrease the font size by clicking the Increase Font Size and Decrease Font Size buttons.

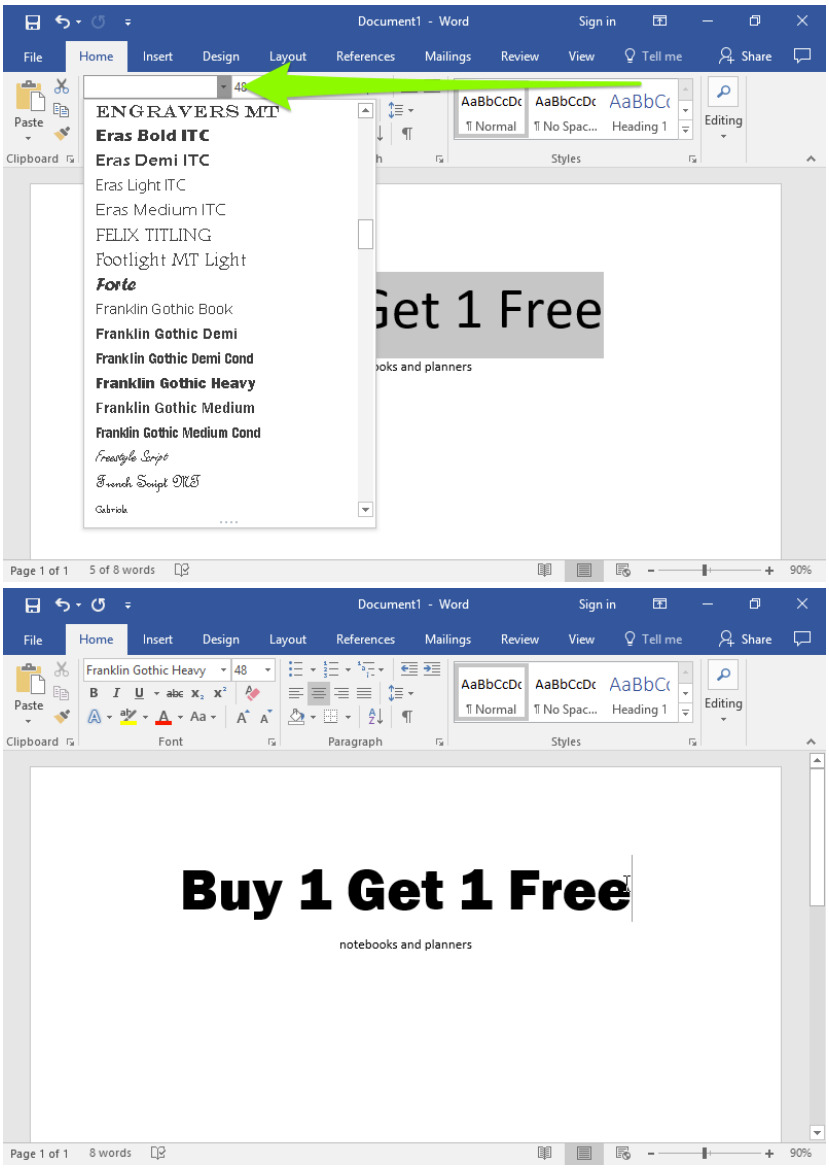


Practice Question

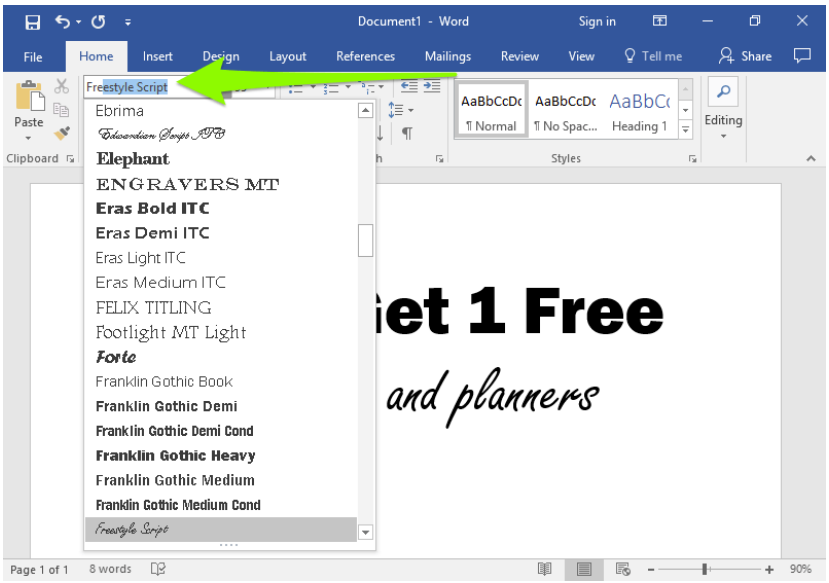
https://assessments.lumenlearning.co...essments/18590

Font

The font changes the styling of letters in your text. The menu for changing the font is in the Home tab near the top-left corner. Like the font size menu, hovering your mouse over each font option will change selected text so you can see a preview of what each font looks like.

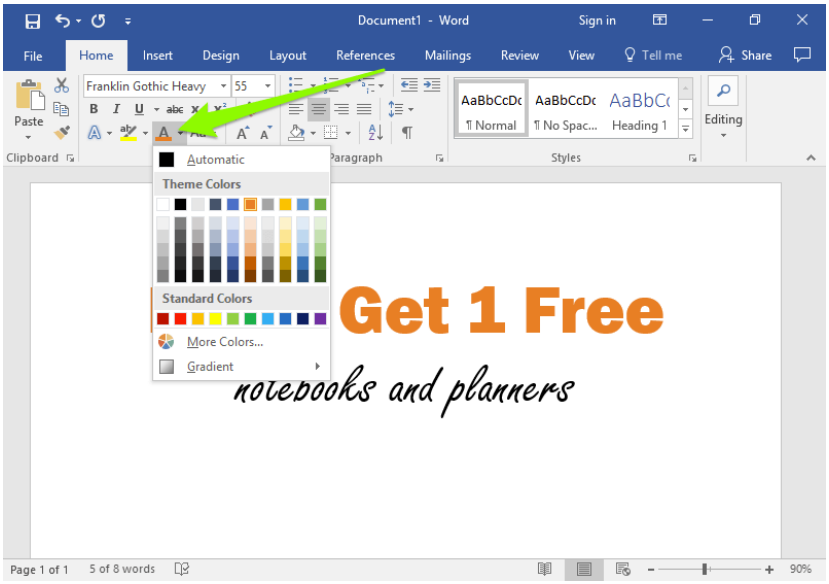


If you already know what font you want, you can start typing the name to skip to it in the menu.

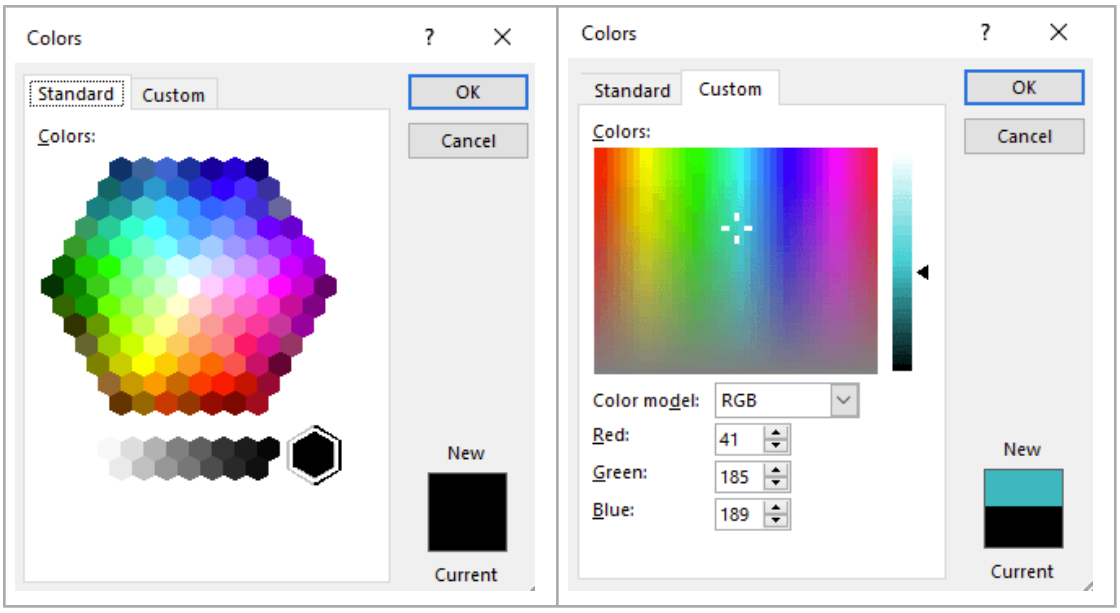


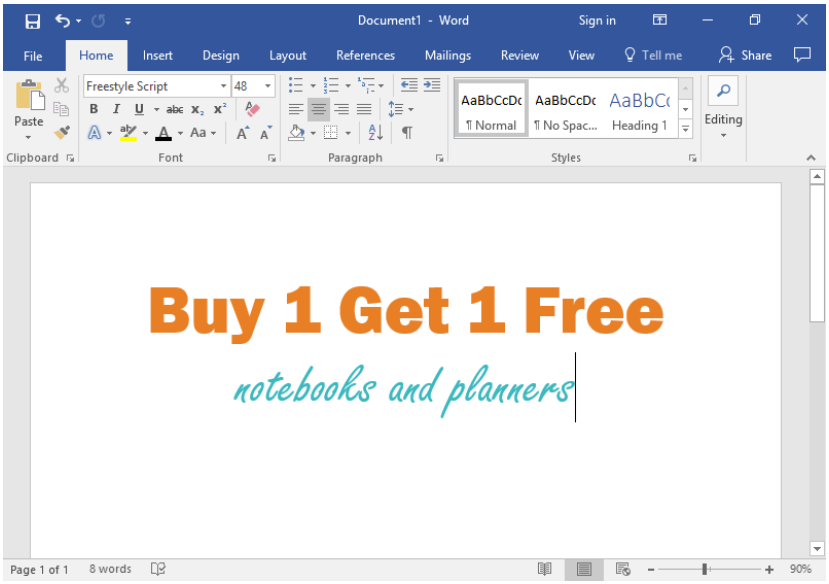
Font Color

What's life without a little color? Select the text you want to change, then click the font color dropdown menu, which will give you a wide array of colors to choose from.



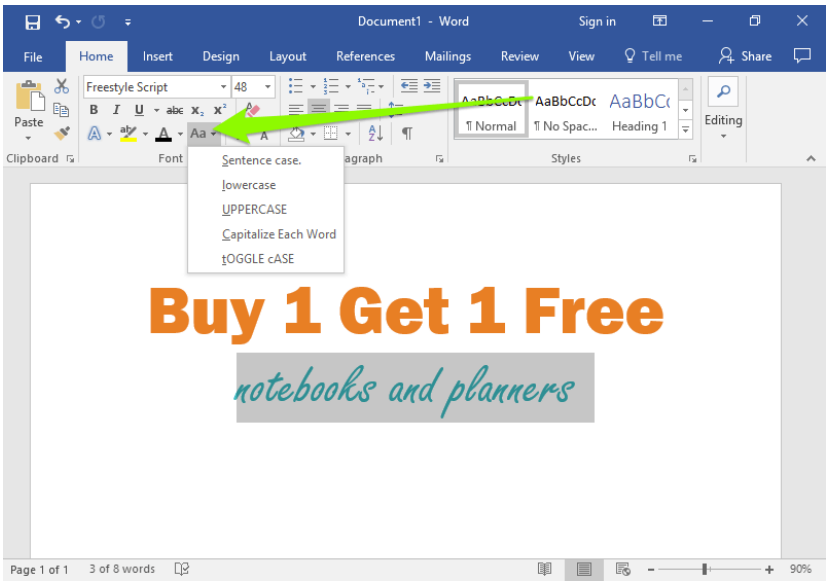
If you want a different color, you can choose More Colors... (below Standard Colors in the dropdown menu) to bring up a dialog box with even more options.





Case

Case controls how much of your text is capitalized, or whether your text is upper*case* or lower*case*. This is a useful feature if you want to change the case of your text without having to type it again.



Case Definitions

- **sentence case:** text starts with a capital letter, like a sentence
- **lowercase:** text is all lowercase, with no capital letters
- **uppercase:** text is all uppercase, with all capital letters
- **capitalize each word:** each word is capitalized
- **toggle case:** reverses the case of whatever is selected (uppercase letters become lowercase and vice versa)

Notebooks and planners Sentence case.	notebooks and planners lowercase
NOTEBOOKS AND PLANNERS UPPERCASE	Notebooks And Planners Capitalize Each Word

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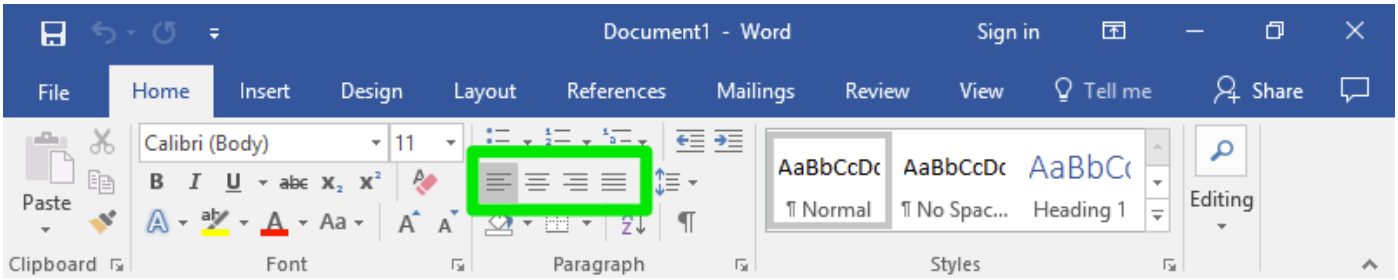
3.11: Alignment, Justification, and Indentation

Learning Objectives

- Change alignment of text.

Alignment

To align or justify text, move your cursor into the paragraph you want to change, then click the left-align, right-align, centered, or justify buttons.

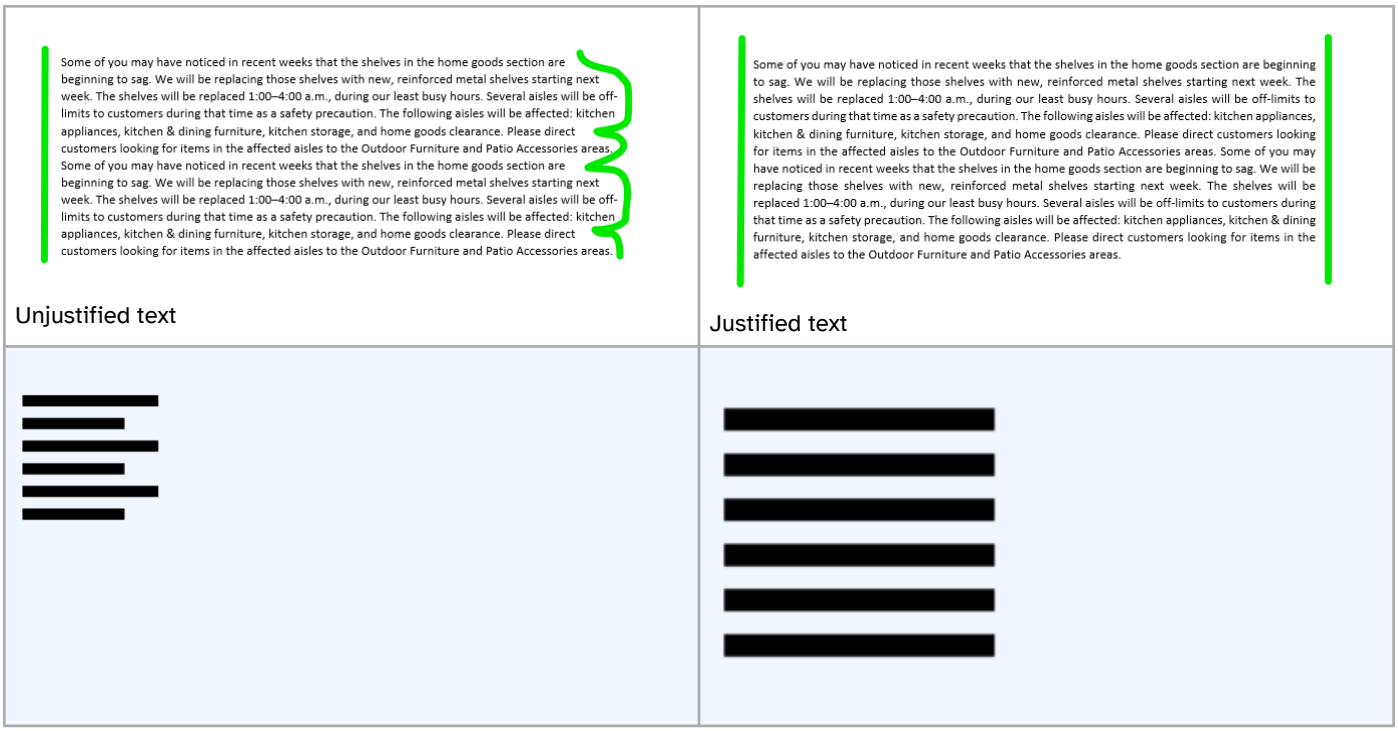


Alignment is how text flows in relation to the rest of the page (or column, table cell, text box, etc.). There are four main alignments: left, right, center, and justified.

- **Left-aligned text** is text that is aligned with a left edge. You can also left-align your text with the shortcut **Ctrl+L** (**Cmnd+L)**.
- **Right-aligned text** is text that is aligned with a right edge. You can also right-align your text with the shortcut **Ctrl+R** (**Cmnd+R**).
- **Centered text** is text that is centered between two edges. You can also center-align your text with the shortcut **Ctrl+E** (**Cmnd+E**).

Left-aligned	Centered	Right-aligned
Buy 1 Get 1 Free Notebooks and planners While supplies last Sale ends September 25	Buy 1 Get 1 Free Notebooks and planners While supplies last Sale ends September 25	Bu Notebook Whi Sale ends
		

Justification controls the spacing between words. A justified text increases the space between words to fill the entire line so that it is aligned with both the left and right edges. You can also center-align your text with the shortcut **Ctrl+J** (**Cmnd+J**).



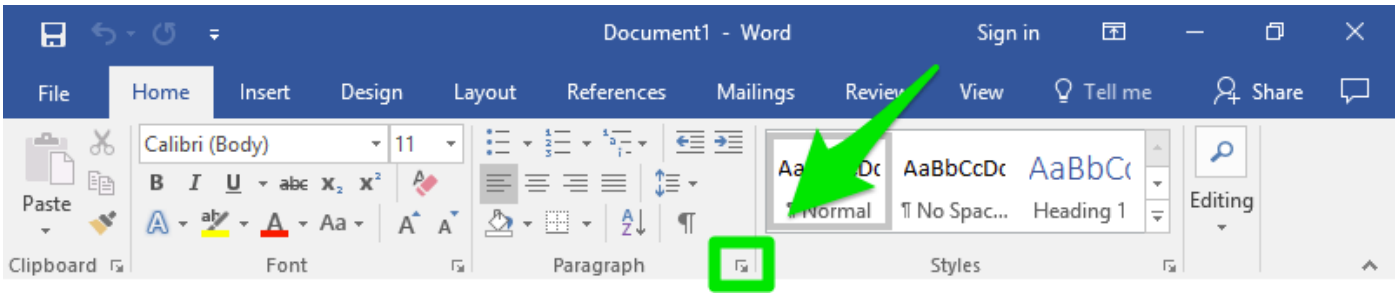
You can also change the alignment and justification settings in the paragraph dialog box.

Practice Question

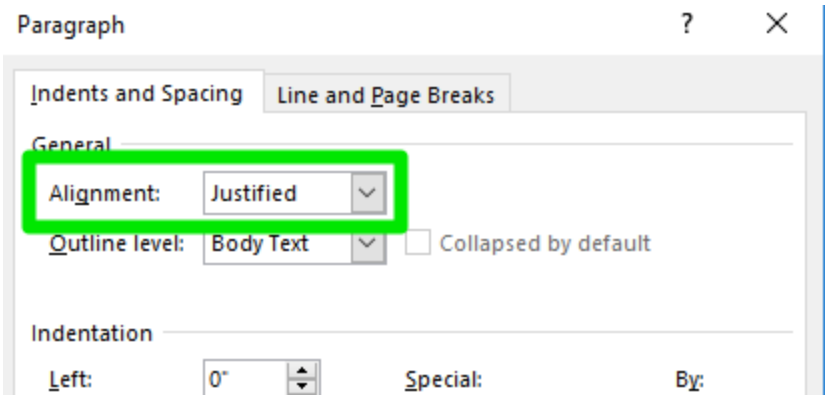
https://assessments.lumenlearning.co...essments/18591

Paragraph Dialog Box: Justification and Alignment

Open the paragraph dialog box by clicking the small arrow icon in the bottom-right corner of the Paragraph group.



The dropdown menu to change the alignment is near the top of the dialog box.



Indentation

In many documents, indenting is a good way to distinguish the start of a new paragraph, especially when there is no paragraph spacing.

To indent, hit the Tab key once on your keyboard at the start of a paragraph.

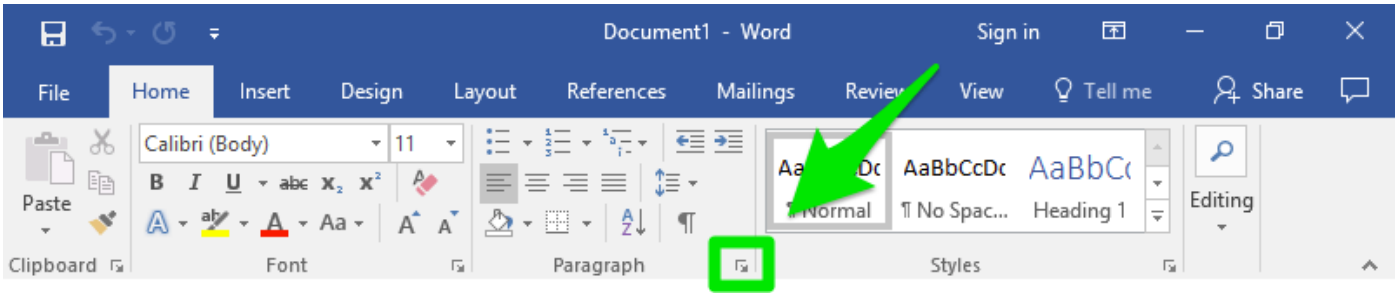
Some of you may have noticed in recent weeks that the shelves in the home goods section are beginning to sag. We will be replacing those shelves with new, reinforced metal shelves starting next week. The shelves will be replaced 1:00–4:00 a.m., during our least busy hours. Several aisles will be off-limits to customers during that time as a safety precaution. The following aisles will be affected: kitchen appliances, kitchen & dining furniture, kitchen storage, and home goods clearance. Please direct customers looking for items in the affected aisles to the Outdoor Furniture and Patio Accessories areas.

One tab at the beginning of the first line of a paragraph.

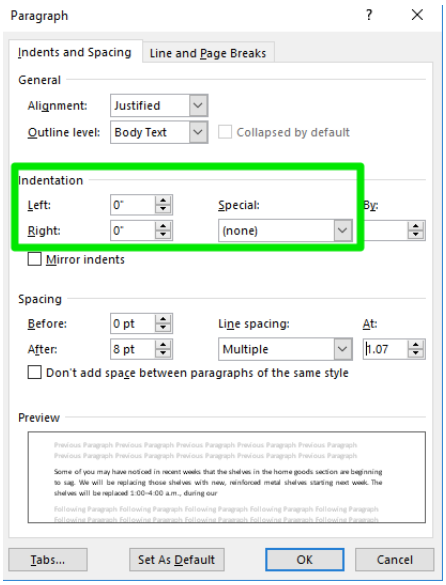
For more control over indentation settings, use the paragraph dialog box.

Paragraph Dialog Box: Indentation

Open the paragraph dialog box by clicking the small arrow icon in the bottom-right corner of the Paragraph group.



The indentation section is toward the middle of the dialog box.



The Left and Right settings indent the entire paragraph to the left and right.

Indentation Comparison
Some of you may have noticed in recent weeks that the shelves in the home goods section are beginning to sag. We will be replacing those shelves with new, reinforced metal shelves starting next week. The shelves will be replaced 1:00–4:00 a.m., during our least busy hours. Several aisles will be off-limits to customers during that time as a safety precaution. The following aisles will be affected: kitchen appliances, kitchen & dining furniture, kitchen storage, and home goods clearance. Please direct customers looking for items in the affected aisles to the Outdoor Furniture and Patio Accessories areas.
Without indentation
Some of you may have noticed in recent weeks that the shelves in the home goods section are beginning to sag. We will be replacing those shelves with new, reinforced metal shelves starting next week. The shelves will be replaced 1:00–4:00 a.m., during our least busy hours. Several aisles will be off-limits to customers during that time as a safety precaution. The following aisles will be affected: kitchen appliances, kitchen & dining furniture, kitchen storage, and home goods clearance. Please direct customers looking for items in the affected aisles to the Outdoor Furniture and Patio Accessories areas.
With 1-inch indentation on left and right sides

The Special dropdown menu allows you to choose to indent the first line of the paragraph or to create a hanging indent. Upon choosing First or Hanging, another field will appear to let you choose how big the first line or hanging indent will be.



Some of you may have noticed in recent weeks that the shelves in the home goods section are beginning to sag. We will be replacing those shelves with new, reinforced metal shelves starting next week. The shelves will be replaced 1:00–4:00 a.m., during our least busy hours. Several aisles will be off-limits to customers during that time as a safety precaution. The following aisles will be affected: kitchen appliances, kitchen & dining furniture, kitchen storage, and home goods clearance. Please direct customers looking for items in the affected aisles to the Outdoor Furniture and Patio Accessories areas.	Some of you may have noticed in recent weeks that the shelves in the home goods section are beginning to sag. We will be replacing those shelves with new, reinforced metal shelves starting next week. The shelves will be replaced 1:00–4:00 a.m., during our least busy hours. Several aisles will be off-limits to customers during that time as a safety precaution. The following aisles will be affected: kitchen appliances, kitchen & dining furniture, kitchen storage, and home goods clearance. Please direct customers looking for items in the affected aisles to the Outdoor Furniture and Patio Accessories areas.
Hanging indent	First line indent

Practice Question

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3.12: Line and Paragraph Spacing

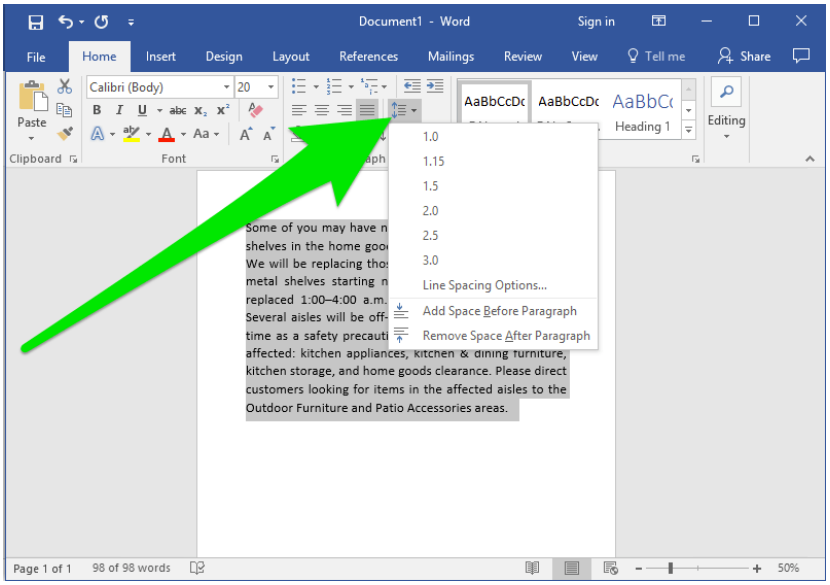
Learning Objectives

- Change line spacing of text.

Line Spacing

Line spacing is the distance between lines of text. Loose line spacing can make text much more readable, while tight line spacing can fit more text in a space.

To change the line spacing, select the lines you want to change. Then go to the Home tab and find the line spacing button in the Paragraph section. The line spacing button triggers a dropdown menu from which you can select a line spacing.



The numbers in the line spacing dropdown menu reflect how much the line spacing will increase relative to the size of the line. For example, a line spacing of 1 means the line spacing will be as large as one line, a line spacing of 2 means the line spacing will be the size of two lines, and so on.

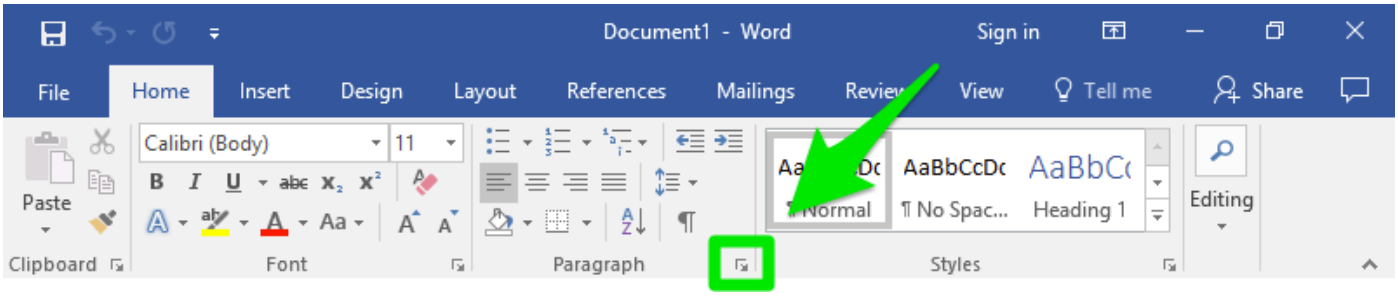
Some of you may have noticed in recent weeks that the shelves in the home goods section are beginning to sag. We will be replacing those shelves with new, reinforced metal shelves starting next week. The shelves will be replaced 1:00–4:00 a.m., during our least busy hours. Several aisles will be off-limits to customers during that time as a safety precaution. The following aisles will be affected: kitchen appliances, kitchen & dining furniture, kitchen storage, and home goods clearance. Please direct customers looking for items in the affected aisles to the Outdoor Furniture and Patio Accessories areas.	Some of you may have noticed in recent weeks that the shelves in the home goods section are beginning to sag. We will be replacing those shelves with new, reinforced metal shelves starting next week. The shelves will be replaced 1:00–4:00 a.m., during our least busy hours. Several aisles will be off-limits to customers during that time as a safety precaution. The following aisles will be	Some of you may have noticed i shelves in the home goods sectic We will be replacing those shelv metal shelves starting next wee replaced 1:00–4:00 a.m., during
1.0 spacing	2.0 line spacing	3.0 line spacing

Practice Question

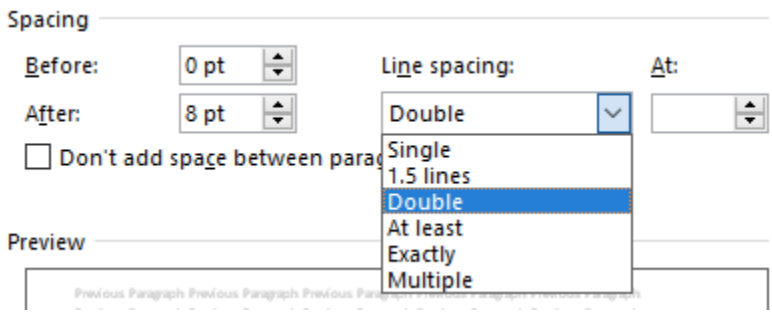
https://assessments.lumenlearning.co...essments/18593

Paragraph Dialog Box: Line Spacing

Open the paragraph dialog box by clicking the small arrow icon in the bottom-right corner of the Paragraph group.

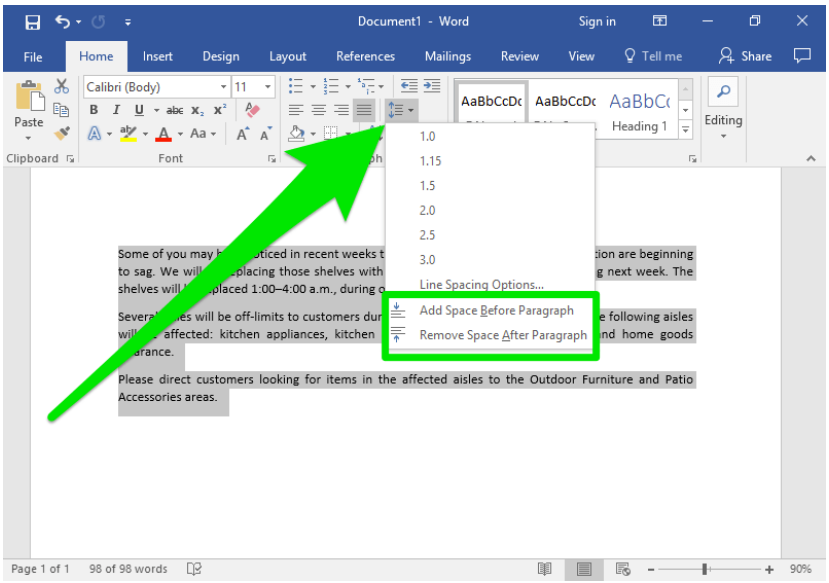


You can use the Line spacing dropdown menu to choose Single, 1.5, or Double line spacing. The At least option lets you set a minimum point value for the spacing, and Exactly lets you set an exact point value. Finally, the Multiple option lets you set a line spacing greater than Double (for example, 3 for triple spacing).



Paragraph Spacing

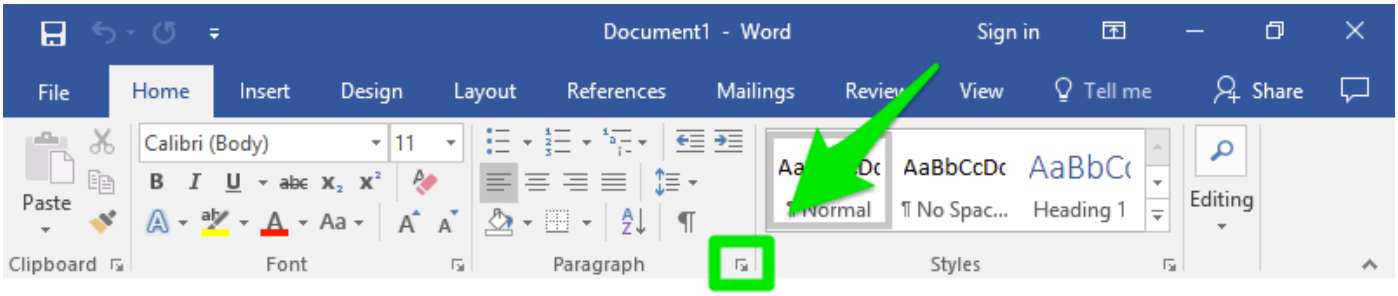
You may have noticed that by default, Word adds a space between each paragraph. You can change the size of that space or eliminate it completely by changing the paragraph spacing. There is an option to Add Space Before Paragraph or Remove Space After Paragraph in the line spacing menu.



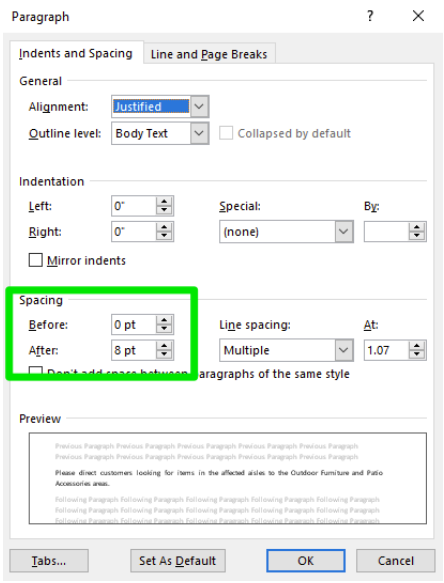
For more control over the paragraph spacing, go to the paragraph dialog box.

Paragraph Dialog Box: Paragraph Spacing

Open the paragraph dialog box by clicking the small arrow icon in the bottom-right corner of the Paragraph group.



The Spacing section controls how much space comes before and after a paragraph. Here, you can increase or decrease the amount of points that come before and after the paragraph you have selected.



Practice Question

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3.20: Paragraph Concept

Learning Objectives

- Explain the following laws An explanation of how to type paragraphs properly within word processing documents.
- An explanation of how tabs and returns are treated; including the use of the show/hide feature. the Ideal Gas Law

Word Wrap

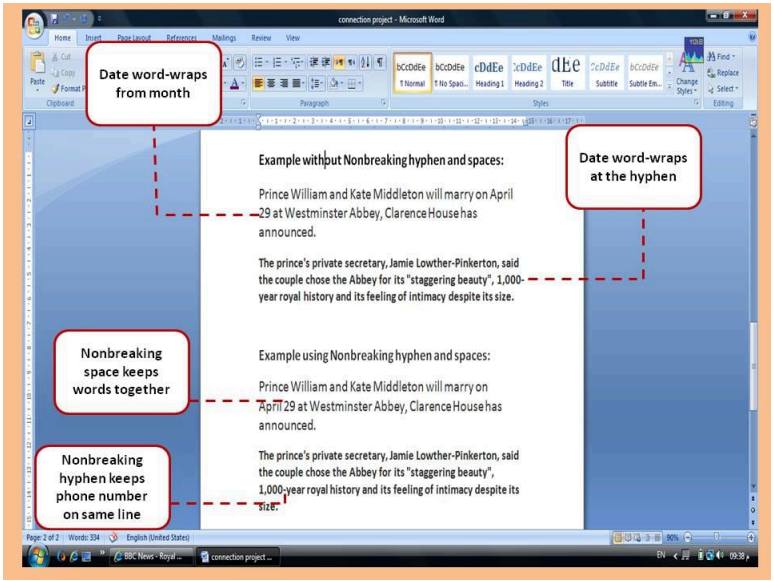
Word wrap is the feature of breaking lines between and not within words, except when a single word is longer than a line. So, when your line is full of text, the word processor automatically jumps to the next line. Sometime, the text may wrap in an unwanted location. To make the reading easier, you need to proofread word wrapping location and insert special characters. Two things to be concerned with are how to control word wrapping with nonbreaking hyphens and nonbreaking spaces?

- Insert Nonbreaking Hyphens

If there is a word with hyphen at the end of a line, the first word and the hyphen may appear on the first line, and the second word will be in the next line. So, to keep word with hyphen together, replace the regular hyphen with a nonbreaking hyphen. A nonbreaking hyphen prevents the word with hyphen from becoming separated at the hyphen. To insert a nonbreaking hyphen, press Ctrl+Shift+Hyphen.

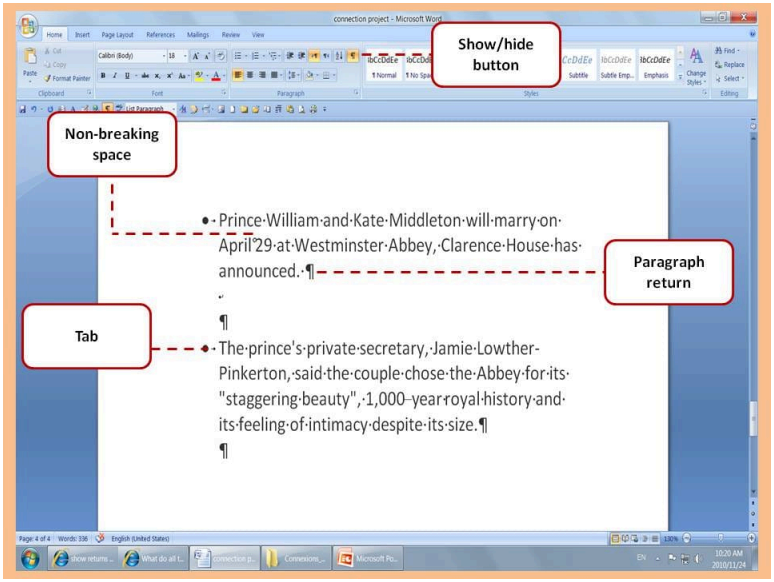
- Insert Nonbreaking Spaces

Sometimes text willwrap to the next line if a word does not fit at the end of the line, so some words should be kept together for improved readability. To prevent words from separating due to the word-wrap feature, you can insert a nonbreaking space. To insert a nonbreaking space, press Ctrl+Shift+Spacebar between the two words that you want to keep together.



Show/Hide spaces, return, and tabs

I cannot tell you how helpful using this feature can be. If you get used to working in Word with this feature turned ON, you'll keep yourself out of so much trouble! As you type text, Word inserts nonprinting marks or symbols. To see these symbols click the Home tab, in the Paragraph group, click Show/Hide button that look like a reversed “p”. When you click it you will see the different characters that show you there are spaces, returns, and tabs on your text.



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3.21: Insert versus Overtype

Learning Objectives

- An explanation of how these two modes of entry effect what you see when typing. How to toggle between the two modes.

Insert

Insert means that you add text to the current text without replacing any single letter. For example, the original sentence is “John is a good person”; if you insert “very” between “a” and “good”, the sentence will be “John is a very good person”.

To insert a text:

Step 1 - Move the insertion point to the place you want to insert the text.

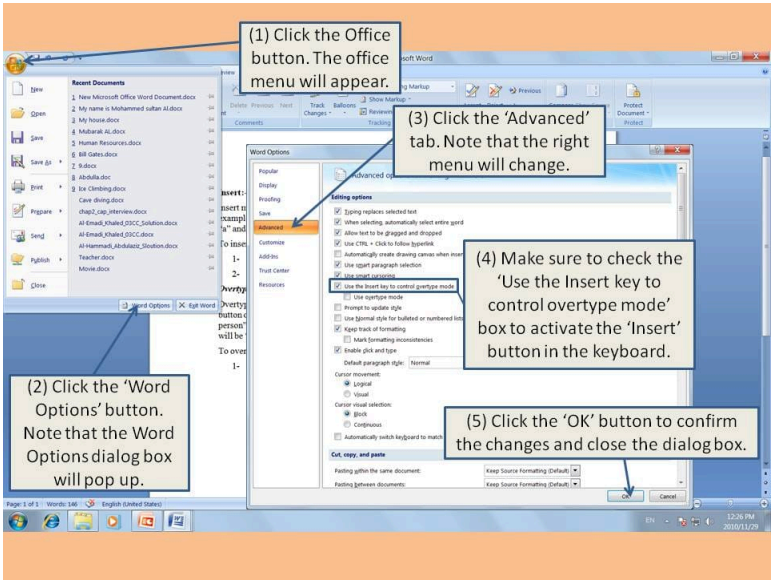
Step 2 - Type the text you want.

Overtype

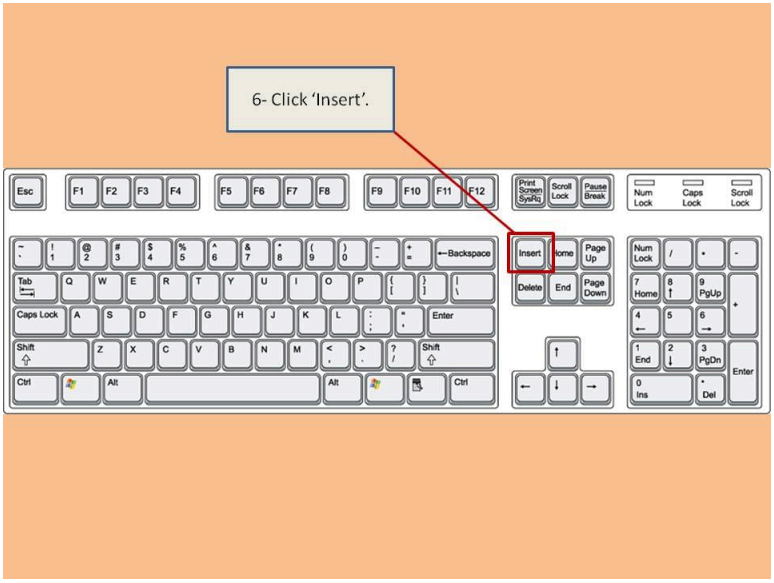
Overtype means that you replace the current text with another text using the ‘Insert’ button on the keyboard. For example, the original sentence is “John is a very good person” and you want to replace “good” with “nice”. If you put the insertion point before “good” and type “nice”, the sentence will be “John is a very nice person” not “John is a very nice good person”.

To overtype a text:

Step 1 - Be sure to activate the ‘Overtype option’. To do that , follow the instructions:



Step 2 - To overtype the text, move the insertion point to the place you want to replace the text (before the text); click the insert button (toggles from insert mode to overtype mode).



Step 3 - Type the new text that will overtype the existing text. Hit the insert key to toggle off the overtype and return to the insert mode.

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3.22: Auto Correct and Auto Text

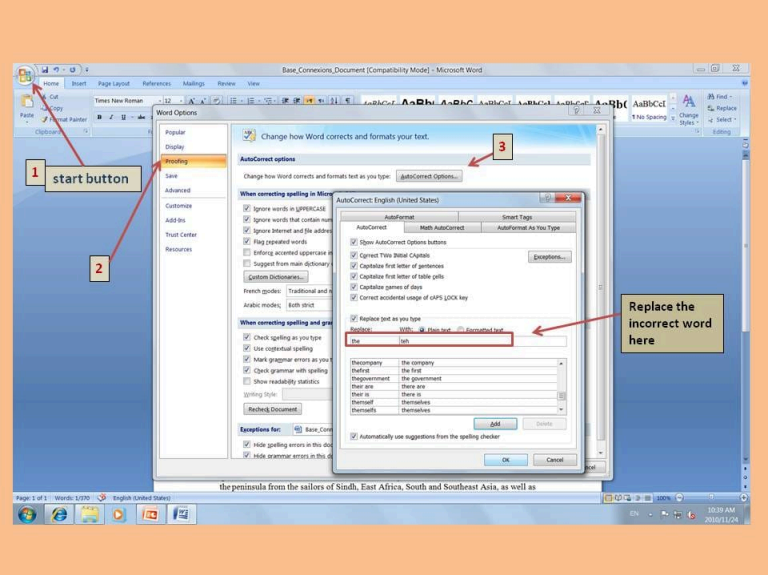
Learning Objectives

- An explanation of how these two featured effect what happens when typing.

AutoCorrect

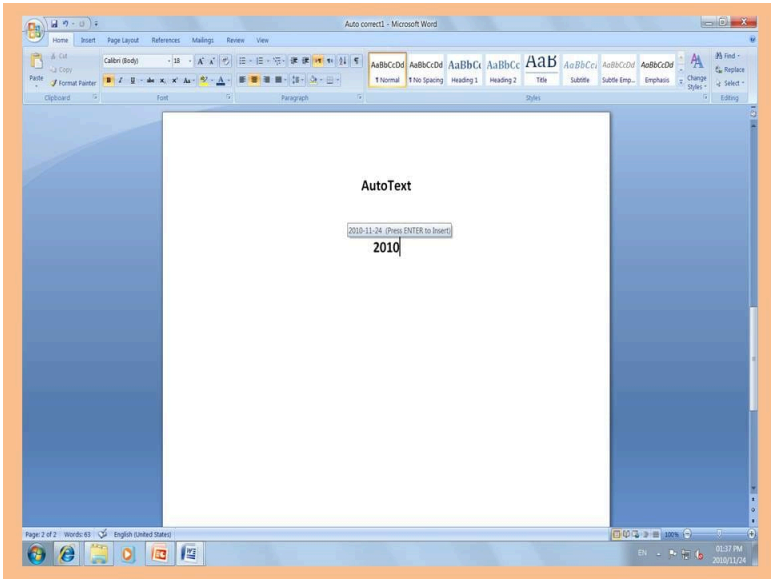
Many people make mistakes while they are typing in the word. You will notice while you are typing your misspelled words will automatically be corrected. Here are the steps to turn on the AutoCorrect.

1. Click on start button as shown, and then press *word option*.
2. Choose **Proofing**.
3. When you click on proofing click on *AutoCorrect option*.
4. At the last step here you can replace the incorrect word with the correct one you choose.



AutoText

Auto text is one way to complete your unfinished words in the word document, while are you typing specially dates, time, and years you will notice that there is something popping to you like in the picture below as shown to you. You can confirm that just by pressing **ENTER**.



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3.23: Spelling and Grammar Checker

Learning Objectives

- Simple instructions for using the spelling and grammar checking features of word processing.

Spelling and Grammar Checker

Many students, especially ESL students, hope to write an academic essay, paper, or any academic writing that is free of spelling or grammar mistakes. Sometimes when we revise our work, we might miss or cannot recognize some of those mistakes, and for that reason, Microsoft Office Word has provided the world an awesome feature called Spelling and Grammar Checker. Spelling and Grammar Checker helps you avoid many common spelling and grammar errors in your word documents, and at the same time you may correct some of them.

Types of Errors

There are three different wavy underline colors that have three different meanings: green, red, and blue; the green wavy underline indicates grammatical error(s), the red wavy underline refers to spelling error(s), and the blue wavy underline refers to contextual error(s).

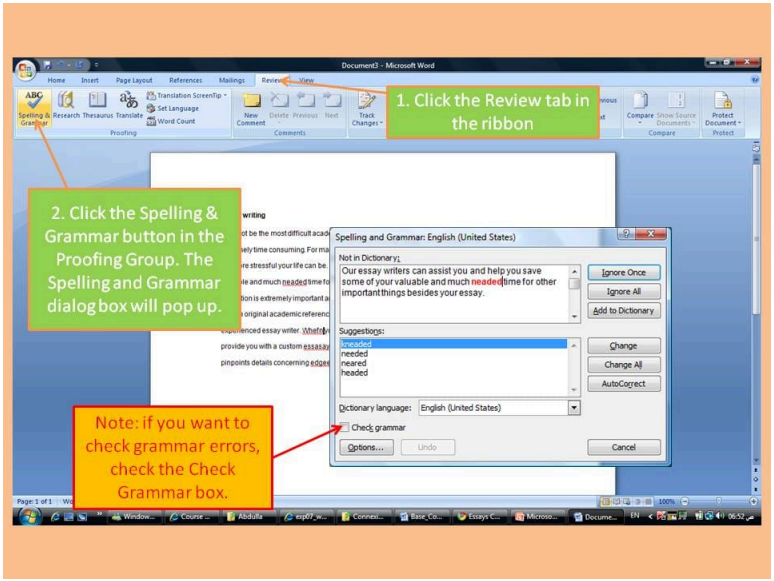
Auto Corrections

Microsoft Office Word has a feature that corrects some spelling errors automatically; for example, if you type "teh" instead of "the", the word "teh" will be adjusted automatically to "the". **However, the application cannot correct or find all grammar mistakes,** so you have to review your document thoroughly before printing the final draft, and make sure that your document does not have any spelling, grammatical, or contextual errors.

There are many methods to identify misspelled words or questionable grammar in your document: you may print your document and give it to someone else to correct it using a marker, or you may read your document aloud that helps you find some mistakes.

Using Spelling and Grammar Checker

To start Spelling and Grammar Checker, do the following steps:



Then, choose the appropriate options. Once you finish, click the X button on the right top corner of the Spelling and Grammar dialog box to close the dialog box.

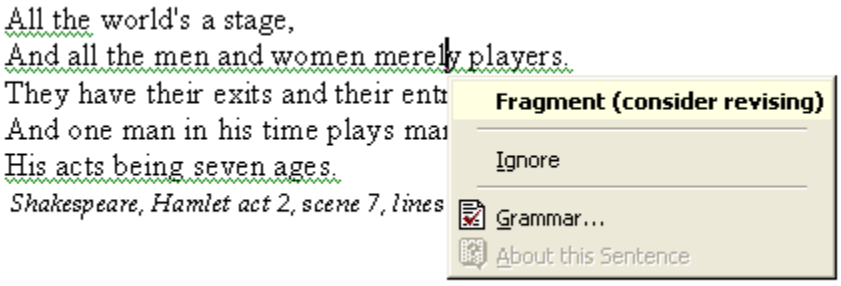
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3.24: Spell Check and Dictionaries

Learning Objectives

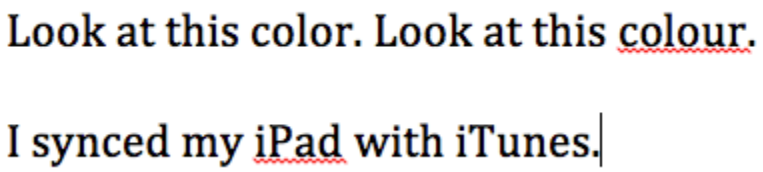
- Correct spelling and grammar errors.



As the screenshot above demonstrates, Spell Check and Grammar Check are potentially useful tools, but very fallible ones.

You've probably seen the angry red wavy lines indicating a misspelled word as you type a document. Sometimes, those red lines may have been helpful, saving you from making an embarrassing typo. Other times, those red lines are just annoying and distracting. In this section, we will cover how Spellcheck works and how you can best use it to your advantage.

How Spell Checker Works



At top, the American English dictionary won't recognize correctly spelled British English words. At bottom, Word's dictionary may highlight correct words not included in its dictionary.

The spell checker tool compares every word you type against its dictionary, or database of words. If a word isn't in its dictionary, the word is marked misspelled with a red underline. This means words that are correctly spelled may be marked as misspelled, especially brand names, specialized industry or scientific terms, and words in another language. With a little tweaking, you can teach Microsoft Word (and other Office programs) how to spell uncommon words and names you use regularly. That way, genuine mistakes are not lost in a sea of red underlines.

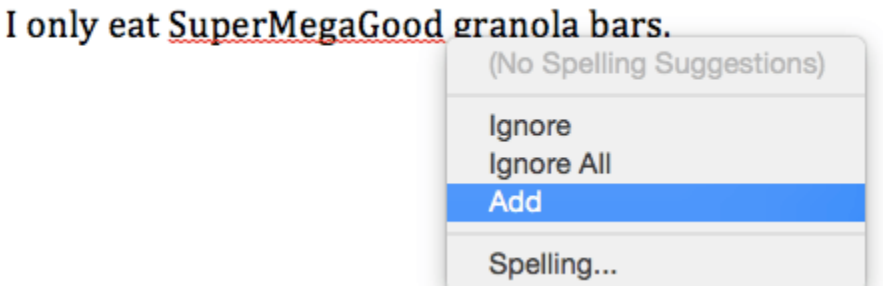
Practice Question

https://assessments.lumenlearning.co...essments/18596

Adding Words to the Dictionary

The simplest method to add words to the dictionary is to right-click the marked word and select Add. If you do not wish to add the

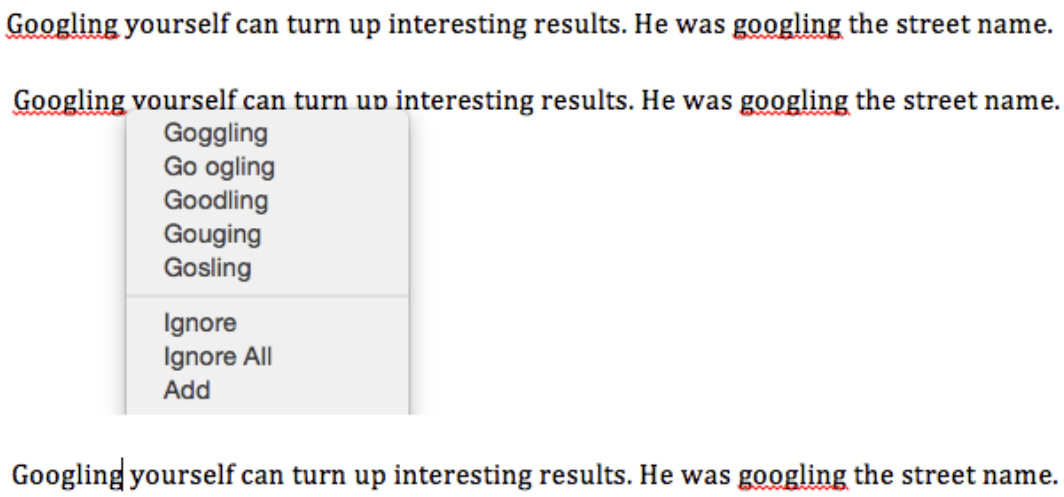
word but do not want to see the red line, you can select Ignore or Ignore All. (Ignore ignores that word once; Ignore All ignores the word through the entire document.)



Keep in mind that adding a word to the dictionary will not necessarily add all versions of that word. For example, after adding *iPad* to the dictionary, the dictionary will still not recognize *iPads*.

The good news is that adding a word to the Microsoft Word dictionary will also add it to the dictionary for other Office products such as Excel and PowerPoint.

The dictionary is case-sensitive. Adding *iPad* will not add *ipad* (a good thing, since *ipad* is incorrect). Keep this in mind if the word you want to add to the dictionary is capitalized because it is at the beginning of a sentence.

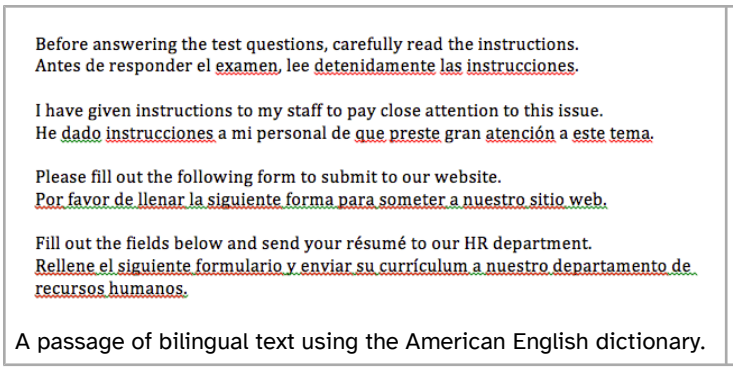


Adding the capitalized form of the word will not add the lowercase form of the word. To get around this, add the lowercase word to the dictionary first.

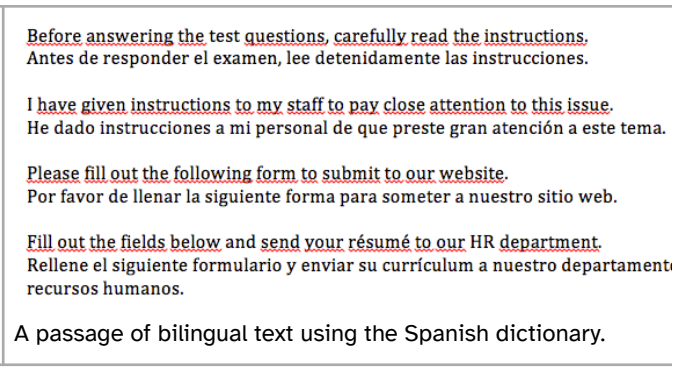
Keep in mind that adding a word adds it to whichever language dictionary you are using. For example, adding “c’est la vie” to the dictionary tells Microsoft Word that “c’est la vie” is an English word. That may be nice for the occasional borrowed term, but it will get overwhelming if you find yourself using a lot of foreign words not typically used in English vernacular. We will cover other language dictionaries later in this section.

Bonus: Switching Language Dictionaries

You can switch your dictionary to a different language. Go to Tools > Dictionary, Dictionary, and choose a different language.



A passage of bilingual text using the American English dictionary.



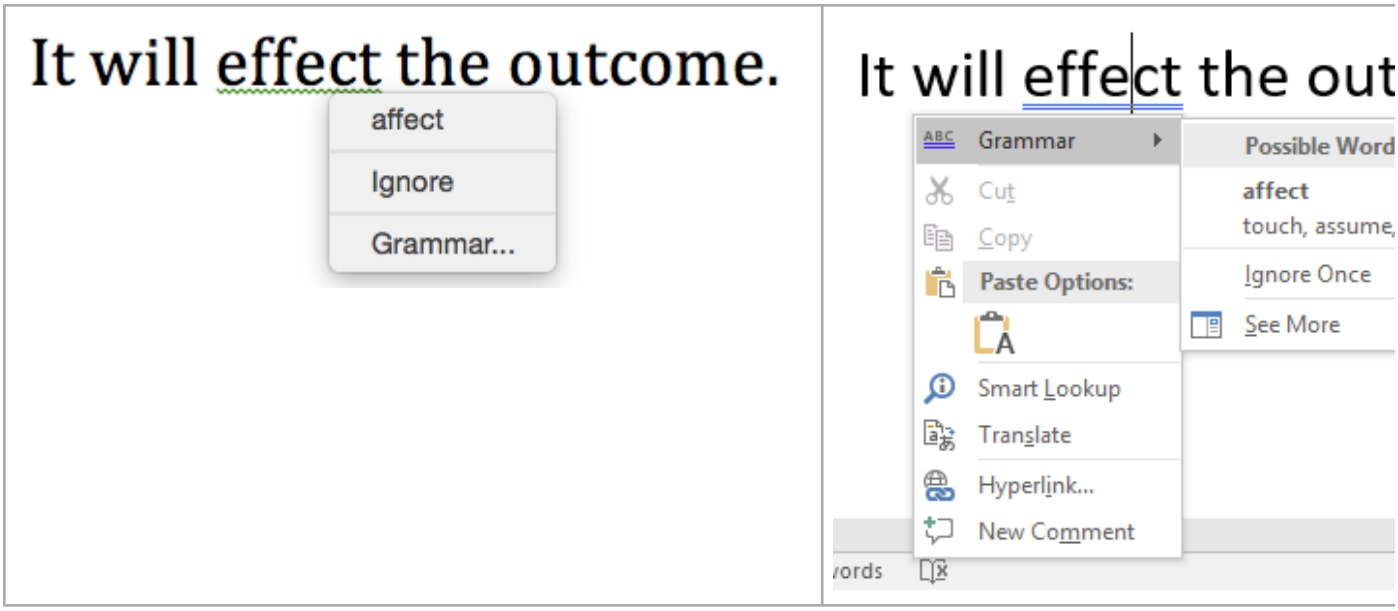
A passage of bilingual text using the Spanish dictionary.

Grammar Check

Grammar check works much like spell check, searching through your document for grammatical and style errors rather than spelling errors. Grammar check underlines words or phrases in blue or green, depending on your version of Word.



Right-click on the underlined word or phrase to see suggested corrections. You can also choose Ignore, Ignore Once, or Ignore All if the "error" is actually correct. Like spell check, grammar check is prone to errors. In some versions of Word, you may see an Ignore Rule or "Don't check for this issue" option. Clicking Ignore Rule will make Grammar check ignore that specific grammar rule in your document while still looking for other grammar errors.



Practice Question

https://assessments.lumenlearning.co...essments/18595

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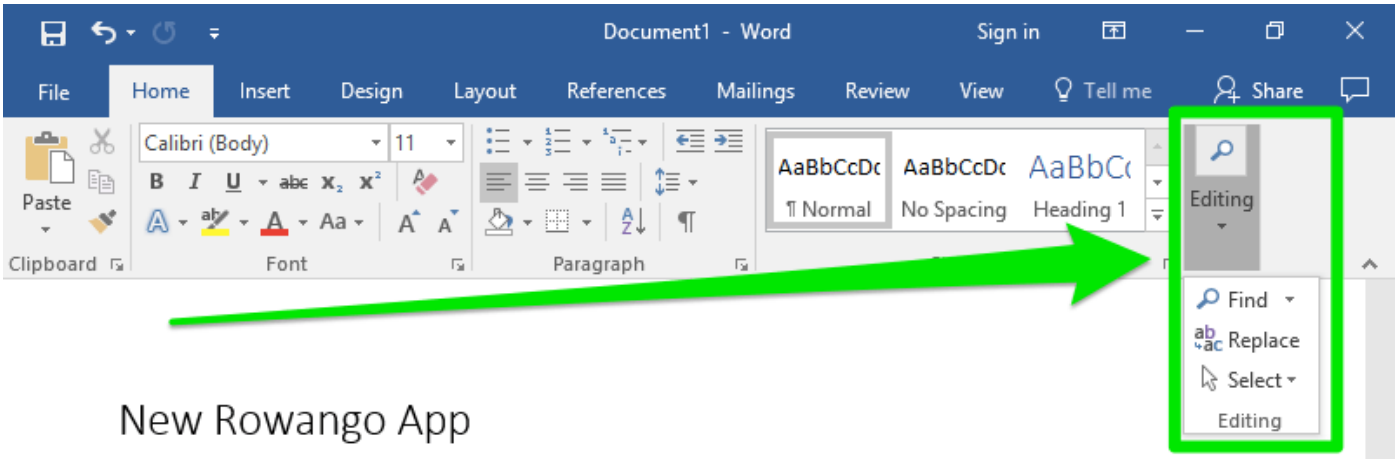
3.25: Find and Replace

Learning Objectives

- Find and replace text.

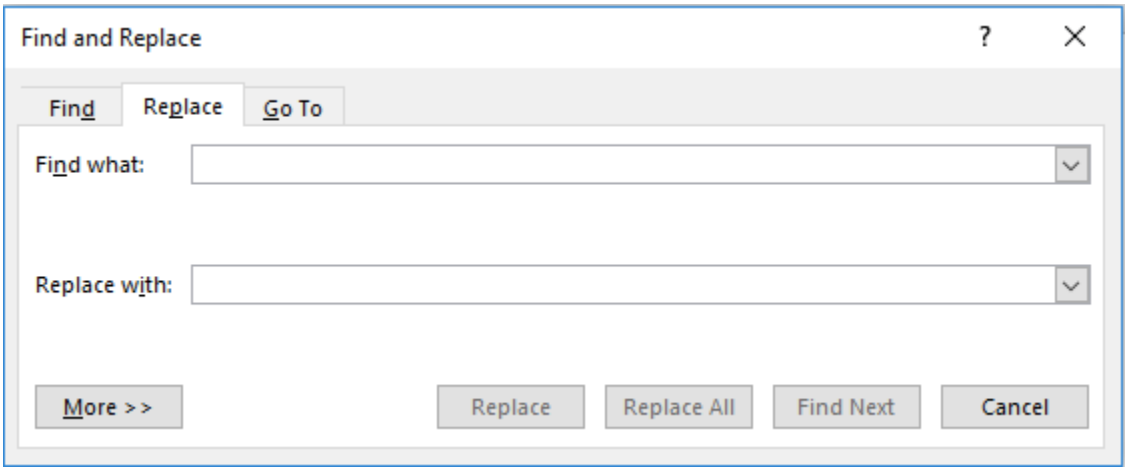
Find and Replace helps you to find words or formats in a document and can let you replace all instances of a word or format. This is particularly handy in long documents.

To use Find and Replace, use the shortcut Ctrl+H or navigate to Editing in the Home tab of the ribbon, then choose Replace. To just quickly find something, use the shortcut Ctrl+F (Cmnd+F) or navigate to Home>Editing>Find.



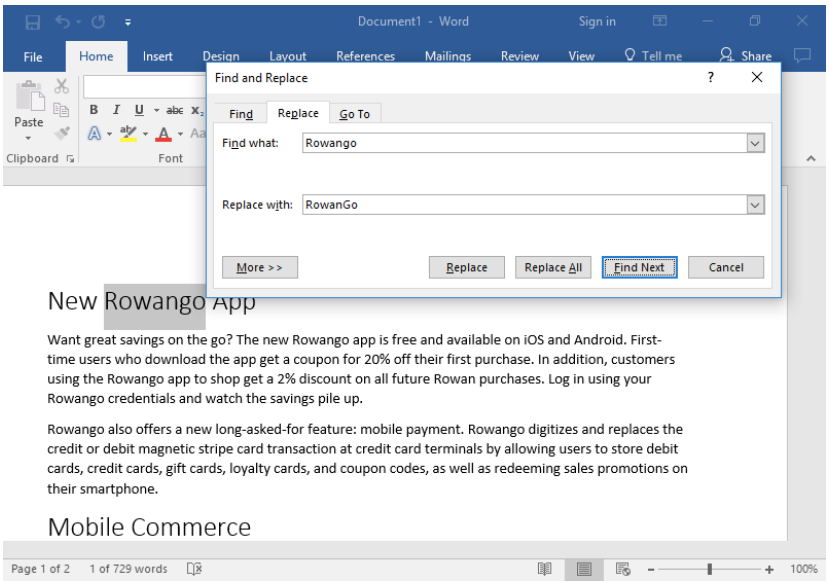
Replace

Use the shortcut Ctrl+H or navigate to Home>Editing>Replace to reach the Find and Replace dialog box.



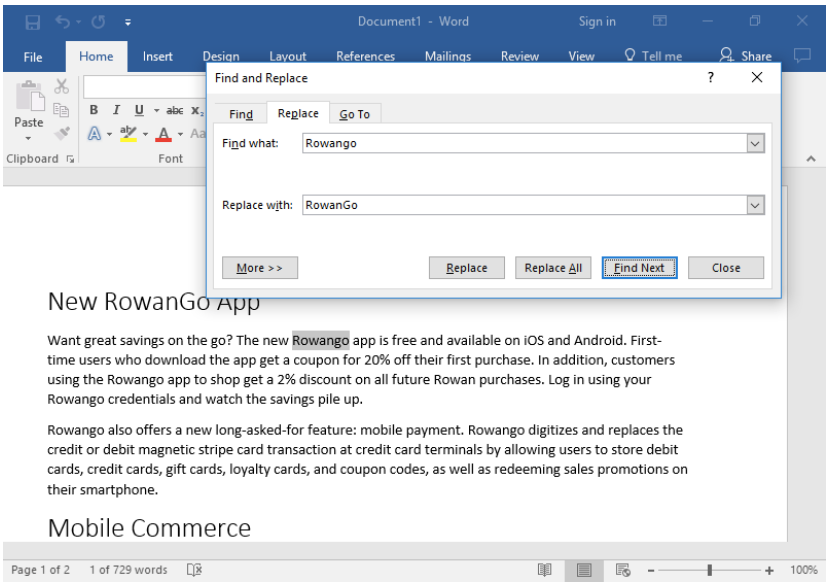
Type what you want to find in the Find what field, and the replacement in the Replace with field. (Note that you can move the Find and Replace dialog box by clicking the title bar and dragging it elsewhere so you can see what was behind it.)

Find Next highlights the first occurrence of the Find word. Clicking Find Next again will highlight the second occurrence, clicking Find Next again will highlight the next occurrence, and so on.



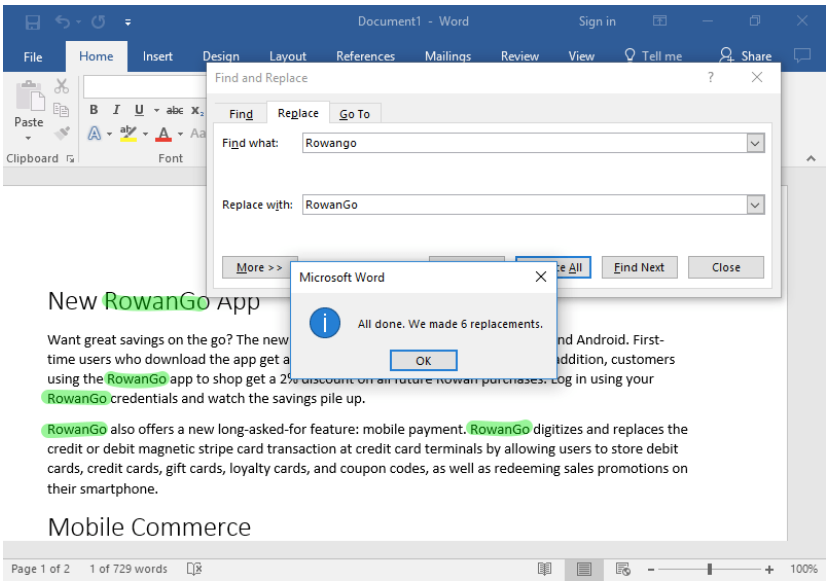
Find Next. The first Rowango is highlighted.

Clicking Replace replaces only the highlighted occurrence of the Find word.



Replace. The first Rowango is replaced with RowanGo. The other Rowango words remain the same.

Replace All replaces every instance of the Find word with the Replace word. A small dialog box will appear to tell you how many replacements were made.



Replace All. Notice that every instance of Rowango has been replaced with RowanGo. (highlighting added for this course a document)

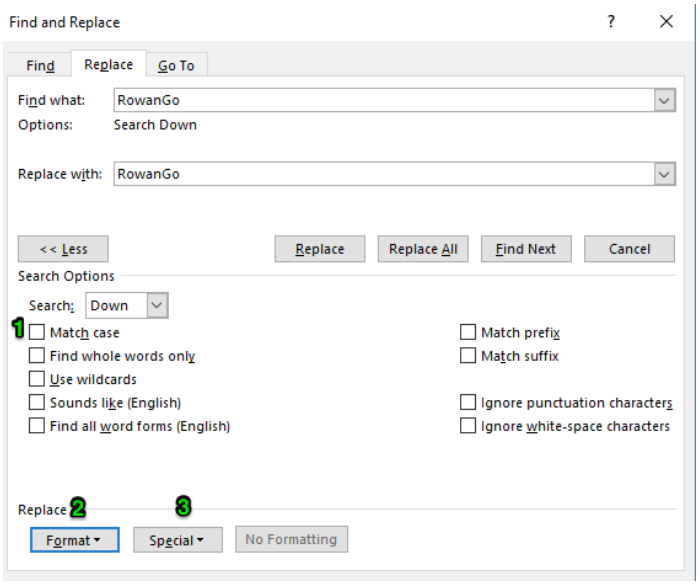
The Pitfalls of Replace All

Be careful when you use Replace All. It will replace *every* occurrence of the Find phrase, including occurrences you hadn't intended to replace. For example, replacing every "kg" with "kilogram" could result in the word *backilogramround* instead of *background*. Use spaces in the Find field to avoid this: replacing " kg " with " kilogram " will leave *background* the way it is. Some versions of Word also have a Whole Words checkbox option; this will ignore when a search term appears in the middle of a word.

A link to an interactive elements can be found at the bottom of this page.

Replace: More Options

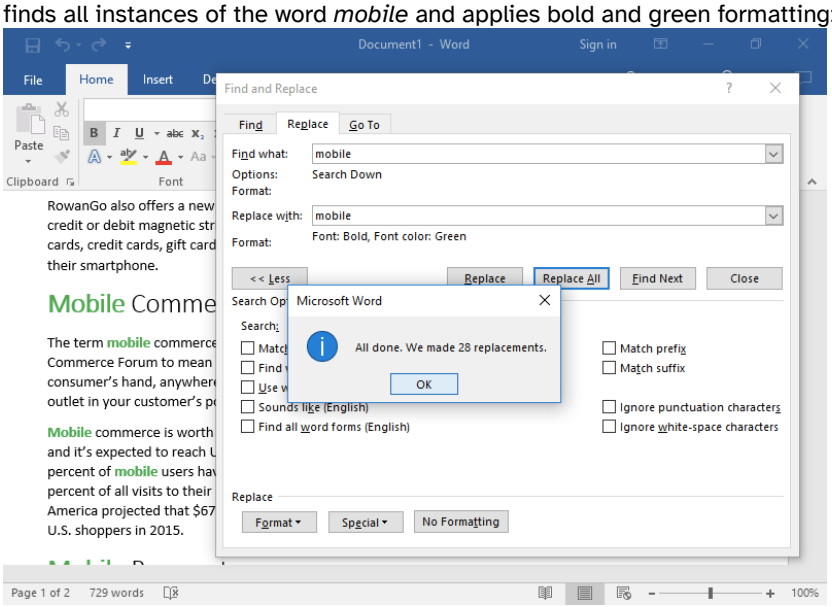
Click the More>>> button in the bottom-left corner of the Find and Replace dialog box to find more options. There are many options here, but we will focus on three.



1. **Match case.** Case is whether a letter is uppercase or lowercase. If the Match case box is checked, then Find and Replace

becomes case-sensitive. For example, checking the Match case button and then searching for “Fishing Goods” will find “Fishing Goods” but NOT “fishing goods” or “Fishing goods.” If the Match case box is unchecked, then searching for “Fishing Goods” will find “Fishing Goods” and “fishing goods” and “Fishing goods” and so on.

2. **Format.** Click the Format button to select from a variety of formatting options such as Font, Paragraph, and so on. When a formatting style is selected for Find, the Find term must have that formatting to be found. (Leave the Find field blank and choose a formatting style to find all occurrences of that formatting.) Similarly, choosing a formatting style for the Replace field will replace the Find term with whatever is in the Replace field with the Replace formatting. For example, this search finds all instances of the word *mobile* and applies bold and green formatting:

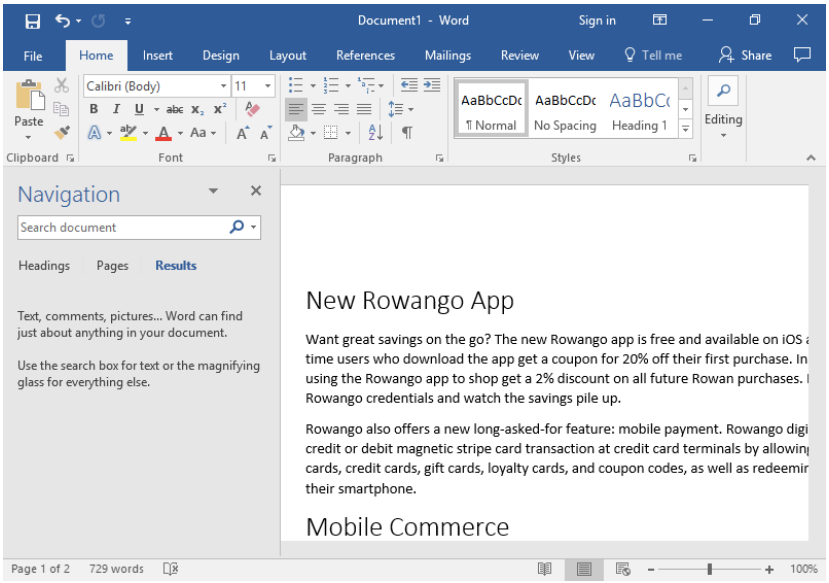


3. **Special.** Special refers to special characters, or characters that are not on the typical keyboard. In Find and Replace, some of these characters can also be things like “any digit” or “any letter.”

Find Function

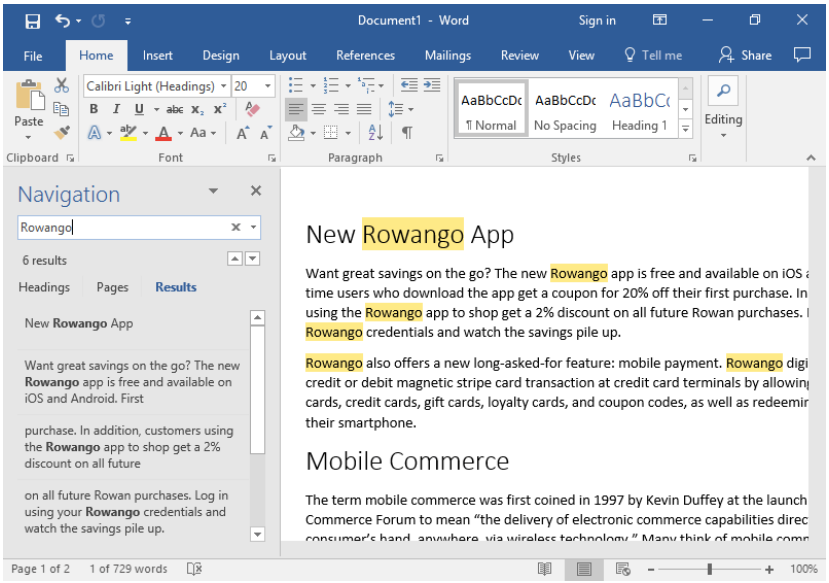
You can also find words with the Find function. Simply finding where a word is used in a document is faster with the Find function.

To open the Find function, use the shortcut Ctrl+F or navigate to Home>Editing>Find. This will open a Navigation menu to the left.



Type in the Navigation text field that says “Search document” for the term you want to find. The term will be highlighted

throughout the document. You can scroll through the document to see the highlighted occurrences, or you can scroll down through the Navigation pane to see where each word occurs in the text.



Practice Question

https://assessments.lumenlearning.co...essments/18597

A link to an interactive elements can be found at the bottom of this page.

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3.26: Assignment - Create Basic Document

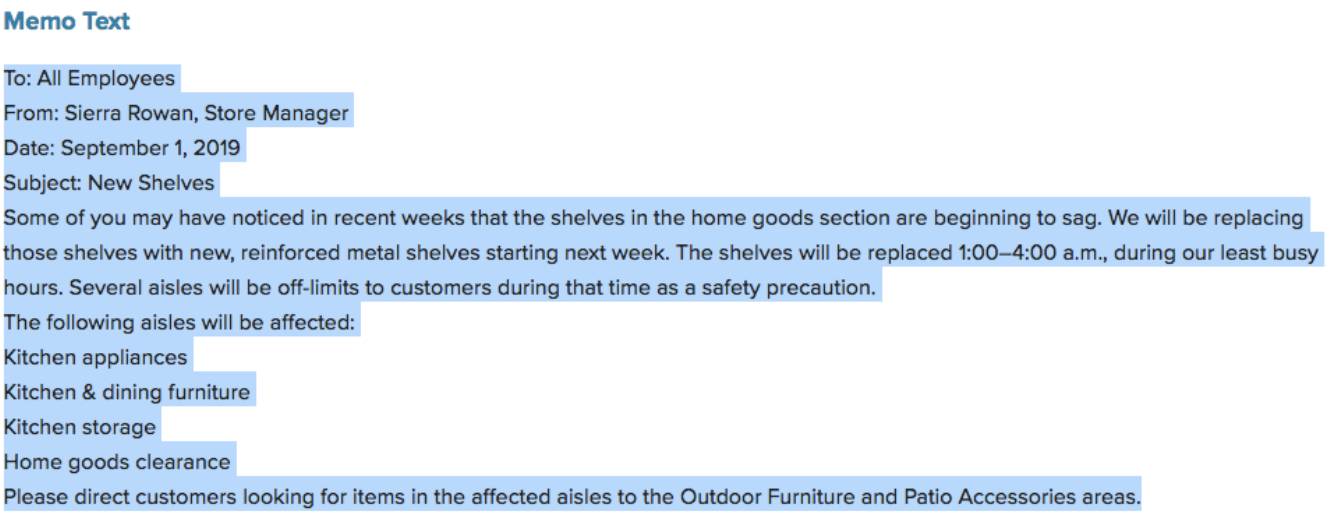
For this assignment, you will create and format a business memo. Follow the directions, then submit your assignment. If you get stuck on a step, review this module and ask your classmates for help in the discussion forum.

Memo Text

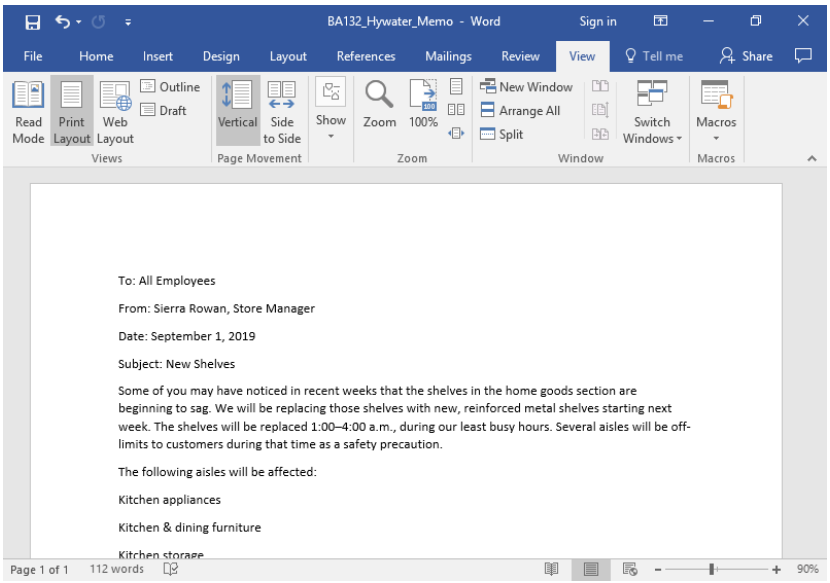
To: All Employees
From: Sierra Rowan, Store Manager
Date: September 1, 2019
Subject: New Shelves
Some of you may have noticed in recent weeks that the shelves in the home goods section are beginning to sag. We will be replacing those shelves with new, reinforced metal shelves starting next week. The shelves will be replaced 1:00–4:00 a.m., during our least busy hours. Several aisles will be off-limits to customers during that time as a safety precaution.
The following aisles will be affected:
Kitchen appliances
Kitchen & dining furniture
Kitchen storage
Home goods clearance
Please direct customers looking for items in the affected aisles to the Outdoor Furniture and Patio Accessories areas.

Memo Directions

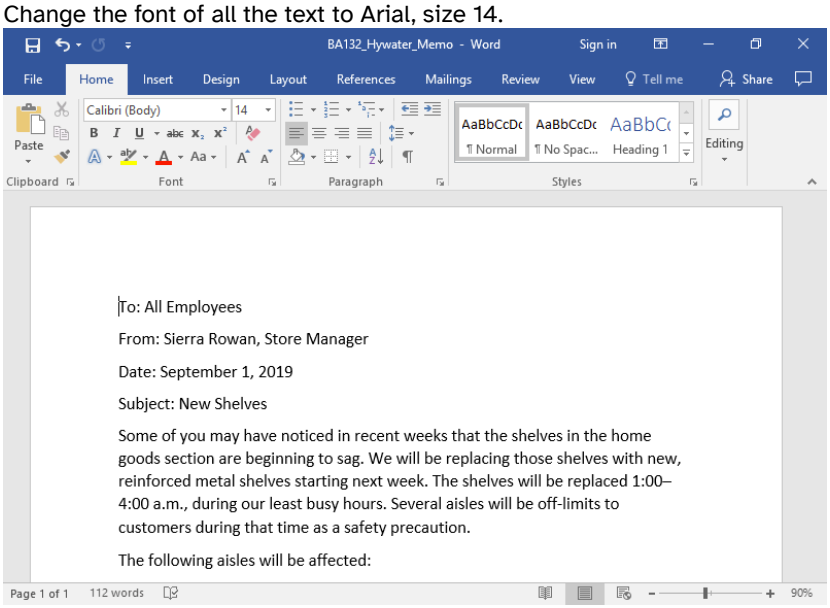
1. Create a new blank document in Microsoft Word.
2. Copy and paste the Memo Text (see above) into your Word document.



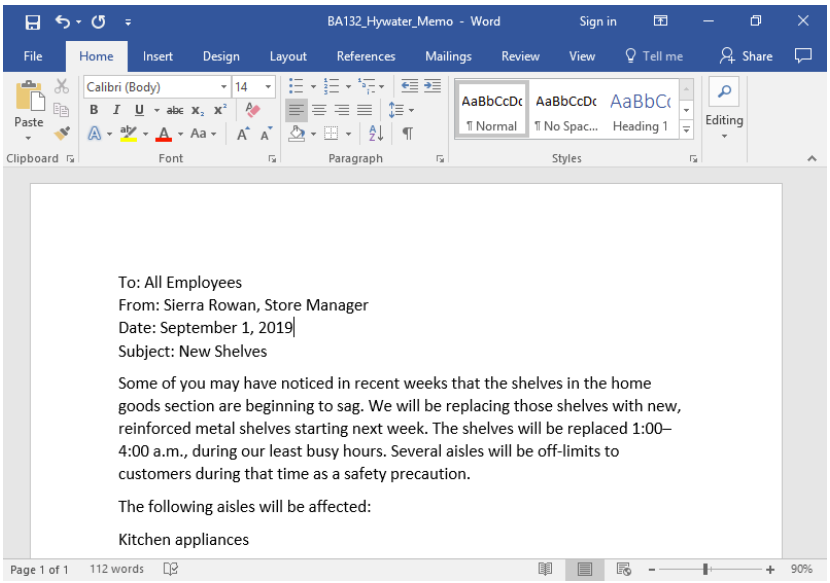
3. Save the document to the Rowan folder on your desktop as **BA132_LastName_Memo.docx**, replacing “LastName” with your own last name. (Example: BA132_Hywater_Memo) It is a good idea to save your work periodically.



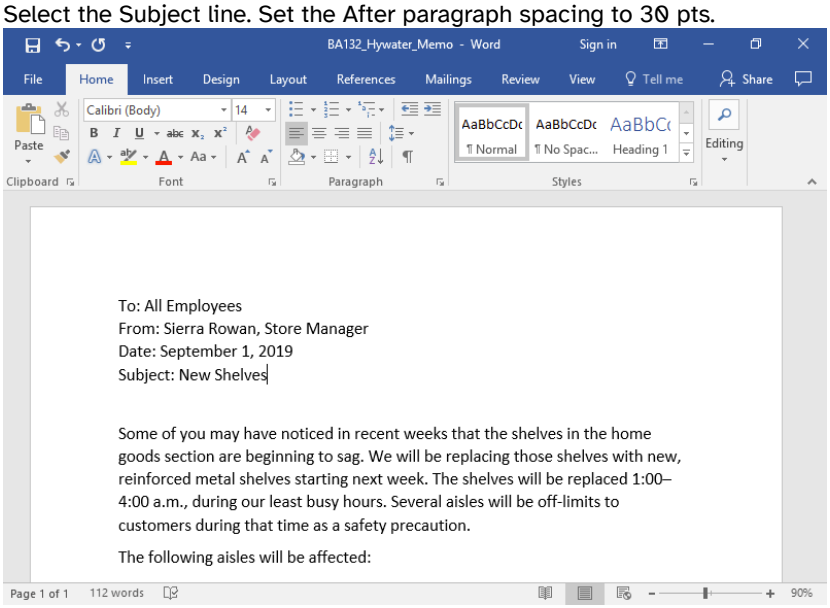
4. Change the font of all the text to Arial, size 14.



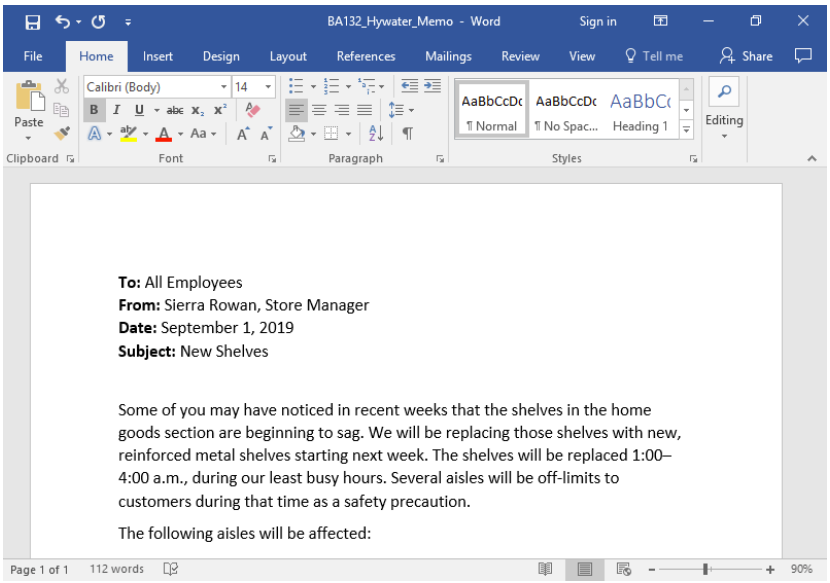
5. Select the first three lines of the memo (To through Date lines). Remove the spacing after the paragraphs **or** set the After paragraph spacing to 0.



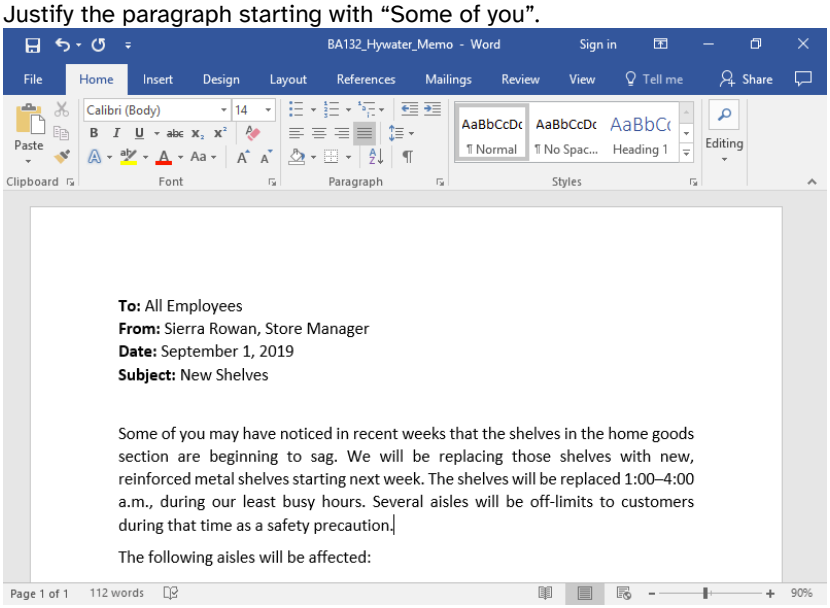
6. Select the Subject line. Set the After paragraph spacing to 30 pts.



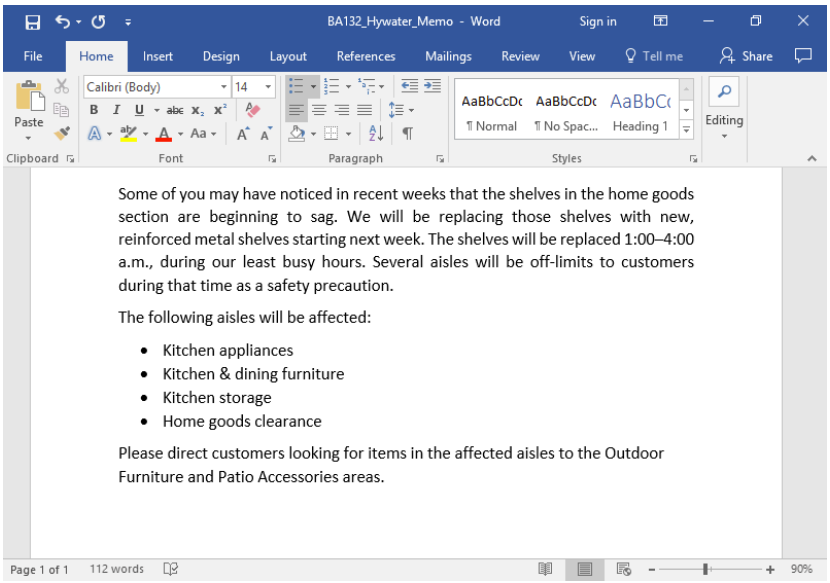
7. Bold “To:”, “From:”, “Date:”, and “Subject:” in the first four lines.



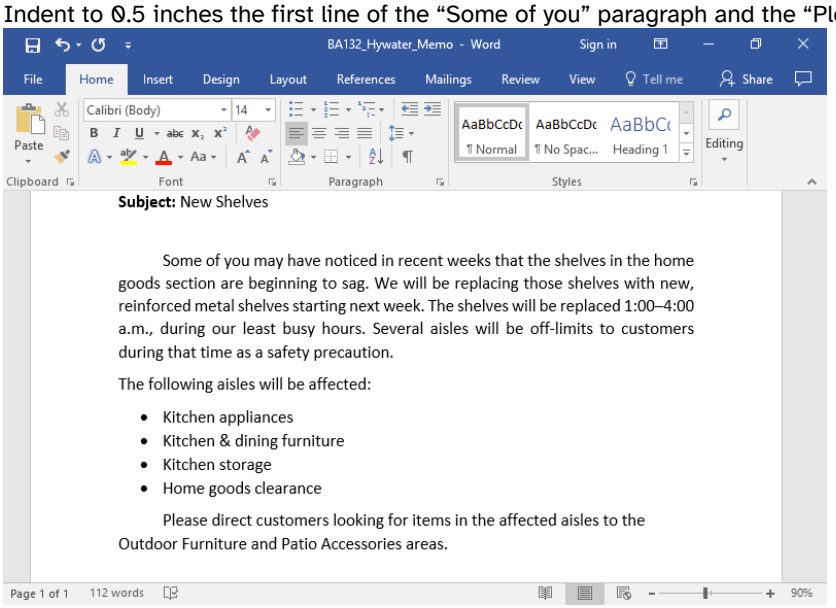
8. Justify the paragraph starting with “Some of you”.



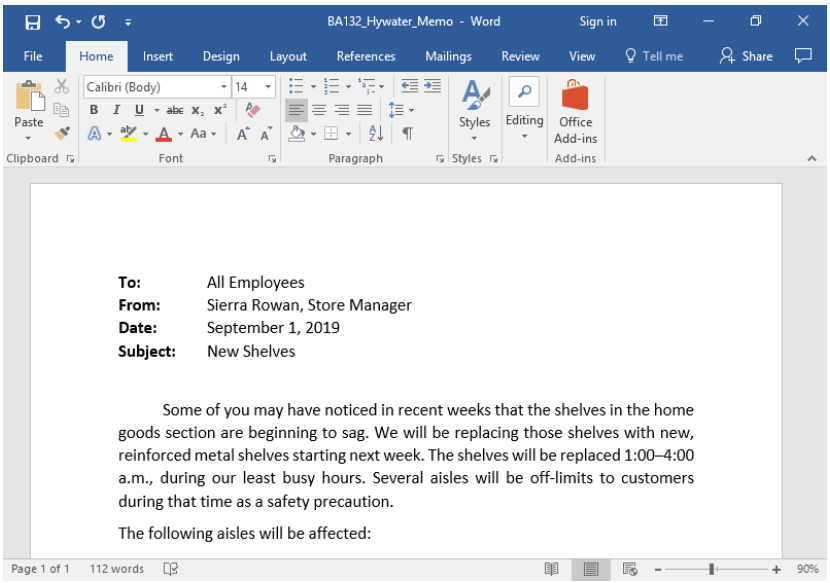
9. Select the four lines “Kitchen appliances” through “Home goods clearance” and make them a bulleted list.



10. Indent to 0.5 inches the first line of the “Some of you” paragraph and the “Please direct customers” paragraph.



11. In the first four lines of the memo, hit the Tab key twice after **To:**, **From:**, and **Date:**. Hit the Tab key once after **Subject:**.



12. Save your work and submit the document in your course online.

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3.27: Selecting Text and Applying Effects

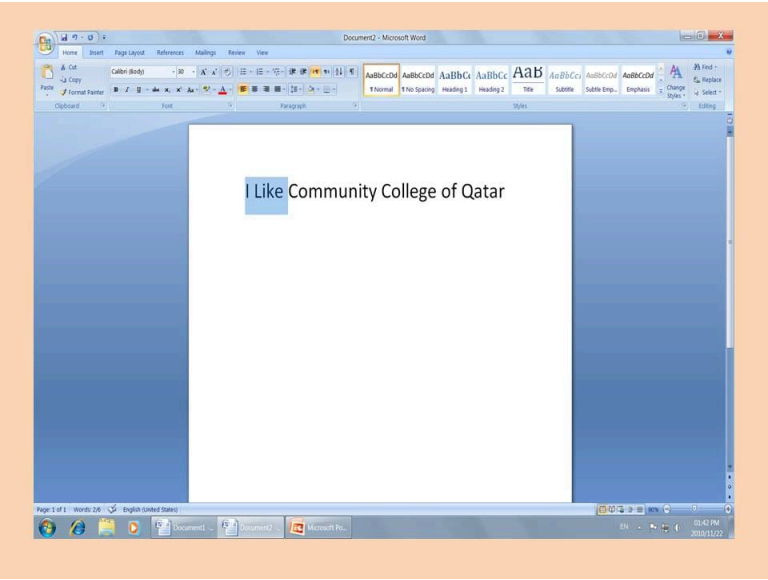
Learning Objectives

- How to select text within a document coupled with how to apply commonly used effects such as bold, font types, etc. onto the selected text.

Selecting Text

If you want to **select** a text you have to:

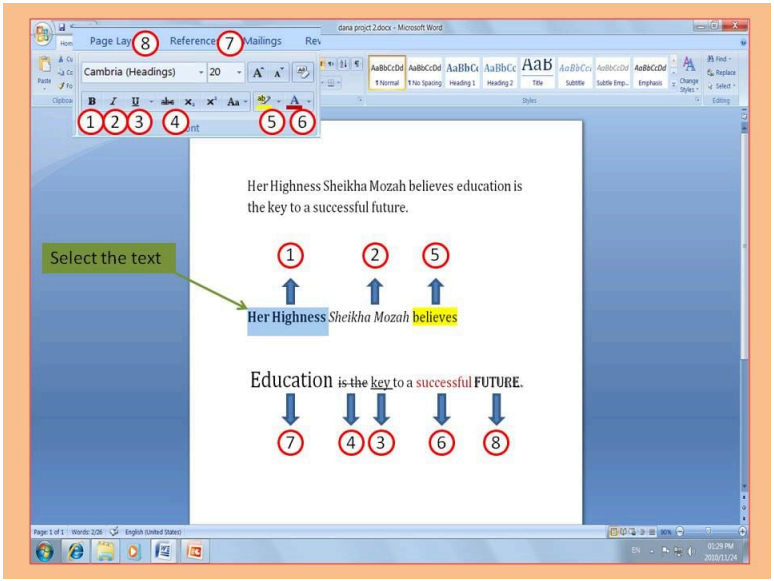
- Move insertion point to the word that you want to select
- left click in the mouse and select the wanted text



Applying Effects

If you want to **apply effect** in your text:-

- From the **font** box which is placed in **home** tab you can apply effects in your text such as, font, size, bold, underlined, italic ...
- You have to select the text, and then press the icon that you desire.



The explanations for these numbers are:-

1. **Bold**: to make your type apper **like this.**
2. **Italic**: to make your type face curve or (bend) to the right *like this.*
3. **Underline**: to make a line below your text Like this.
4. **Strikethrough**: to cross the text or make a line at the middle of the text.
5. **Highlight color**: to highlight a text.
6. **Font color**: to change the font color.
7. **Font size:** to change the text size.
8. **Font:** to change the font hand writing or style**.**

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3.28: Styles

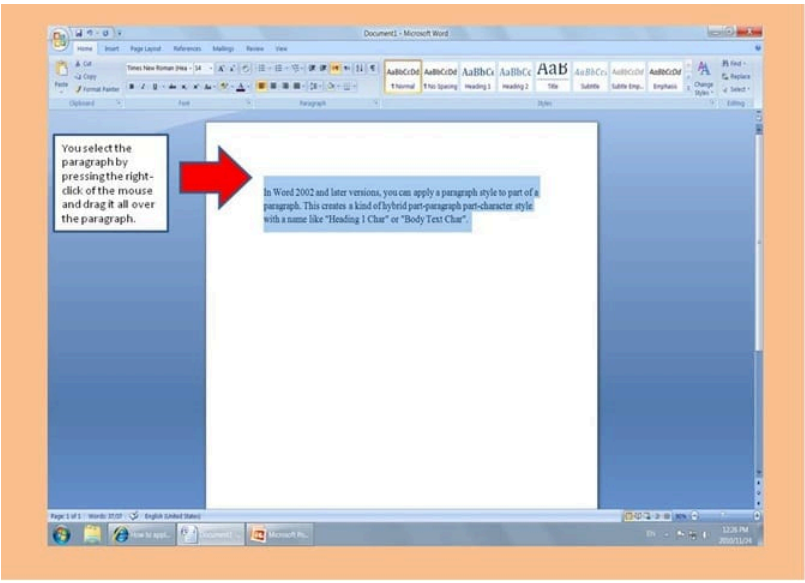
Learning Objectives

- How to use the "Heading 1" style, plus how to change styles for an entire document.

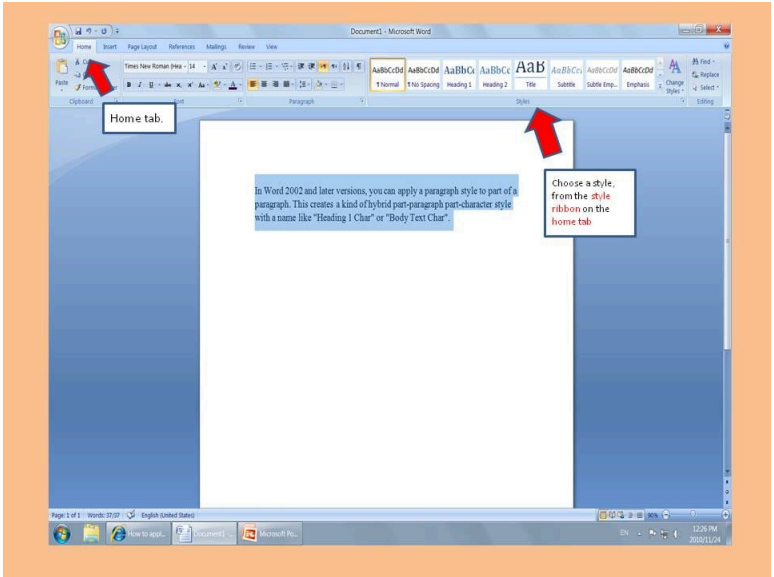
All formatting in Microsoft Word is controlled by styles. A style is a set of formatting instructions. Word applies the formatting instructions when you apply a style. Microsoft Word comes with dozens of built-in styles.

Here are the steps of applying a style:

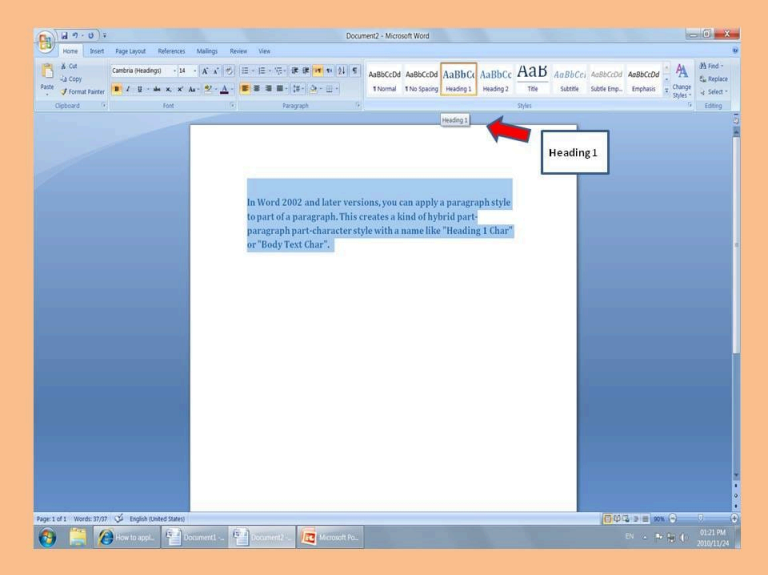
Step 1: Select the text.



Step 2: Apply the style: using the mouse.



The results when choosing Heading 1:



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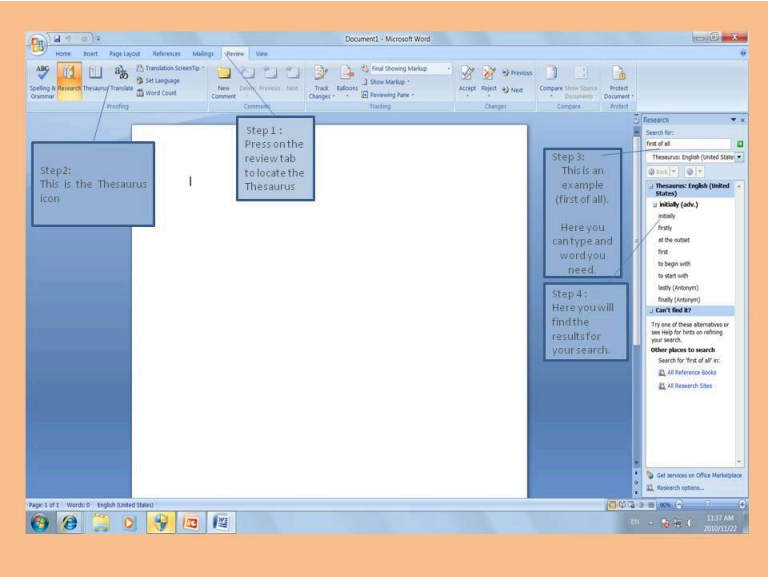
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3.29: Using the Thesaurus

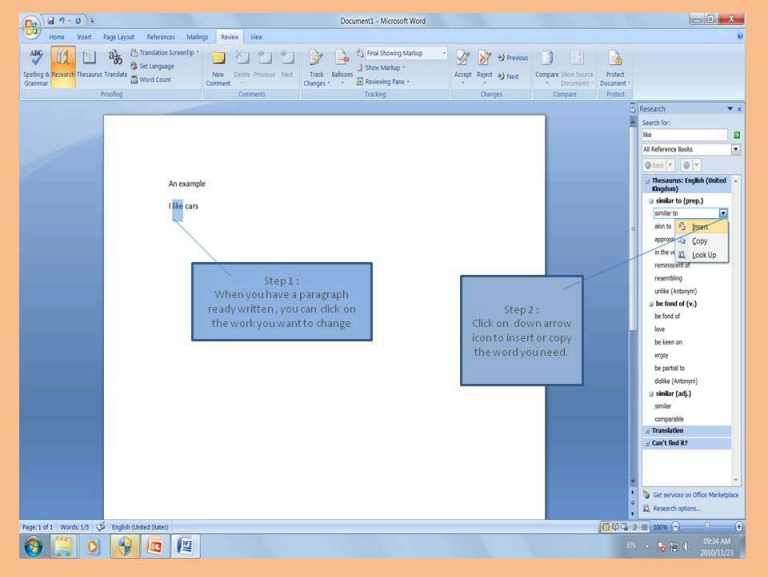
Learning Objectives

- How to use the thesaurus to improve a docoument.

What is a Thesaurus: A thesaurus is a reference work that lists words grouped together according to similarity of meaning (containing synonyms and sometimes antonyms), in contrast to a dictionary, which contains definitions and pronunciations.



Here are the first basic steps on how to use the thesaurus.



Here its explaining on when you have a paragraph written instead of typing the word in the search bar, you can just click on the word you want to change.

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3.30: Introduction to Images

What you'll learn to do: place images in a Word document.

Images are a huge asset for certain documents. A brightly colored image can draw customers in to look at a flyer, or a graph can explain a concept better than a paragraph. Placing images into your document can really make it pop.

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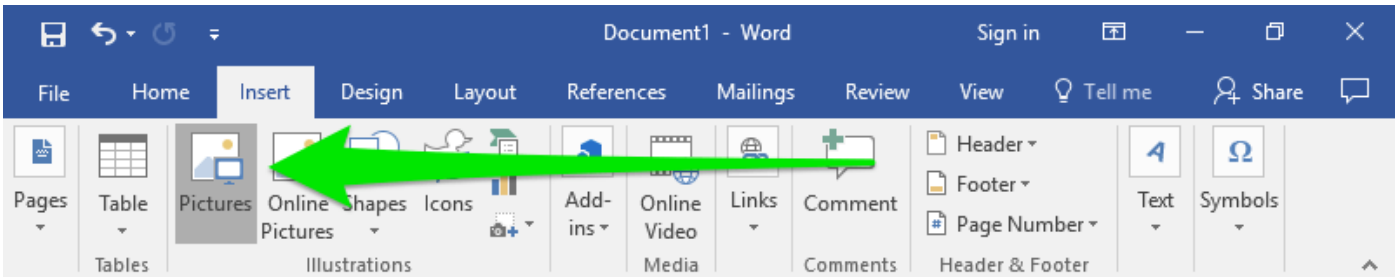
- User:16e07644-bc80-4fc3-88e1-201eee6aa266 has no license indicated.

3.31: Adding Images

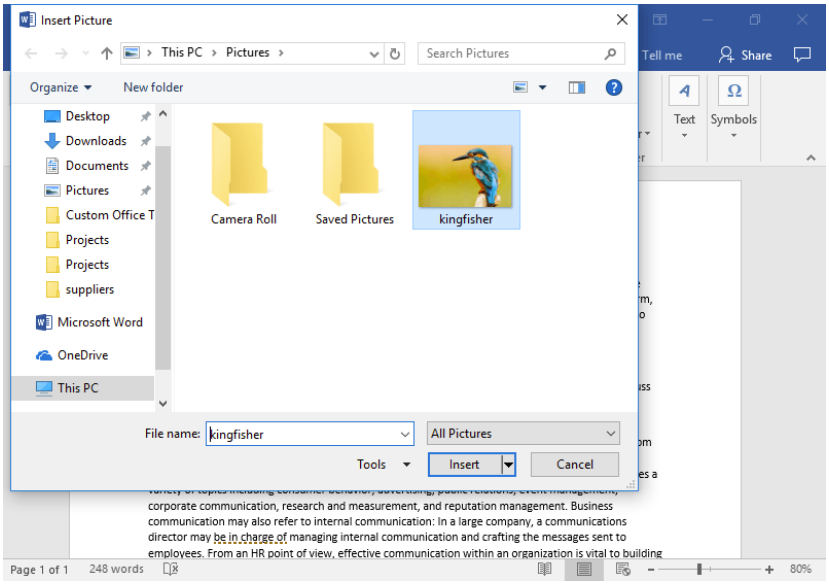
Learning Outcomes

- Insert images.

To add an image, put your cursor where you want the image to appear (at the beginning of a paragraph is a good place). Then go to Insert>Pictures.



A window will pop up to let you choose a picture saved on your computer.





The image will appear where you placed your cursor. You can click and drag the image to anywhere within the text.

You may recognize a lot of these controls from the Text Boxes section, such as the resize dots at each side and corner that you can use to increase or decrease the size of the image. To maintain the proportions of the image, hold down the Shift key while clicking and dragging a corner. You can also rotate the image by clicking and dragging the circular arrow at the top of the image.

Practice Question

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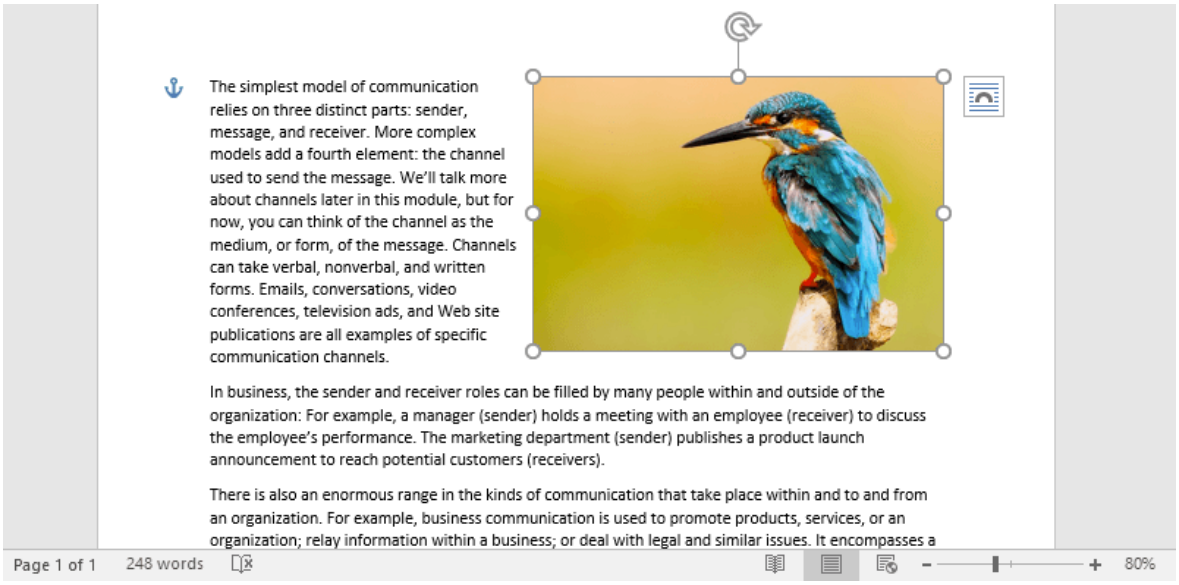
- User:a8113624-7408-41a9-a412-9c002a88f1e0 has no license indicated.

3.32: Text Wrap

Learning Objectives

- Change image layout options.

Notice that wherever the image is placed, the line spacing dramatically increases to fit the size of the picture. This is because images are treated as an inline text character. In other words, Word treats the image like it would treat any word or letter of text. You can change this by applying a **text wrap**. Text wrap causes all of the text to wrap around the image so that the image does not interfere with line spacing.

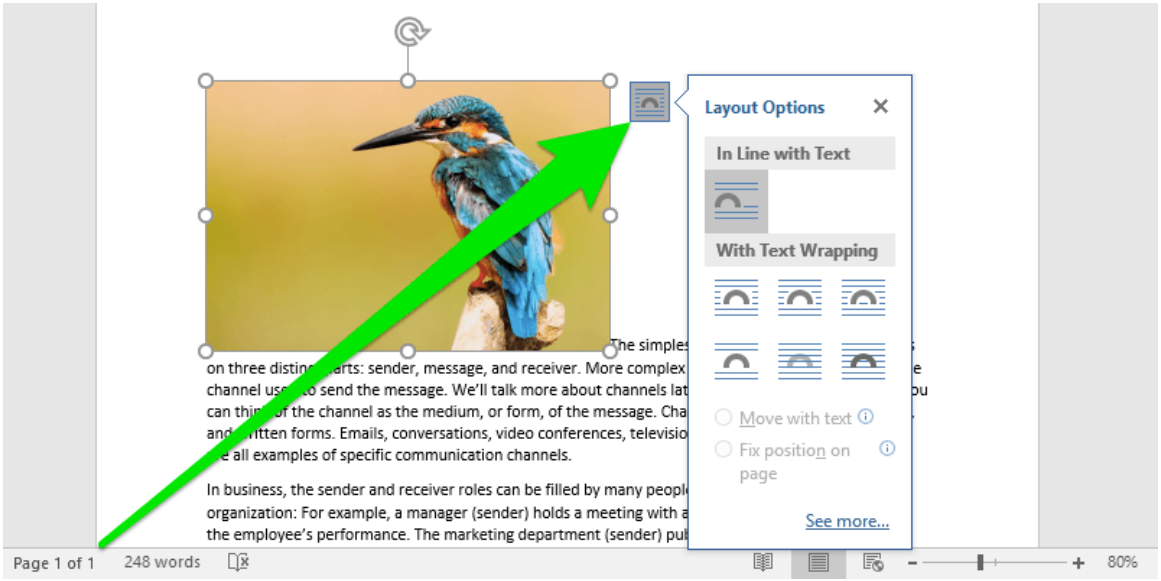


Text wrap

There are a couple of ways to get to the text wrap options and apply a text wrap.

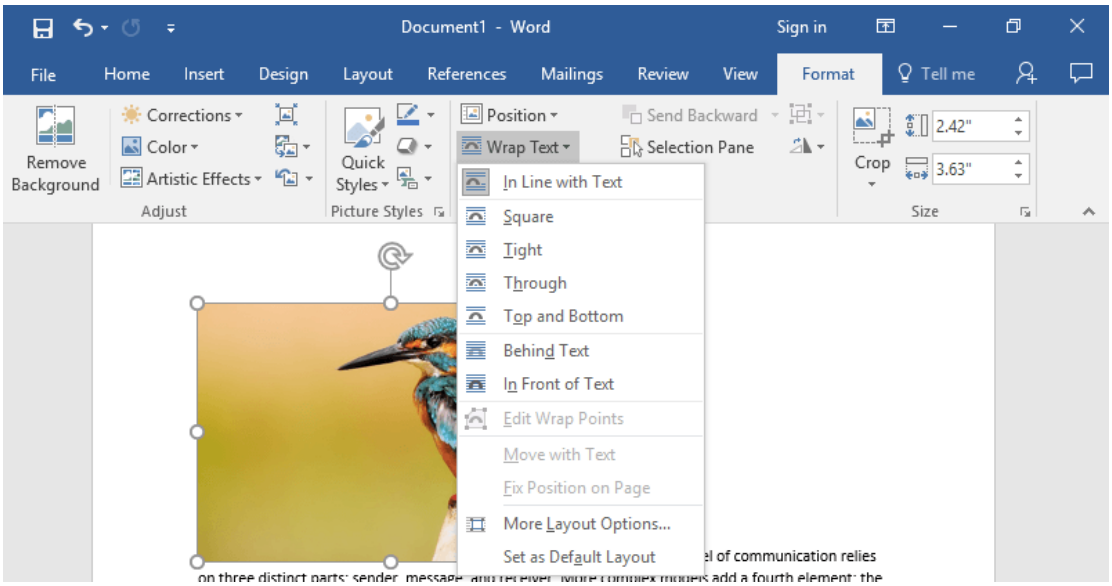
Method 1: Quick Apply

Click the box to the right of the image with a rainbow-shaped icon.



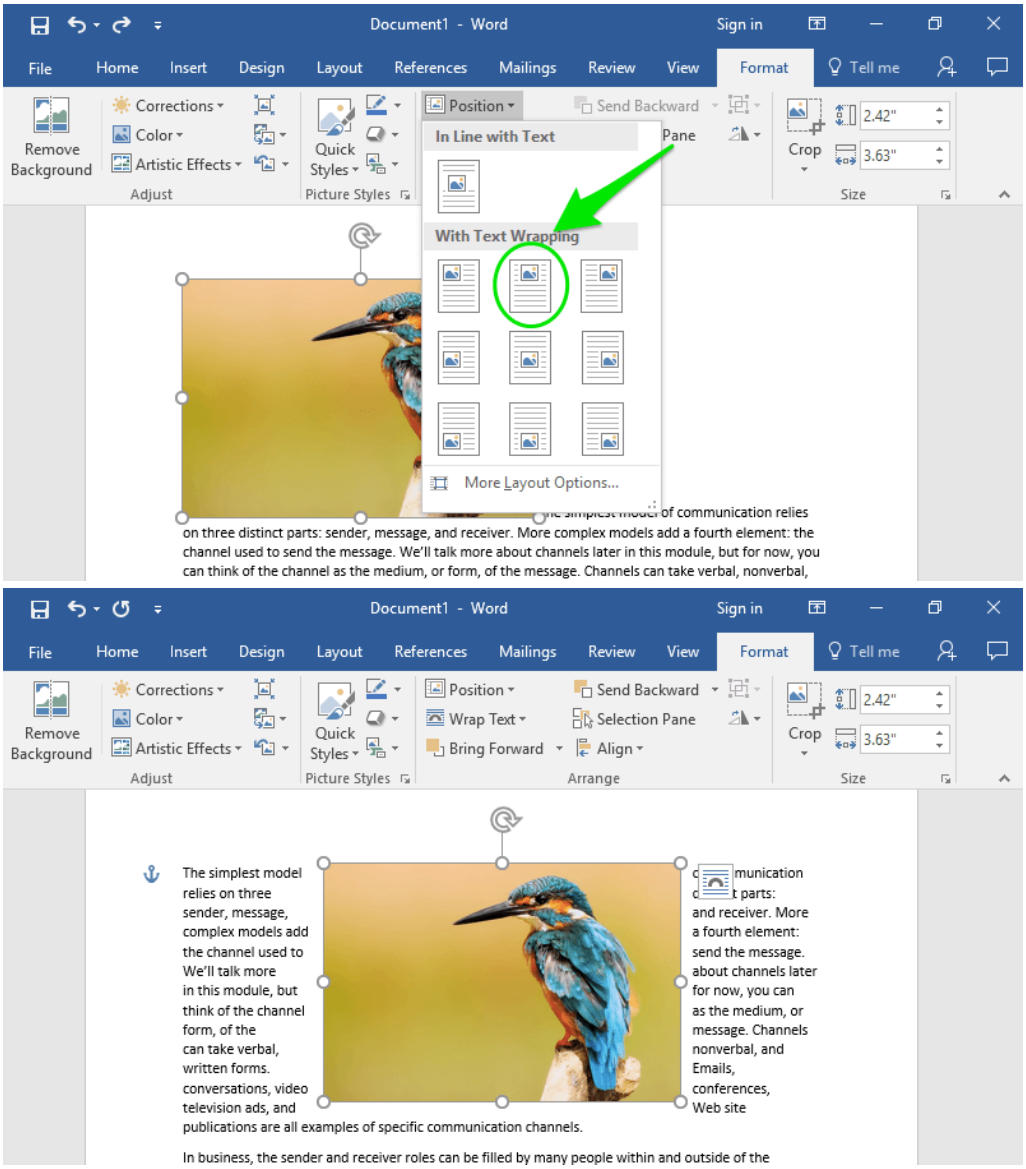
Method 2: Format Tab

When you click on the image, the Format tab will appear in the ribbon. From the Format tab, you can choose Warp Text.



Method 3: Position

Go to Format>Position for options that not only apply text wrap but also position the image on the page.



Position in Top Center with Square Text Wrapping

Text Wrap Options

Regardless of which method you use, the text wrap options are the same. The text wrap you will probably use the most is the square text wrap, but there are other text wraps too.

- **Square**—Text wraps around the image in a square shape
- **Tight/Through**—Text wraps around image, regardless of what shape the image is. This text wrap works best with images that have no background.
- **Top and Bottom**—Text stops when it hits the top of the image and continues at the bottom of the image; no text is to the left or right of the image
- **Behind text**—Image is behind text. Text will cover image.
- **In front of text**—Image is in front of text. Text behind the image is not visible.

The simplest model of communication relies on three distinct parts: sender, message, and receiver. More complex models add a fourth element: the channel used to send the message. We'll talk more about channels later in this module, but for now, you can think of the channel as the medium, or form, of the message. Channels can take verbal, nonverbal, and written forms. Emails, conversations, video conferences, television ads, and Web site publications are all examples of specific communication channels.

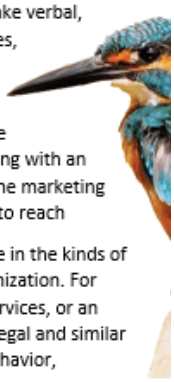


In business, the sender and receiver roles can be filled by many people within and outside of the organization: For example, a manager (sender) holds a meeting with an employee (receiver) to discuss the employee's performance. The marketing department (sender) publishes a product launch announcement to reach potential customers (receivers).

There is also an enormous range in the kinds of communication that take place within and to and from an organization. For example, business communication is used to promote products, services, or an organization; relay information within a business; or deal with legal and similar issues. It encompasses a variety of topics including consumer behavior, advertising, public relations, event management, corporate communication, research and measurement, and reputation

Square text wrap

The simplest model of communication relies on thre
More complex models add a fourth element: the cha
about channels later in this module, but for now, you
of the message. Channels can take verbal,
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event management, corporate
measurement, and reputation management. Busines
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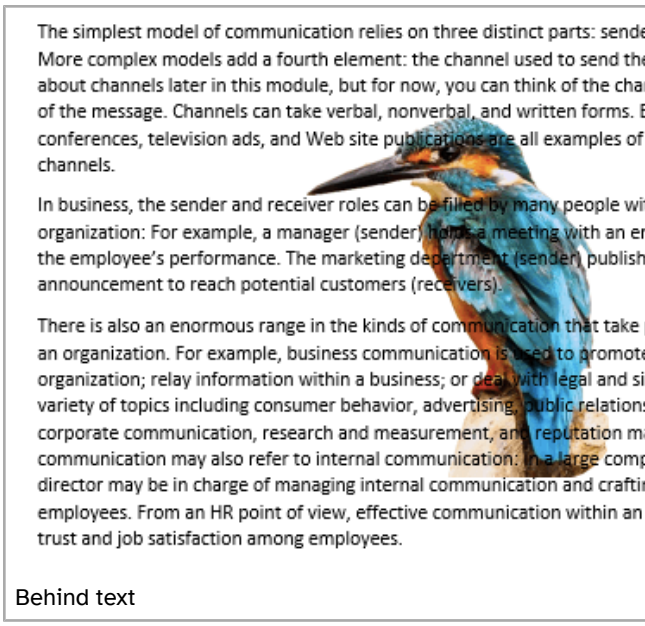
Tight text wrap

The simplest model of communication relies on three distinct parts: sender, message, and receiver. More complex models add a fourth element: the channel used to send the message. We'll talk more about channels later in this module, but for now, you can think of the channel as the medium, or form,

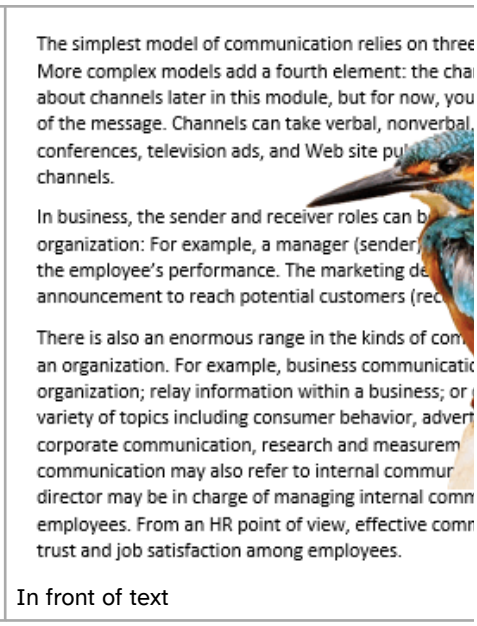


of the message. Channels can take verbal, nonverbal, and written forms. Emails, conversations, video conferences, television ads, and Web site publications are all examples of specific communication channels. In business, the sender and receiver roles can be filled by many people within and outside of the organization: For example, a manager (sender) holds a meeting with an employee (receiver) to

Top and bottom text wrap



Behind text



In front of text

After the text wrap is applied, you can click and drag the image to anywhere in the document, and the text will wrap around it accordingly.

Practice Question

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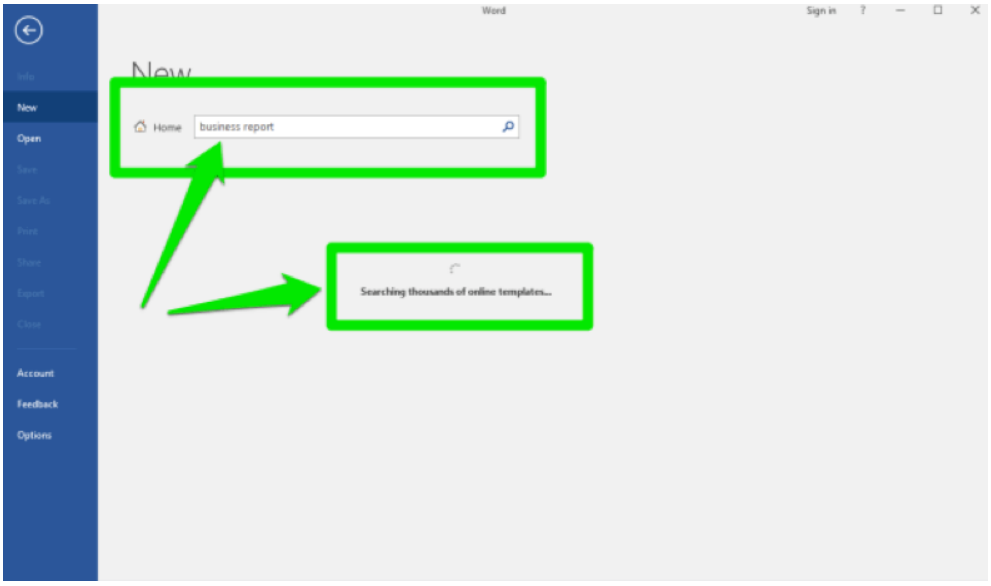
3.33: Internet and Word

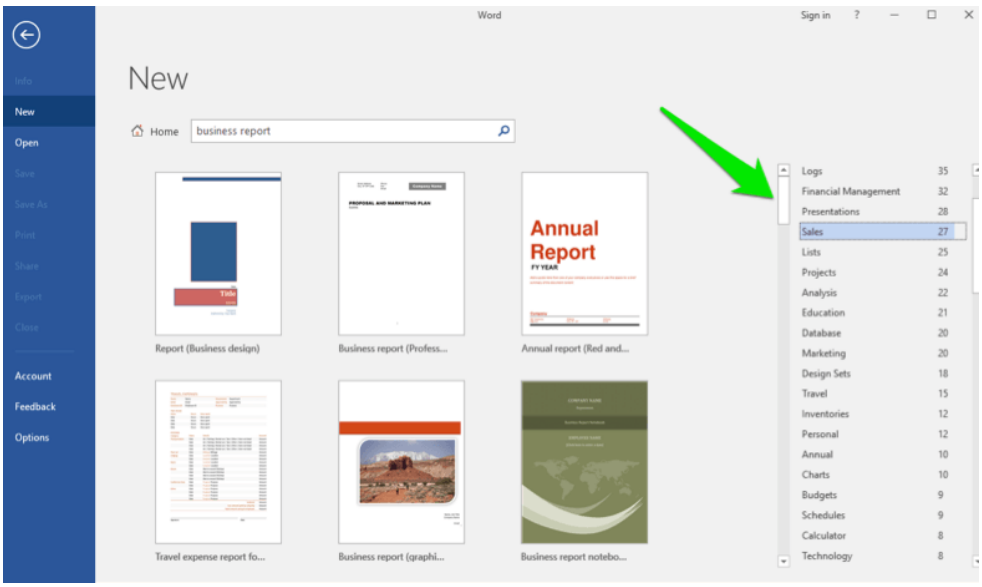
Learning Outcomes

- Use internet tools to enhance Word documents.

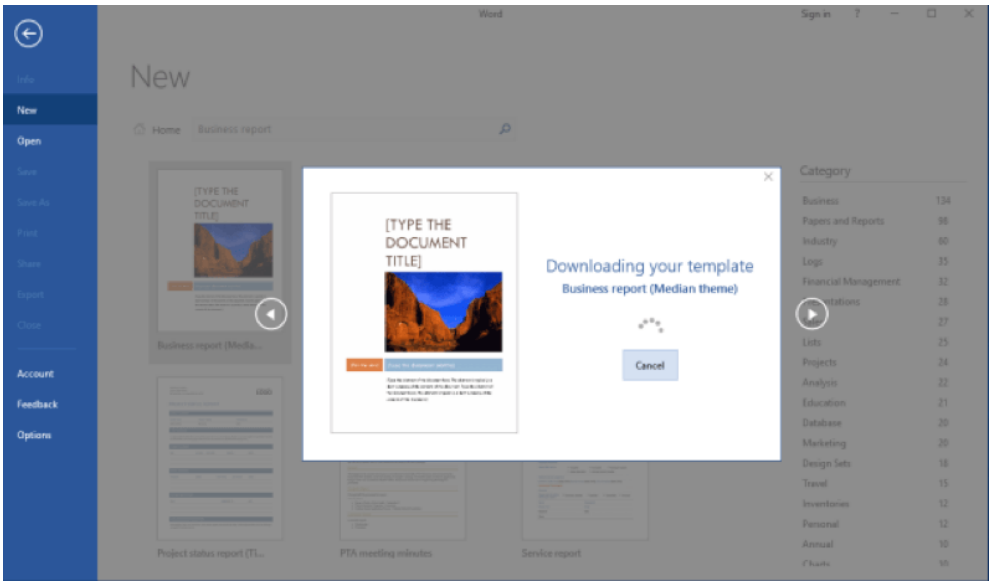
Rowan Retail Store #1 is using Word to present their plan for the Q3 sales campaign. The campaign for this store will be through social media and the focus on selling more sporting goods in the store. Shanda Bates is creating the Word document.

First, Shanda opens Word on her computer and decides she will use a report template. She searches for business reports. Word's search bar uses the internet to find thousands of report templates for Shanda to use. This is one way the internet is integrated into a Word document.

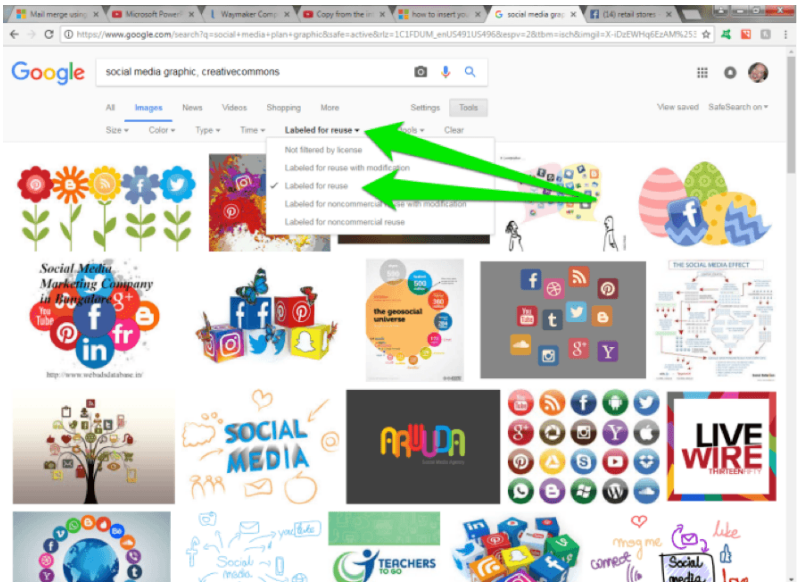


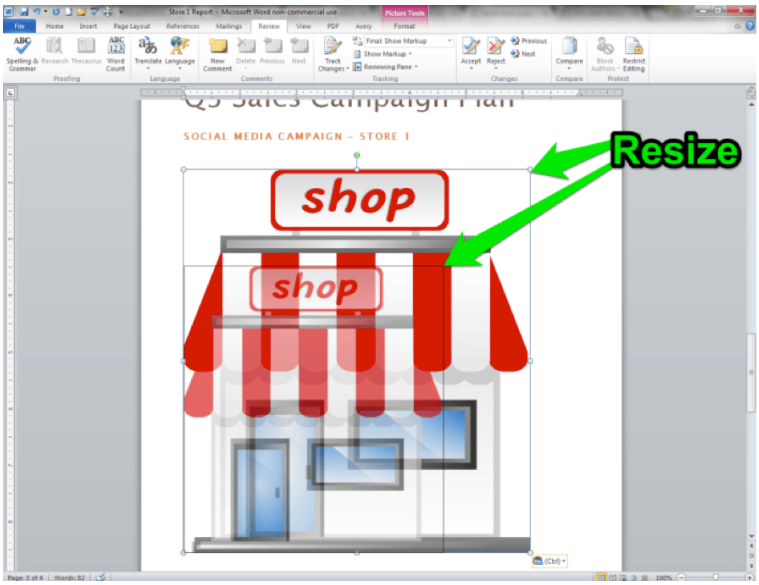


After Shanda selects and downloads the report template, she types in the titles and other information on the first page.



Next, Shanda begins to compose the plan and wants pictures and icons to add where appropriate, so she opens a web browser and searches for images. To find usable images she selects the Tools>Images for reuse option, which sorts the images to fit this parameter. Shanda finds a little shop icon, copies (Ctrl+C or Cmd+C) and pastes (Ctrl+V or Cmd+V) it into the report. She then drags it and resizes it to fit.

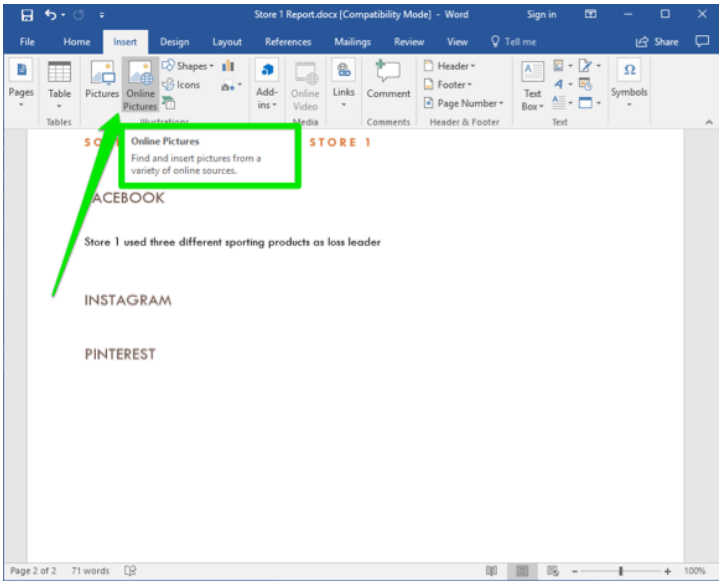




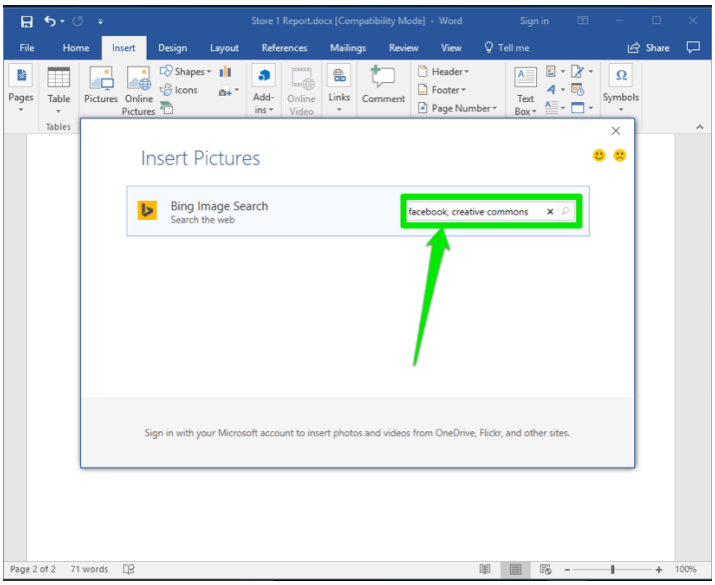
Practice Question

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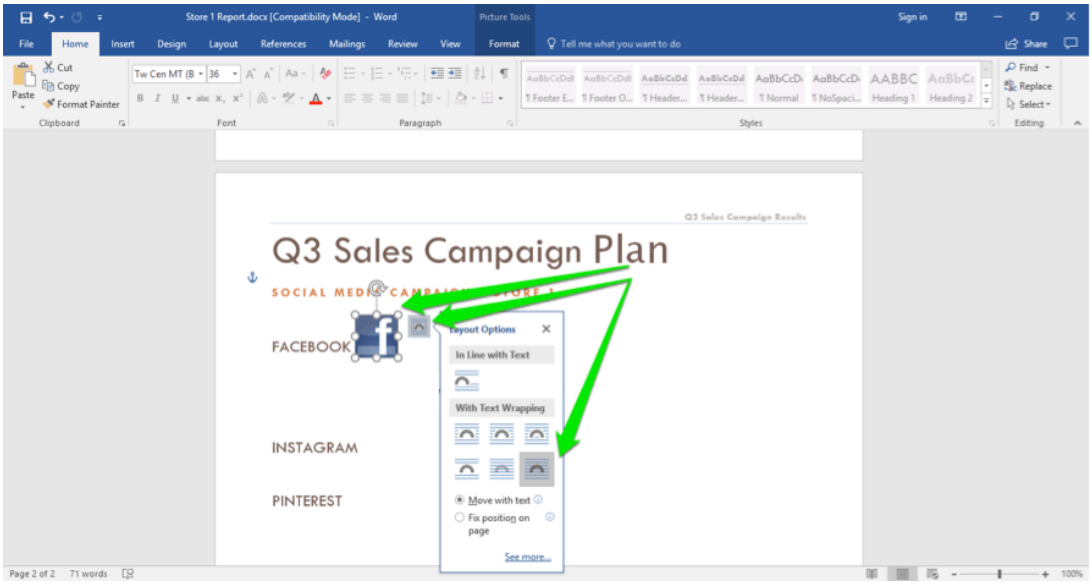
She continues to search for images, but this time she uses the **Online Pictures** button within Word to find a usable Facebook icon.



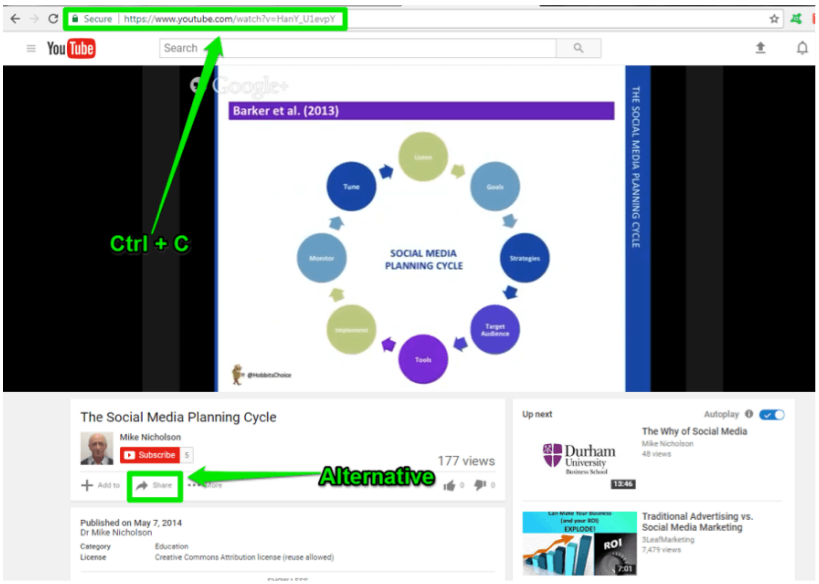
She searches and finds an appropriate icon and clicks to insert it in her document.



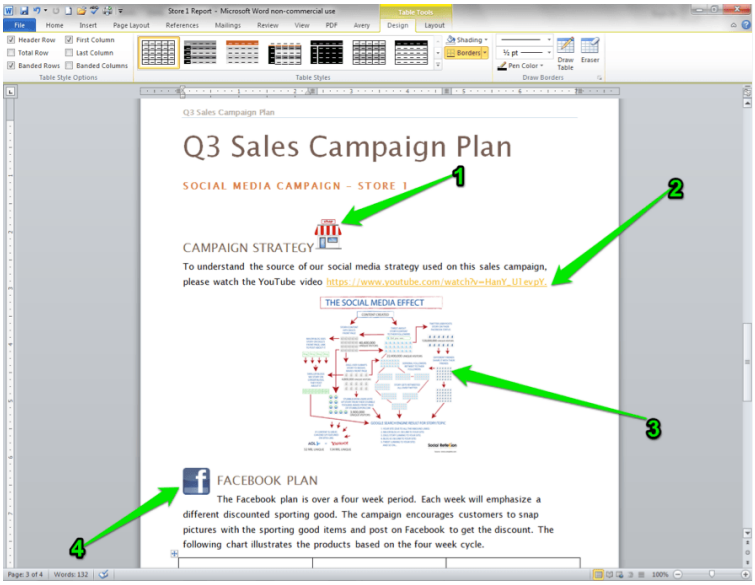
After resizing the icon, Shanda wraps the text by the icon so that it fits on the page with the text.



Shanda thinks that including a link to the social media strategy video she watched to create this plan is a good idea. She searches and finds the video in YouTube, then copies the link and pastes it into the plan. Alternatively, she could click the share button and share the video on various social media platforms.



She continues to fill in the text of the plan and finish this report off. Let's have a quick recap of the integration actions she took.



1. **Store icon.** Shanda searched the internet for an appropriate icon, copied it, pasted it, resized it, chose a layout, and dragged the icon to the place in the document she liked.
2. **Hyperlinked YouTube page.** Shanda included a link to the video by finding the video on YouTube, then copying and pasting the link into the report. The link can now be clicked to take the reader to watch the video.
3. **Graphic chart.** Shanda searched with Word's **Online Picture** button and found a chart to display her social media campaign plan's purpose. Like before, she copied the chart, pasted it, resized it, chose a layout, and centered the chart.
4. **Facebook icon.** Shanda searched with Word's **Online Picture** button to find the Facebook icon to put next to the Facebook section in her report. She copied it, pasted it, resized it, and picked the appropriate layout option, then dragged the icon to the appropriate place in the document.

These same processes of search, find, copy, paste, resize, and so on are going to be the same in Excel and PowerPoint.

Practice Question

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3.34: What is a Business Letter?

Many businesses use standard templates and styles for their memos, letters, and emails. Since these formats are standardized, you can use these templates to quickly create business documents in the proper format.

How to Construct a Business LetterPage

Read this handout which discusses business writing and the proper way to format business letters. As you read, think about a work-related letter you have sent or received. Did you or the author follow these guidelines?

What this Handout is About

This handout will help you write business letters required in many different situations, from applying for a job to requesting or delivering information. While the examples that are discussed specifically are the application letter and cover letter, this handout also highlights strategies for effective business writing in general.

Principles to Keep in Mind

Business Writing is Different

Writing for a business audience is usually quite different than writing in the humanities, social sciences, or other academic disciplines. Business writing strives to be crisp and succinct rather than evocative or creative; it stresses specificity and accuracy. This distinction does not make business writing superior or inferior to other styles. Rather, it reflects the unique purpose and considerations involved when writing in a business context.

When you write a business document, you must assume that your audience has limited time in which to read it and is likely to skim. Your readers have an interest in what you say insofar as it affects their working world. They want to know the “bottom line”: the point you are making about a situation or problem and how they should respond.

Business writing varies from the conversational style often found in email messages to the more formal, legalistic style found in contracts. A style between these two extremes is appropriate for the majority of memos, emails, and letters. Writing that is too formal can alienate readers, and an attempt to be overly casual may come across as insincere or unprofessional. In business writing, as in all writing, you must know your audience.

In most cases, the business letter will be the first impression that you make on someone. Though business writing has become less formal over time, you should still take great care that your letter’s content is clear and that you have proofread it carefully.

Pronouns and Active versus Passive Voice

Personal pronouns (like I, we, and you) are important in letters and memos. In such documents, it is perfectly appropriate to refer to yourself as I and to the reader as you. Be careful, however, when you use the pronoun we in a business letter that is written on company stationery, since it commits your company to what you have written. When stating your opinion, use I; when presenting company policy, use we.

The best writers strive to achieve a style that is so clear that their messages cannot be misunderstood. One way to achieve a clear style is to minimize your use of the passive voice. Although the passive voice is sometimes necessary, often it not only makes your writing dull but also can be ambiguous or overly impersonal. Here’s an example of the same point stated in passive voice and in the active voice:

Passive voice: “The net benefits of subsidiary divestiture were grossly overestimated.”

[Who did the overestimating?]

Active voice: The Global Finance Team grossly overestimated the net benefits of subsidiary divestiture.

The second version is clearer and thus preferable.

Of course, there are exceptions to every rule. What if you are the head of the Global Finance Team? You may want to get your message across without calling excessive attention to the fact that the error was your team's fault. The passive voice allows you to gloss over an unflattering point—but you should use it sparingly.

Focus and Specificity

Business writing should be clear and concise. Take care, however, that your document does not turn out as an endless series of short, choppy sentences. Keep in mind also that "concise" does not have to mean "blunt"—you still need to think about your tone and the audience for whom you are writing. Consider the following examples:

After carefully reviewing this proposal, we have decided to prioritize other projects this quarter.
Nobody liked your project idea, so we are not going to give you any funding.

The first version is a weaker statement, emphasizing facts not directly relevant to its point. The second version provides the information in a simple and direct manner. But you don't need to be an expert on style to know that the first phrasing is diplomatic and respectful (even though it's less concise) as compared with the second version, which is unnecessarily harsh and likely to provoke a negative reaction.

Business Letters: Where to Begin

Reread the description of your task (for example, the advertisement of a job opening, instructions for a proposal submission, or assignment prompt for a course). Think about your purpose and what requirements are mentioned or implied in the description of the task. List these requirements. This list can serve as an outline to govern your writing and help you stay focused, so try to make it thorough. Next, identify qualifications, attributes, objectives, or answers that match the requirements you have just listed. Strive to be exact and specific, avoiding vagueness, ambiguity, and platitudes. If there are industry- or field-specific concepts or terminology that are relevant to the task at hand, use them in a manner that will convey your competence and experience. Avoid any language that your audience may not understand. Your finished piece of writing should indicate how you meet the requirements you've listed and answer any questions raised in the description or prompt.

Application Letters and Cover Letters

Many people believe that application letters and cover letters are essentially the same. For purposes of this handout, though, these kinds of letters are different. The letter of application is a sales letter in which you market your skills, abilities, and knowledge. A cover letter, on the other hand, is primarily a document of transmittal. It identifies an item being sent, the person to whom it is being sent, and the reason for its being sent, and provides a permanent record of the transmittal for both the writer and the reader.

Application Letters

When writing an application letter, remember that you probably have competition. Your audience is a professional who screens and hires job applicants—someone who may look through dozens or even hundreds of other applications on the day she receives yours. The immediate objective of your application letter and accompanying resume is to attract this person's attention. Your ultimate goal is to obtain an interview.

As you write your application letter, be sure you complete three tasks: catch the reader's attention favorably, convince the reader that you are a qualified candidate for the job, and request an interview.

Application Letter Checklist:

- Identify the job by title and let the recipient know how you heard about it.
- Summarize your qualifications for the job, specifically your work experience, activities that show your leadership skills, and your educational background.

- Refer the reader to your enclosed resume.
- Ask for an interview, stating where you can be reached and when you will be available. If your prospective employer is located in another city and you plan to visit the area, mention the dates for your trip.
- If you are applying for a specific job, include any information pertinent to the position that is not included in your resume.

To save your reader time and to call attention to your strengths as a candidate, state your objective directly at the beginning of the letter.

I am seeking a position as a manager in your Data Center. In such a management position, I can use my master's degree in information systems and my experience as a programmer/analyst to address business challenges in data processing.

If you have been referred to a company by one of its employees, a career counselor, a professor, or someone else, mention that before stating your job objective.

Example:

> I am seeking a position as a manager in your Data Center. In such a management position, I can use my master's degree in information systems and my experience as a programmer/analyst to address business challenges in data processing.
>
> If you have been referred to a company by one of its employees, a career counselor, a professor, or someone else, mention that before stating your job objective.

Example:

> During the recent ARRGH convention in Washington, D.C., one of your sales representatives, Dusty Brown, informed me of a possible opening for a manager in your Data Center. My extensive background in programming and my master's degree in information systems make me highly qualified for the position.

In subsequent paragraphs, expand on the qualifications you mentioned in your opening. Add any appropriate details, highlighting experience listed on your resume that is especially pertinent to the job you are seeking. Close with a request for an interview. Proofread your letter carefully.

Two sample letters of application are presented below. The first letter (Sample Number 1) is by a recent college graduate responding to a local newspaper article about the company's plan to build a new computer center. The writer is not applying for a specific job opening but describes the position he seeks. The second letter (Sample Number 2) is from a college senior who does not specify where she learned of the opening because she is uncertain whether a position is available.

Sample Number 1

6123 Farrington Road, Apt. B11
Chapel Hill, NC 27514

January 11, 2005

Taylor, Inc.
694 Rockstar Lane
Durham, NC 27708

Dear Human Resources Director:

I just read an article in the News and Observer about Taylor's new computer center just north of Durham. I would like to apply for a position as an entry-level programmer at the center.

I understand that Taylor produces both in-house and customer documentation. My technical writing skills, as described in the enclosed resume, are well suited to your company. I am a recent graduate of DeVry Institute of Technology in Atlanta with an Associate's Degree in Computer Science. In addition to having taken a broad range of courses, I served as a computer consultant at the college's computer center where I helped train users to work with new systems.

I will be happy to meet with you at your convenience and discuss how my education and experience match your needs. You can reach me at my home address, at (919) 233-1552, or at krock@devry.alumni.edu.

Sincerely,

Raymond Krock

Sample Number 2

6123 Farrington Road, Apt. G11
Chapel Hill, NC 27514

January 11, 2005

Taylor, Inc.
694 Rockstar Lane
Durham, NC 27708

Dear Ms. Jones:

I am seeking a position in your engineering department where I may use my training in computer sciences to solve Taylor's engineering problems. I would like to be a part of the department that developed the Internet Selection System but am unsure whether you have a current opening.

I expect to receive a Bachelor of Science degree in Engineering from North Carolina State University in June and by that time will have completed the Computer Systems Engineering Program. Since September 2000, I have been participating, through the University, in the Professional Training Program at Computer Systems International in Raleigh. In the program I was assigned to several staff sections as an apprentice. Most recently, I have been a programmer trainee in the Engineering Department and have gained a great deal of experience in computer applications. Details of the academic courses I have taken are included in the enclosed resume.

If there is a position open at Taylor Inc., please let me know whom I should contact for further information. I look forward to hearing from you soon. I may be reached at my office (919-866-4000 ext. 232) or via email (Brock@aol.com).

Sincerely,

Rebecca Brock

Cover Letters

As mentioned previously, application letters and cover letters are not the same. A cover letter identifies an item being sent, the person to whom it is being sent, and the reason for its being sent. A cover letter provides a permanent record of the transmittal for both the writer and the reader.

In a cover letter, keep your remarks brief. Your opening should explain what you are sending and why. In an optional second paragraph, you might include a summary of the information you are sending. A letter accompanying a proposal, for example, might point out sections in the proposal that might be of particular interest to the reader. The letter could then go on to present a key point or two explaining why the writer's firm is the best one for the job. The closing paragraph should contain acknowledgements, offer additional assistance, or express the hope that the material will fulfill its purpose.

The following are examples of cover letters. The first letter (Sample Number 1) is brief and to the point. The second letter (Sample Number 2) is slightly more detailed because it touches on the manner in which the information was gathered.

Sample Number 1

Your Company Logo and Contact Information

January 11, 2005

Brian Eno, Chief Engineer
Carolina Chemical Products
3434 Pond View Lane
Durham, NC 27708

Dear Mr. Eno:

Enclosed is the final report on our installment of pollution control equipment at Eastern Chemical Company, which we send with Eastern's Permission. Please call me collect (ext. 1206) or email me at the address below if I can answer any questions.

Sincerely,

Nora Cassidy
Technical Services Manager
ncassidy@company.com

Enclosure: Report

Sample Number 2

Your Company Logo and Contact Information

January 11, 2005

Brian Eno, Chief Engineer
Ecology Systems, Inc.
8458 Obstructed View Lane
Durham, NC 27708

Dear Mr. Eno:

Enclosed is the report estimating our power consumption for the year as requested by John Brenan, Vice President, on September 4.

The report is the result of several meetings with Jamie Anson, Manager of Plant Operations, and her staff and an extensive survey of all our employees. The survey was delayed by the transfer of key staff in Building A. We believe, however, that the report will provide the information you need to furnish us with a cost estimate for the installation of your Mark II Energy Saving System.

We would like to thank Billy Budd of ESI for his assistance in preparing the survey. If you need more information, please let me know.

Sincerely,

Nora Cassidy
New Projects Office
ncassidy@company.com

Enclosure: Report

Works Consulted

We consulted these works while writing this handout. This is not a comprehensive list of resources on the handout's topic, and we encourage you to do your own research to find the latest publications on this topic. Please do not use this list as a model for the format of your own reference list, as it may not match the citation style you are using.

- Covey, Stephen R. *FranklinCovey Style Guide for Business and Technical Writing*. 5th ed. Upper Saddle River, N.J.: Franklin Covey, 2012.
- *Business and Administrative Communication* . Boston: McGraw-Hill, 2012.
- Source: The Writing Center, University of North Carolina at Chapel Hill, https://writingcenter.unc.edu/tips-and-tools/business-letters/

How to Construct a Business MemoPage

Read this chapter to learn how to formulate a business memo or email.

Memos

A memo (or memorandum, meaning "reminder") is normally used for communicating policies, procedures, or related official business within an organization. It is often written from a one-to-all perspective (like mass communication), broadcasting a message to an audience, rather than a one-on-one, interpersonal communication. It may also be used to update a team on activities for a given project or to inform a specific group within a company of an event, action, or observance.

Memo Purpose

A memo's purpose is often to inform and represent the business or organization's interests, but it occasionally includes an element of persuasion or a call to action. All organizations have informal and formal communication networks. The unofficial, informal communication network within an organization is often called the grapevine, and it is often characterized by rumor, gossip, and innuendo. On the grapevine, one person may hear that someone else is going to be laid off and start passing the news around. Rumors change and transform as they are passed from person to person, and before you know it, the word is that they are shutting down your entire department.

One effective way to address informal, unofficial speculation is to spell out clearly for all employees what is going on with a particular issue. If budget cuts are a concern, then it may be wise to send a memo explaining the changes that are imminent. If a company wants employees to take action, they may also issue a memorandum.

Memo Format

A memo has a header with guide words that clearly indicate who sent the memo, who the intended recipients are, the date of the memo, and a descriptive subject line. The content of each guide word field aligns. The message then follows the header, and it typically includes a declaration (introduction), a discussion, and a summary.

Figure 4.1.1 shows a sample memo.

To: All employees
From: Larry Ogawa, IT Manager, The Widget Research Company
Date: June 15, 2018
Subject: New photocopier installations – July 5

On July 5, new photocopiers will be installed in the photocopier room on each floor. The installation will take place from 8:30 – 11:30 a.m. During this time, printing, scanning, and photocopying will not be available.

The old photocopiers will be disconnected from the network on the morning of July 5. Technicians will be on-site to simultaneously install the new machines on every floor in order to minimize printing downtime.

The new photocopiers have all of the same functionality as the ones they are replacing but will be faster and quieter. Training sessions will be organized so all employees can learn how to use the new machines. More details about these training sessions will be shared by the end of this month.

Please direct any questions or concerns to me.

Figure 4.1.1. A sample memo (Melissa Ashman, 2018, CC-BY-NC 4.0 international license)

Five Tips for Effective Business Memos

1. Audience Orientation

Always consider the audience and their needs when preparing a memo (or any message for that matter). An acronym or abbreviation that is known to management may not be known by all the employees of the organization, and if the memo is to be posted and distributed within the organization, the goal is to be clear and concise communication at all levels with no ambiguity.

2. Professional Tone

Memos are often announcements, and the person sending the memo speaks for a part or all of the organization. Use a professional tone at all times.

3. Subject Emphasis

The topic of the memo is normally declared in the subject line, and it should be clear, concise, and descriptive. If the memo is announcing the observance of a holiday, for example, the specific holiday should be named in the subject line—for example, use “Thanksgiving weekend schedule” rather than “holiday observance.”

4. Direct Format

Some written business communication allows for a choice between direct and indirect formats, but memorandums are almost always direct. The purpose is clearly announced immediately and up-front, and the explanation or supporting information then follows.

5. Maintain Objectivity

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3.35: Headers and Footers

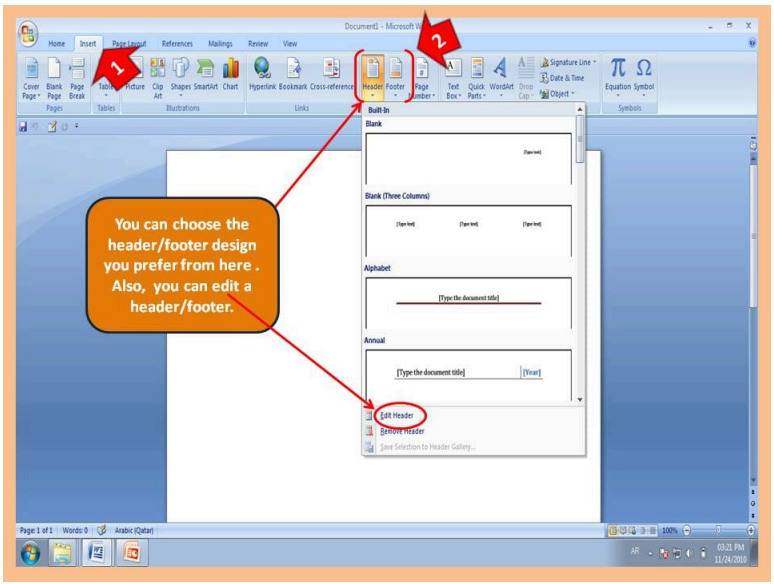
Learning Objectives

- How to create headers and footers for a document.

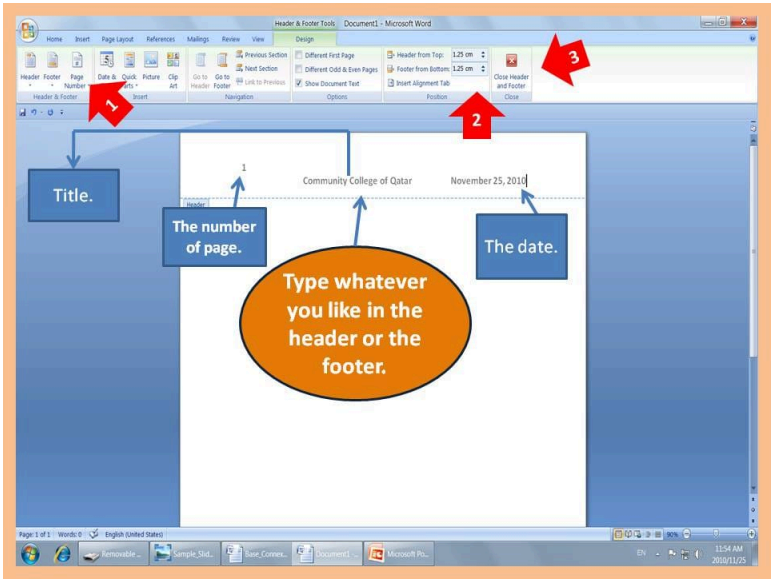
Header and Footer are to insert whatever you need (such as page numbers, title, date...Etc.) into the head (top) and the foot (bottom) of each page. However, the main purpose for the header and footer is to add various scripts to track the access to the blog (such as Google...Etc.).

To create a header or a footer:

1. Click the Insert tab.
2. Click on the Header/Footer pop-down menu.



After you insert the header/footer, type in header or footer whatever you like...



1. You can insert page numbers as it shown in the picture above by choosing the design you like.
2. Also, you can change the height of the Header/footer from the Position group as it shown in the picture above.
3. After finishing editing the header/footer, to exit click the (" Close Header and Footer", the red X next to the Position group).

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3.36: Print Preview and Printing

Learning Objectives

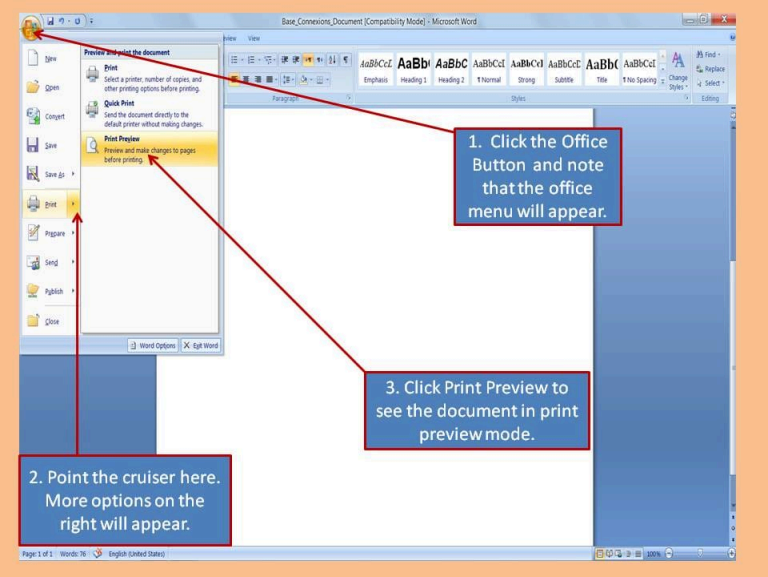
- How to print preview a document to review for problems, plus how to print from the print preview screen.

In the Print Preview, you can see what your document looks like before printing. It helps you to make your paper looks perfect and organized which saves more papers .

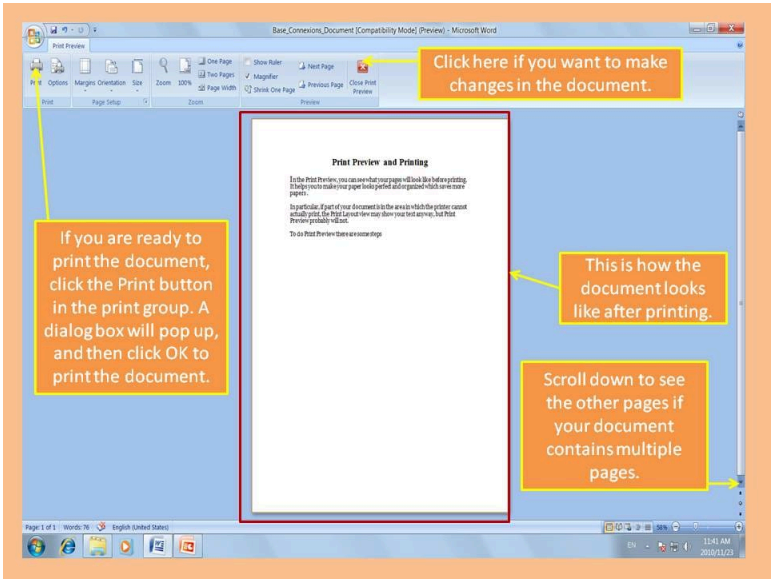
In particular, if a part of your document is in the area in which the printer cannot actually print, the Print Layout view may show your text anyway, but Print Preview probably will not.

Students must print preview their documents before printing to make sure that the document looks perfect and to avoid wasting papers.

To start Print Preview, do the following steps.



This is how the Print Preview mode looks like.



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3.37: Word Tips Tutorials

https://edu.gcfglobal.org/en/word-tips/

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4: SPREADSHEET SOFTWARE

4.1: Introduction to Using Excel

4.2: Microsoft Quick Start Guide Excel as pdf

4.3: The Beginner's Guide to Excel – Excel Basics Tutorial

4.4: Overview of Microsoft Excel

4.5: Excel Project 1- Excel Intro

4.6: Intro- Interface

4.6.1: Intro- Interface- Ribbon

4.6.2: Intro- Interface- Smart Tags/Actions

4.7: Creating a New Workbook

4.8: Entering Data

4.9: Entering, Editing, and Managing Data

4.10: Formatting and Data Analysis

4.11: Introduction to Basic Formatting and Layout

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4.1: Introduction to Using Excel

What you'll learn to do: create a worksheet and add data.

Learning to use Microsoft Excel is one of the most helpful and versatile workplace skills you can acquire, and creating a worksheet in a workbook is the first step. Many of the skills you learned for Microsoft Word can also be applied to Microsoft Excel, such as basic text formatting and file extensions. The file extension for a Microsoft Excel workbook is **.xlsx**, although pre-2003 versions of Excel might use **.xls**.

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https://support.microsoft.com/en-us/office/office-quick-starts-25f909da-3e76-443d-94f4-6cdf7dedc51e?ui=en-us&rs=en-us&ad=us

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4.3: The Beginner's Guide to Excel – Excel Basics Tutorial

https://youtu.be/rwbho0CgEAE

YouTube Video

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4.4: Overview of Microsoft Excel

Learning Objectives

- Examine the value of using Excel to make decisions.
- Learn how to start Excel.
- Become familiar with the Excel workbook.
- Understand how to navigate worksheets.
- Examine the Excel Ribbon.
- Examine the right-click menu options.
- Learn how to save workbooks.
- Examine the Status Bar.
- Become familiar with the features in the Excel Help window.

Microsoft Office contains a variety of tools that help people accomplish many personal and professional objectives. Microsoft Excel is perhaps the most versatile and widely used of all the Office applications. No matter which career path you choose, you will likely need to use Excel to accomplish your professional objectives, some of which may occur daily. This chapter provides an overview of the Excel application along with an orientation for accessing the commands and features of an Excel workbook.

Making Decisions with Excel

Taking a very simple view, Excel is a tool that allows you to enter quantitative data into an electronic spreadsheet to apply one or many mathematical computations. These computations ultimately convert that quantitative data into information. The information produced in Excel can be used to make decisions in both professional and personal contexts. For example, employees can use Excel to determine how much inventory to buy for a clothing retailer, how much medication to administer to a patient, or how much money to spend to stay within a budget. With respect to personal decisions, you can use Excel to determine how much money you can spend on a house, how much you can spend on car lease payments, or how much you need to save to reach your retirement goals. We will demonstrate how you can use Excel to make these decisions and many more throughout this text.

Figure 1.1 shows a completed Excel worksheet that will be constructed in this chapter. The information shown in this worksheet contains sales data for a hypothetical merchandise retail company. The worksheet data can help a retailer analyze the business and determine the number of salespeople needed for each month for example.

	A	B	C	D
1	*Merchandise City, USA* *Retail Sales*			
2	**Month**	**Unit Sales**	**Average Price**	**Sales Dollars**
3	January	2,670	$ 9.99	$ 26,685
4	February	2,160	$ 12.49	$ 26,937
5	March	515	$ 14.99	$ 7,701
6	April	590	$ 17.49	$ 10,269
7	May	1,030	$ 14.99	$ 15,405
8	June	2,875	$ 12.49	$ 35,916
9	July	2,700	$ 9.99	$ 26,937
10	August	900	$ 19.99	$ 17,958
11	September	775	$ 19.99	$ 15,708
12	October	1,180	$ 19.99	$ 23,562
13	November	1,800	$ 17.49	$ 31,416
14	December	4,560	$ 14.99	$ 75,125
15	**Total Sales**	21,755		$ 313,619
16				
17				

Figure 1.1 Example of an Excel Worksheet

Starting Excel

1. Locate Excel on your computer.
2. Click Microsoft Excel to launch the Excel application where you are presented with workbook options to help get you started.
3. Click the first option; “Blank Workbook”.

Excel for Windows vs Excel for Mac

The Excel for Windows and Excel for Mac software versions are very similar. Most of the features, tools and commands are available in both versions. There are, however, some differences with the Excel interface. There are also a few features that are not available in the Excel for Mac version. The screenshots and step-by-step instructions in this textbook are specific to Excel for Windows. We have attempted to provide alternate screenshots and instructions for the Mac version when the differences are significant. When you see this icon , it means we are providing information specific to Mac users.

The Excel Workbook

A workbook is an Excel file that contains one or more worksheets (referred to as spreadsheets). Excel will assign a file name to the workbook, such as **Book1**, **Book2**, **Book3**, and so on, depending on how many new workbooks are opened. **Figure 1.2** shows a blank workbook after starting Excel. Take some time to familiarize yourself with this screen. Your screen may be slightly different based on the version you’re using.

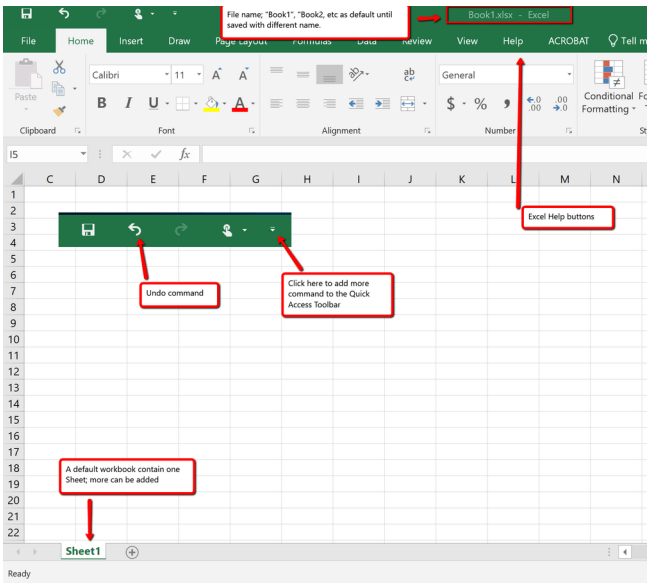


Figure 1.2 Blank Workbook

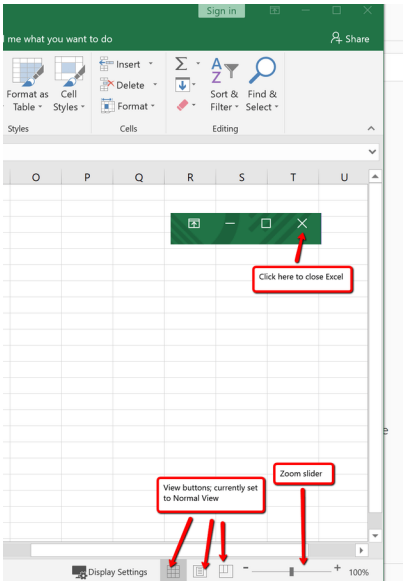


Figure 1.2a Blank Workbook (right-side)

Your workbook should already be maximized (or shown at full size) once Excel is started, as shown in **Figure 1.2**. However, if your screen looks like **Figure 1.3** after starting Excel, you should click the Maximize button, as shown in the figure.

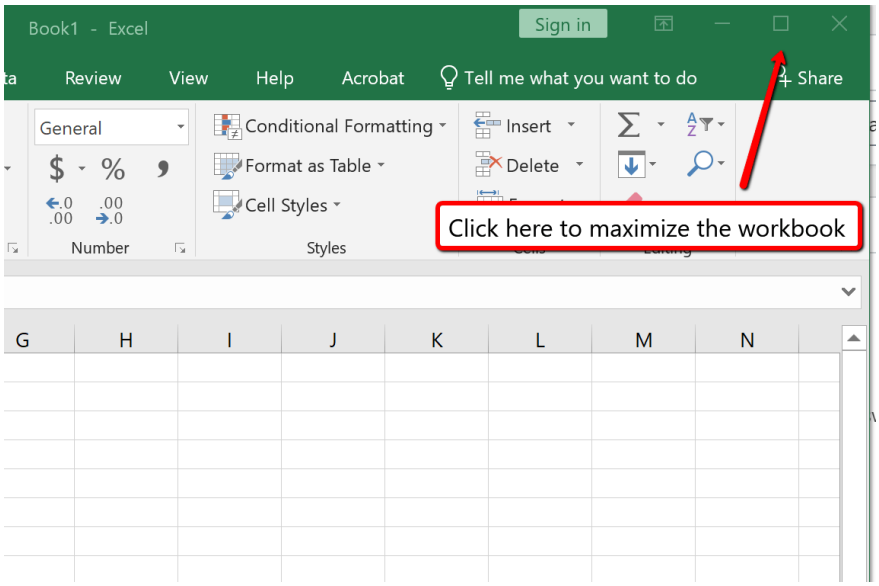


Figure 1.3 Restored Worksheet

Navigating Worksheets

Data are entered and managed in an Excel worksheet. The worksheet contains several rectangles called cells for entering numeric and non-numeric data. Each cell in an Excel worksheet contains an address, which is defined by a column letter followed by a row number. For example, the cell that is currently activated in **Figure 1.3** is **A1**. This would be referred to as cell location A1 or cell reference A1. The following steps explain how you can navigate in an Excel worksheet:

1. Place your mouse pointer over cell D5 and click.
2. Check to make sure column letter D and row number 5 are highlighted, as shown in **Figure 1.4**.

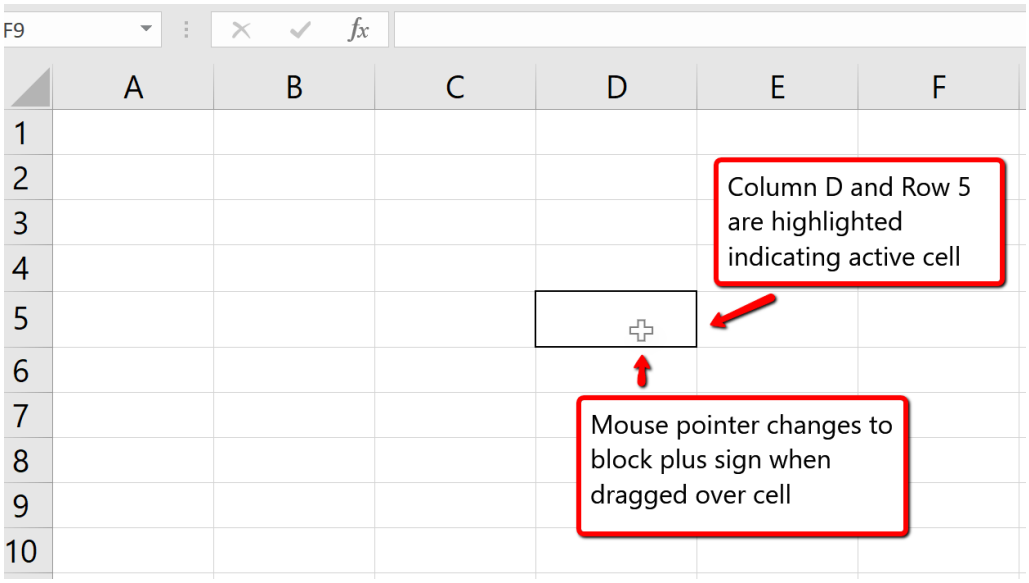


Figure 1.4 Activating a Cell Location

1. Move the mouse pointer to cell A1.
2. Click and hold the left mouse button and drag the mouse pointer back to cell D5.
3. Release the left mouse button. You should see several cells highlighted, as shown in **Figure 1.5**.

This is referred to as a ***cell range*** and is documented as follows: **A1:D5**. Any two cell locations separated by a colon are known as a cell range. The first cell is the top left corner of the range, and the second cell is the lower right corner of the range.

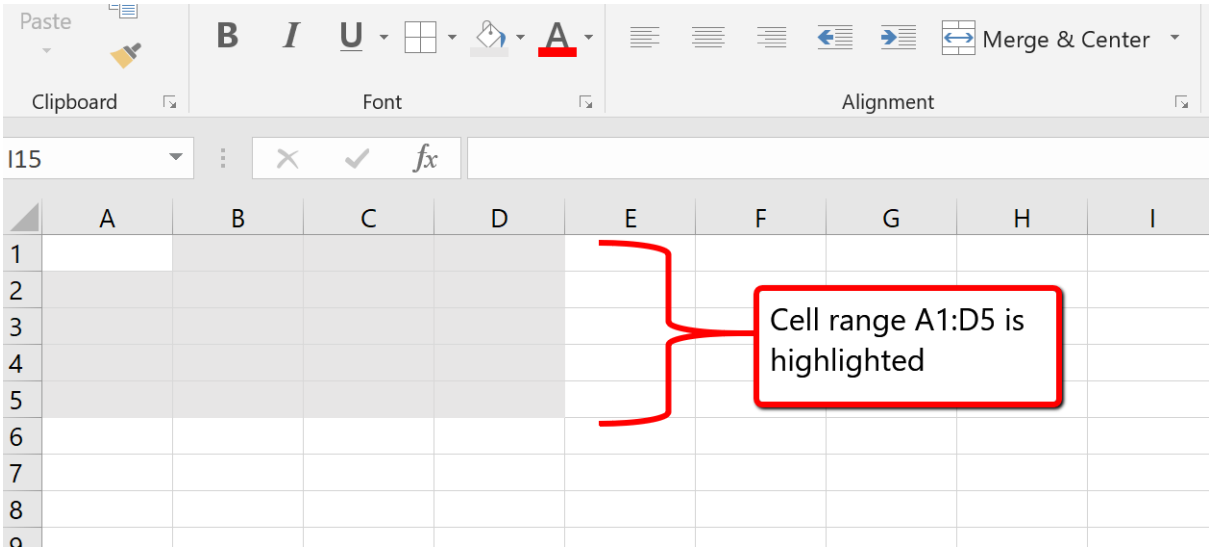


Figure 1.5 Highlighting a Range of Cells

1. At the bottom of the screen, you'll see a sheet tab indicated by "**Sheet1**". Clicking on the + adds additional worksheets. This is how you open or add a worksheets within a workbook. To see how this works, click on the + to add another worksheet so that you now have two sheets
2. Click the Sheet1 worksheet tab at the bottom of the worksheet to return to the worksheet shown in **Figure 1.5**.

Keyboard Shortcuts

Basic Worksheet Navigation

- Use the arrow keys on your keyboard to activate cells on the worksheet.
- Hold the SHIFT key and press the arrow keys on your keyboard to highlight a range of cells in a worksheet.
- Hold the CTRL key while pressing the PAGE DOWN or PAGE UP keys to open other worksheets in a workbook.
- Mac Users: Hold down the Fn and Command keys and press the left or right arrow keys

The Excel Ribbon

Excel's features and commands are found in the Ribbon, which is the upper area of the Excel screen that contains several tabs running across the top. Each tab provides access to a different set of Excel commands. **Figure 1.6** shows the commands available in the Home tab of the Ribbon. **Table 1.1 "Command Overview for Each Tab of the Ribbon"** provides an overview of the commands that are found in each tab of the Ribbon.

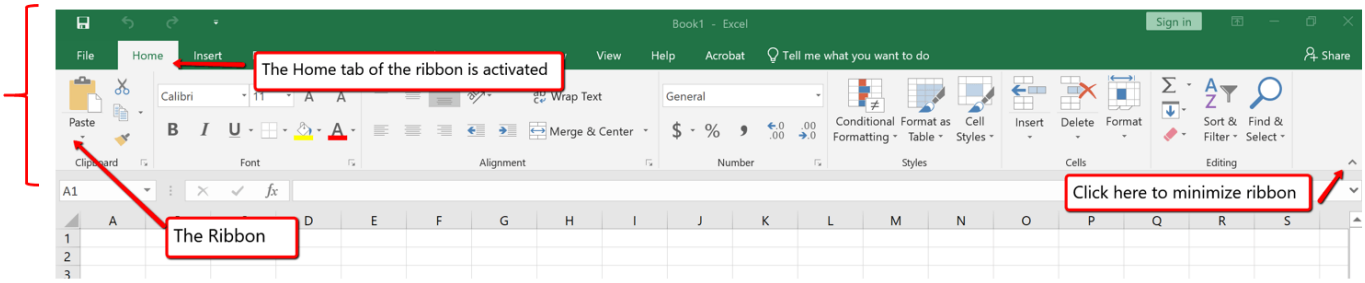


Figure 1.6 Home Tab of Ribbon

The Excel for Mac ribbon, as shown in **Figure 1.6a** below, has two primary differences:

- The older dropdown menu structure is still available with Excel for Mac.
- The specific commands and tools within each tab are slightly different between the two Excel Ribbons. Some of the commands found within the Excel for Windows Ribbon tabs are located within the dropdown menu structure in the Excel for Mac version. So, if you can't find the tool on the Excel for Mac Ribbon, then try to find the tool by looking through the dropdown menu instead.

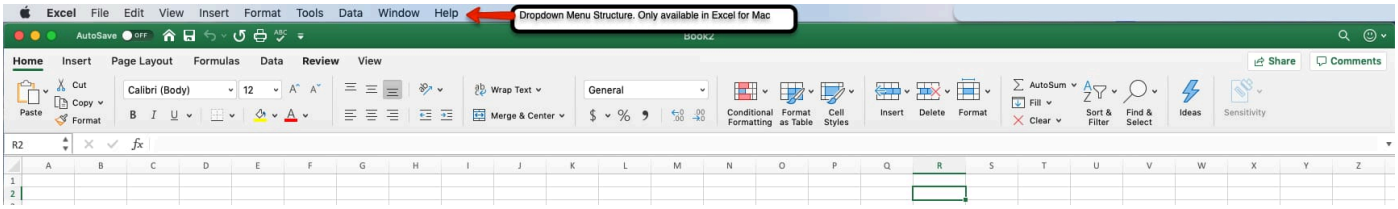


Figure 1.6a Home tab of Excel for Mac Ribbon with dropdown menu structure

Group Title Names on the Ribbon

If you look closely at the Excel Ribbon (See Figure 1.6 above), you will see that the Ribbon is separated in groups of tool buttons, and each group has a title name. On Home tab, the group title names are "Clipboard", "Font", "Alignment", "Number", "Styles". "Cells", "Editing", etc. The tool buttons within each group are all related to the group title.

Mac Users Only: The default "View" for the Excel for Mac ribbon **does not display** these "group title names". Notice in Figure 1.6a above, there are no group title names. It is a good idea to change this "view" so you can see the group title names. Here are the steps:

1. Click the **"Excel" menu option at top left above the Ribbon**
2. Choose **"Preferences"**

3. Click the **“View” button**
4. Scroll down and check the box for **“Group Titles”**
5. Close the “View” dialog box. The group title names should now display as shown in Figure 6.1 (not Figure 6.1a) above

Table 1.1 Command Overview for Each Tab of the Ribbon

Tab Name	Description of Commands
File	Also known as the Backstage view of the Excel workbook. Contains all commands for opening, closing, saving, and creating new Excel workbooks. Includes print commands, document properties, e-mailing options, and help features. The default settings and options are also found in this tab.
Home	Contains the most frequently used Excel commands. Formatting commands are found in this tab along with commands for cutting, copying, pasting, and for inserting and deleting rows and columns.
Insert	Used to insert objects such as charts, pictures, shapes, PivotTables, Internet links, symbols, or text boxes.
Page Layout	Contains commands used to prepare a worksheet for printing. Also includes commands used to show and print the gridlines on a worksheet.
Formulas	Includes commands for adding mathematical functions to a worksheet. Also contains tools for auditing mathematical formulas.
Data	Used when working with external data sources such as Microsoft Access, text files, or the Internet. Also contains sorting commands and access to scenario tools.
Review	Includes Spelling and Track Changes features. Also contains protection features to password protect worksheets or workbooks.
View	Used to adjust the visual appearance of a workbook. Common commands include the Zoom and Page Layout view.
Help	This tab provides access to help and support features such as contacting Microsoft support, sending feedback, suggesting a new feature, and community discussion groups. **This tab is not available with Excel for Mac.**
Draw	Provides drawing options for using a digital pen, mouse or finger depending on the type of device (laptop with touch screen, tablet, computer, etc). This tab is not visible by default. See below on how to customize the Ribbon to add or remove tabs.
Developer	Provides access to some advanced features such as macros, form controls, and XML commands. This tab is not visible by default. See below on how to customize the Ribbon to add or remove tabs.

The Ribbon shown in **Figure 1.6 and Figure 1.6a** (above) is full, or maximized. The benefit of having a full Ribbon is that the commands are always visible while you are developing a worksheet. However, depending on the screen dimensions of your computer, you may find that the Ribbon takes up too much vertical space on your worksheet. If this is the case, you can minimize the Ribbon by clicking the button shown in **Figure 1.6**. When minimized, the Ribbon will show only the tabs and not the command buttons. When you click on a tab, the command buttons will appear until you select a command or click anywhere on your worksheet.

To hide the Ribbon with Excel for Mac you can use the keyboard shortcut:

Hold down the “Command and Option” keys and tap the “R” key

The same keyboard shortcut will unhide the Ribbon as well.

How to Customize the Excel Ribbon

Here are the steps to add additional tabs to the Excel Ribbon

1. Click the File tab and choose Options
2. Click on “Customize Ribbon” at the left side of the Options screen
3. Click the checkbox next to the Tab name that you want to add (See Figure 1.7 below)

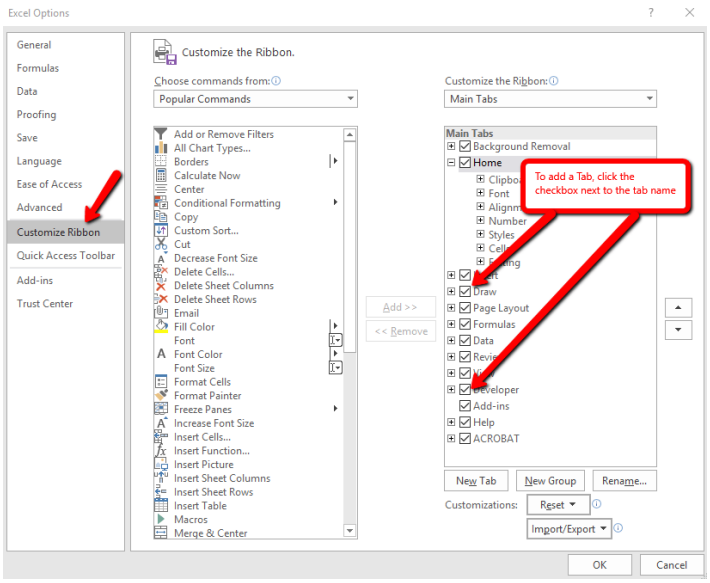


Figure 1.7 Customize the Ribbon Dialog Box

Keyboard Shortcuts

Minimizing or Maximizing the Ribbon

- Hold down the CTRL key and press the F1 key.
- Hold down the CTRL key and press the F1 key again to maximize the Ribbon.
- Mac Users: Hold down the Command and Option keys and press R

Quick Access Toolbar and Right-Click Menu

The Quick Access Toolbar is found at the upper left side of the Excel screen above the Ribbon, as shown in **Figure 1.7**. This area provides access to the most frequently used commands, such as Save and Undo. You also can customize the Quick Access Toolbar by adding commands that you use on a regular basis. By placing these commands in the Quick Access Toolbar, you do not have to navigate through the Ribbon to find them. To customize the Quick Access Toolbar, click the down arrow as shown in **Figure 1.8**. This will open a menu of commands that you can add to the Quick Access Toolbar. If you do not see the command you are looking for on the list, select the More Commands option.

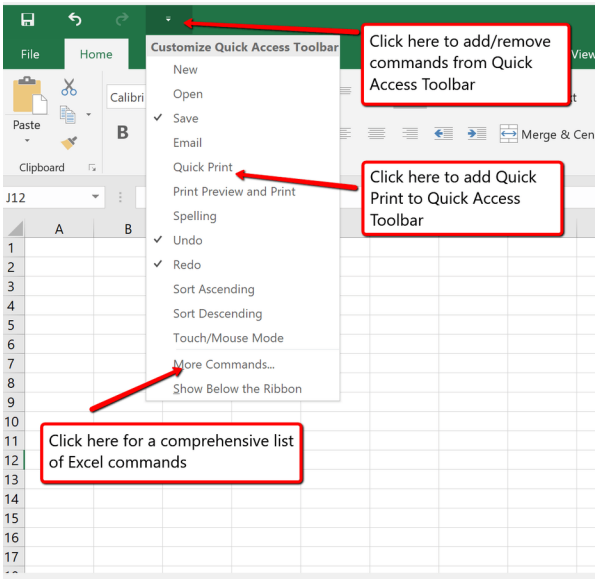


Figure 1.8 Customizing the Quick Access Toolbar

In addition to the Ribbon and Quick Access Toolbar, you can also access many commands by right clicking anywhere on the worksheet. **Figure 1.9** shows an example of the commands available in the right-click menu.

There is no “Right-click” option for Excel for Mac. To access the same commands with Excel for Mac, hold down the Control key and click the mouse button.

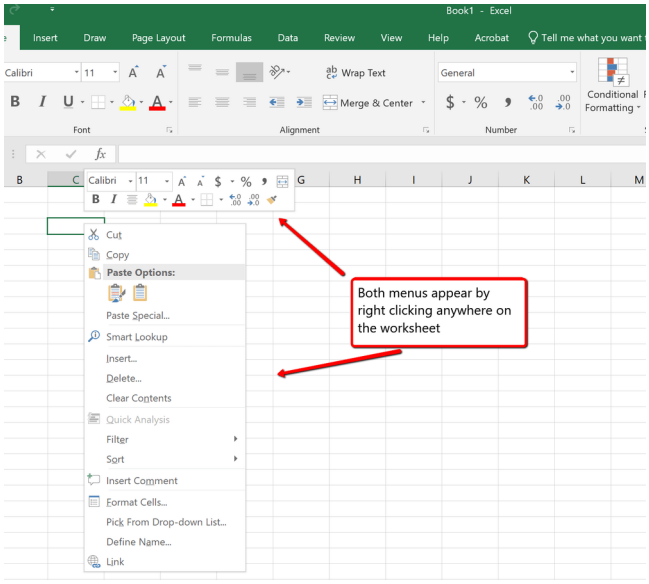


Figure 1.9 Right-Click Menu

The File Tab

The File tab is also known as the **Backstage** view of the workbook. It contains a variety of features and commands related to the workbook that is currently open, new workbooks, or workbooks stored in other locations on your computer or network. **Figure 1.10** shows the options available in the File tab or Backstage view. To leave the Backstage view and return to the worksheet, click the arrow in the upper left-hand corner as shown below.

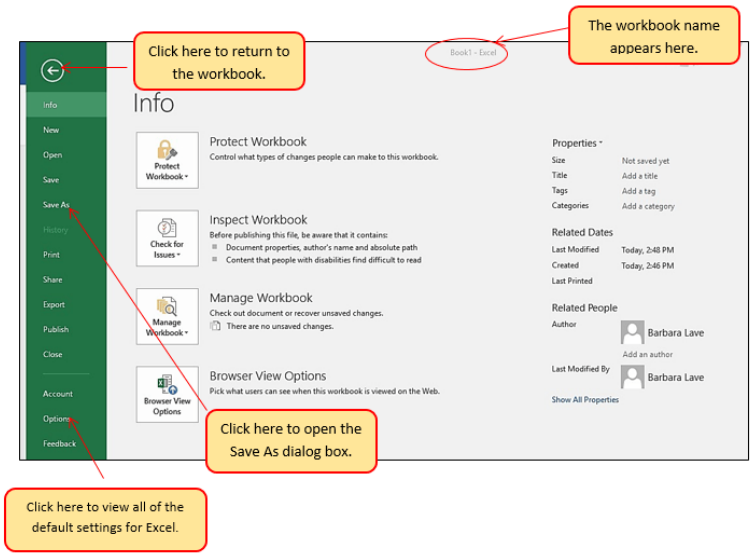


Figure 1.10 File Tab or Backstage View of a Workbook

Included in the File tab are the default settings for the Excel application that can be accessed and modified by clicking the Options button. **Figure 1.11** shows the Excel Options window, which gives you access to settings such as the default font style, font size, and the number of worksheets that appear in new workbooks.

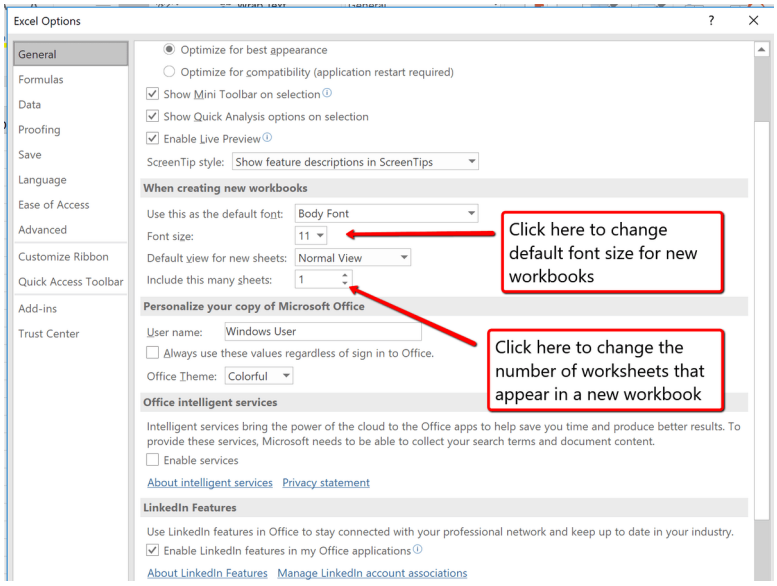


Figure 1.11 Excel Options Window

To access these same options in Excel for Mac, you must click the “Excel” menu option and choose “Preferences” (see **Figure 1.12** below)

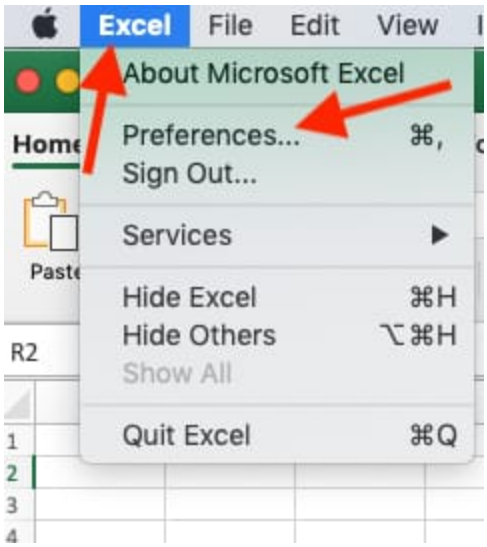


Figure 1.12 The Excel for Mac “Excel” menu option

Saving Workbooks (Save As)

Once you create a new workbook, you will need to change the file name and choose a location on your computer or network to save that file. It is important to remember where you save this workbook on your computer or network as you will be using this file in the **Section 1.2 “Entering, Editing, and Managing Data”** to construct the workbook shown in **Figure 1.1**. The process of saving can be different with different versions of Excel. Please be sure you follow the steps for the version of Excel you are using. The following steps explain how to save a new workbook and assign it a file name.

Saving Workbooks in Excel 365

1. If you have not done so already, open a blank workbook in Excel.
2. Click the File tab and then the **Save As** button in the left side of the Backstage view window. This will open the **Save As** dialog box.
3. Determine a location for saving on your computer by clicking **Browse** on the left side to open the **Save As** dialog box.
4. Click in the File Name box near the bottom of the **Save As** dialog box. Type the new file name: **CH1 Merchandise City Sales Data**
5. Review the settings in the screen for correctness and click the Save button.

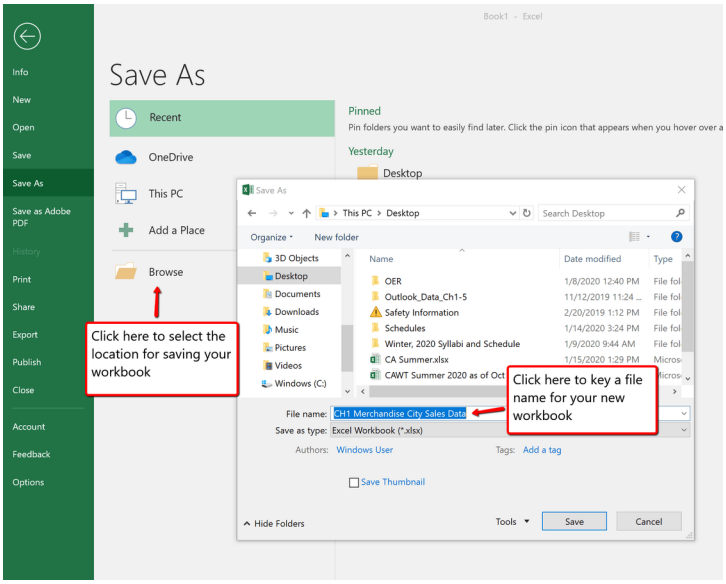


Figure 1.13 Save As Dialog entries for Excel 365

Keyboard Shortcuts

Save As

- Press the F12 key and use the tab and arrow keys to navigate around the Save As dialog box. Use the ENTER key to make a selection.
- Or press the ALT key on your keyboard. You will see letters and numbers, called Key Tips, appear on the Ribbon. Press the F key on your keyboard for the File tab and then the A key. This will open the Save As dialog box.
- The Mac shortcut is: Hold down the Command and Shift keys and press S

Skill Refresher

Saving Workbooks (Save As)

1. Click the File tab on the Ribbon.
2. Click the Save As option.
3. Click on Browse to select a location on your PC to save.
4. Click in the File name box and type a new file name if needed.
5. Click the down arrow next to the “Save as type” box and select the appropriate file type if needed. Excel will default to the file type of .xlsx
6. Click the Save button.

The Status Bar

The Status Bar is located below the worksheet tabs on the Excel screen (**see Figure 1.13**). It displays a variety of information, such as the status of certain keys on your keyboard (e.g., CAPS LOCK), the available views for a workbook, the magnification of the screen, and mathematical functions that can be performed when data are highlighted on a worksheet. You can customize the Status Bar as follows:

1. Place the mouse pointer over any area of the Status Bar and right click to display the “Customize Status Bar” list of options (**see Figure 1.14**).

   Mac Users: use “Control-click” on the Status Bar to display the “Customize Status Bar” options.
2. Select the Caps Lock option from the menu (see **Figure 1.14**).

3. Press the CAPS LOCK key on your keyboard. You will see the Caps Lock indicator on the lower right side of the Status Bar.
4. Press the CAPS LOCK on your keyboard again. The indicator on the Status Bar goes away.

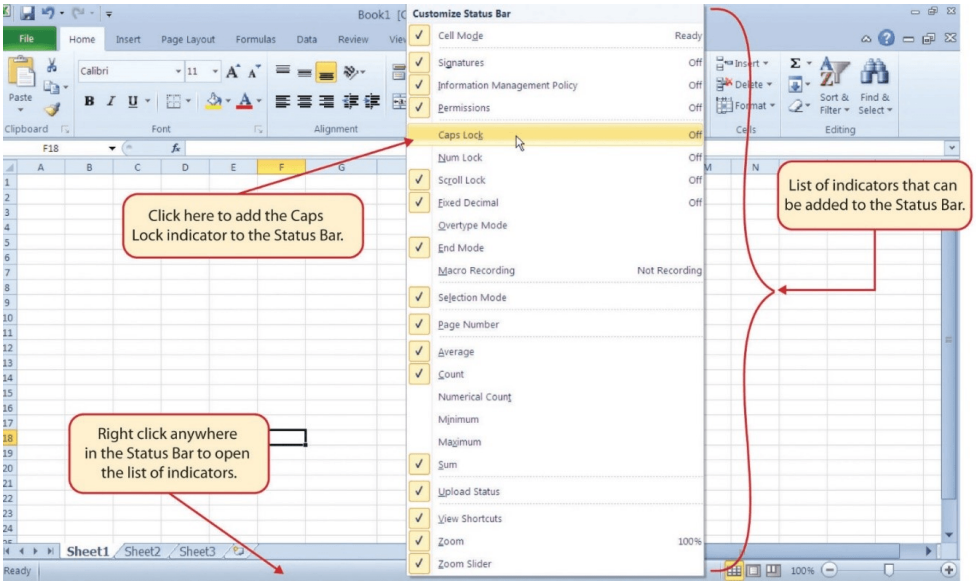


Figure 1.14 Customizing the Status Bar

Excel Help

The Help feature provides extensive information about the Excel application. Although some of this information may be stored on your computer, the Help window will automatically connect to the Internet, if you have a live connection, to provide you with resources that can answer most of your questions. You can open the Excel Help window by clicking the question mark in the upper right area of the screen or ribbon. With newer versions of Excel, use the query box to enter your question and select from helpful option links or select the question mark from the dropdown list to launch Excel Help windows.

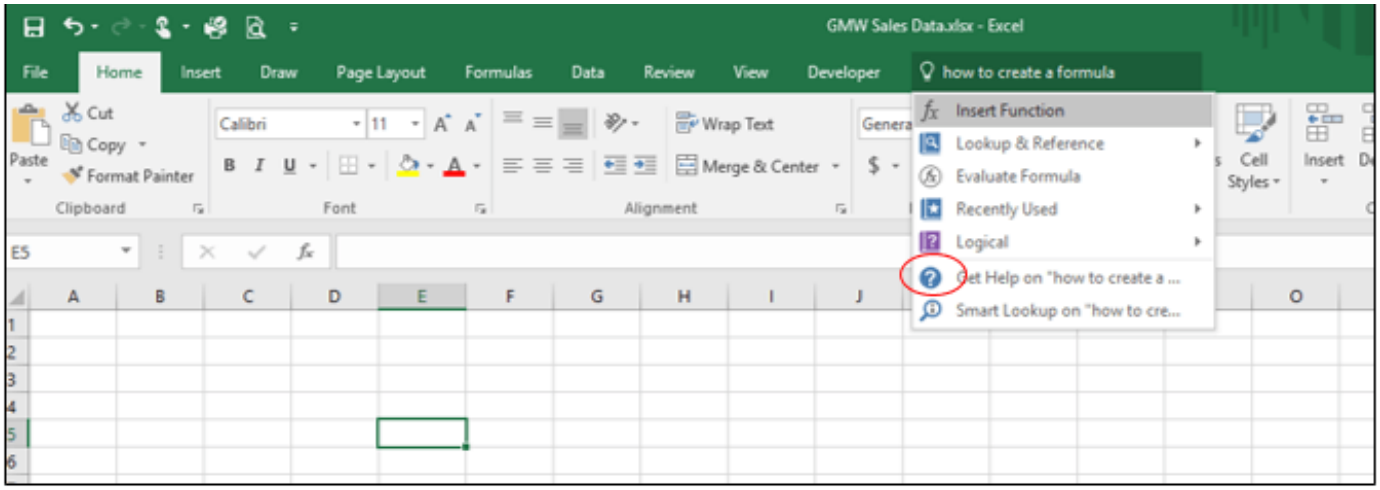


Figure 1.15 Excel Help Window

Keyboard Shortcuts

Excel Help

- Press the F1 key on your keyboard.

- Mac Users: Press F1 or hold down the Command key and press /

Key Takeaways

- Excel is a powerful tool for processing data for the purposes of making decisions.
- You can find Excel commands throughout the tabs in the Ribbon.
- You can customize the Quick Access Toolbar by adding commands you frequently use.
- You can add or remove the information that is displayed on the Status Bar.
- The Help window provides you with extensive information about Excel.

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4.5: Excel Project 1- Excel Intro

https://www.jegsworks.com/lessons/numbers-2/intro/index.html

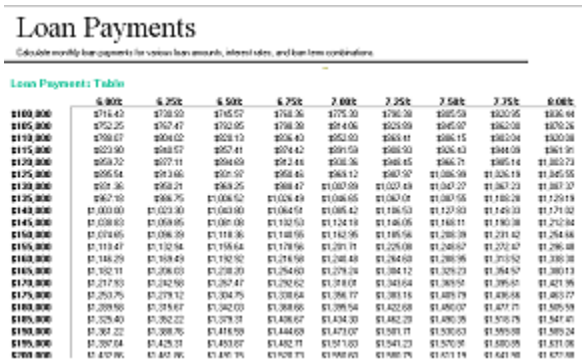
Intro

Project Objectives

- Learn what a spreadsheet is
- Open Excel
- Open an existing workbook
- Learn the parts of the Excel window
- Learn the ribbon tabs, their controls and buttons, and what they do
- Learn to move around in a workbook and on a worksheet
- Use views: Normal, Page Layout, Page Break Preview, Print Preview, Split, Frozen panes
- Select parts of a sheet
- Use AutoSum, Sort
- Create a simple chart
- Format numbers using the ribbon and Mini-Toolbar
- Use Format Painter

What is a spreadsheet?

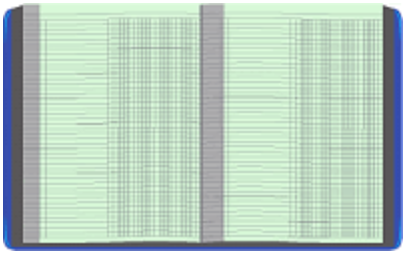
A **spreadsheet** is basically a document which has been divided into rows and columns.



Spreadsheet

Excel and its fellow spreadsheet applications are designed to ease the management of numbers and calculations. Various commands and buttons make it easy to arrange and format columns of numbers and to calculate totals, averages, percentages, budgets, and complex financial and scientific formulas.

The look of a spreadsheet application comes from the account ledgers that have been used to keep records for centuries. Ledger pages are lined off into rows and columns to record such things as items in inventory, income and expenses, debits and credits, and census data, like the illustration.



Ledger



Census Ledger

The biggest advantages of a computer-based spreadsheet over these paper ledgers are the ability to create and update totals and other calculations automatically as you enter new data and the ability to search the whole document quickly.

Before you can open a real spreadsheet and see for yourself how this works, you need to learn your way around the Excel window a bit. So off we go to look at the Excel interface.

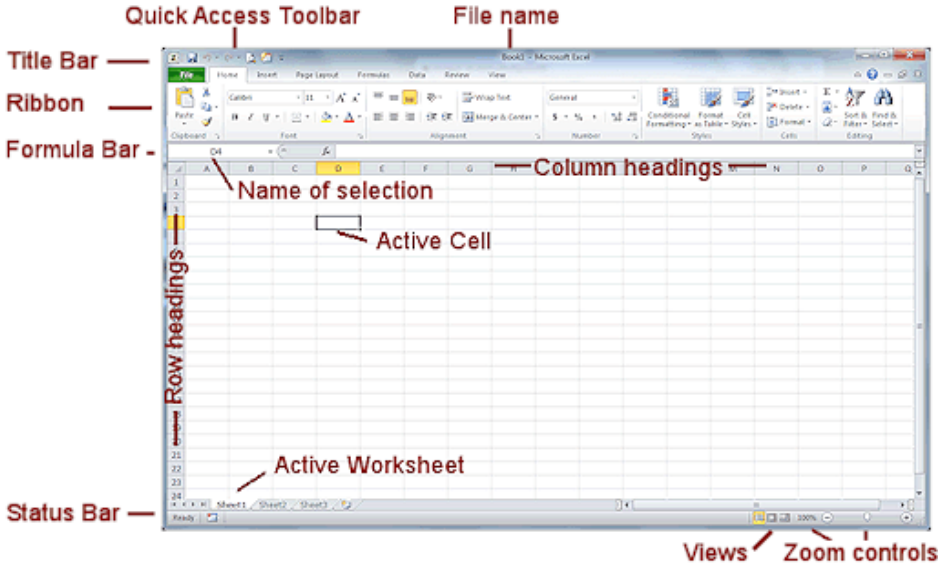
In the Introduction lessons you will work with an existing document to learn your way around the Excel interface and to see how the basic spreadsheet tasks work.

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4.6: INTRO- INTERFACE

https://www.jegsworks.com/lessons/numbers-2/intro/interface.htm

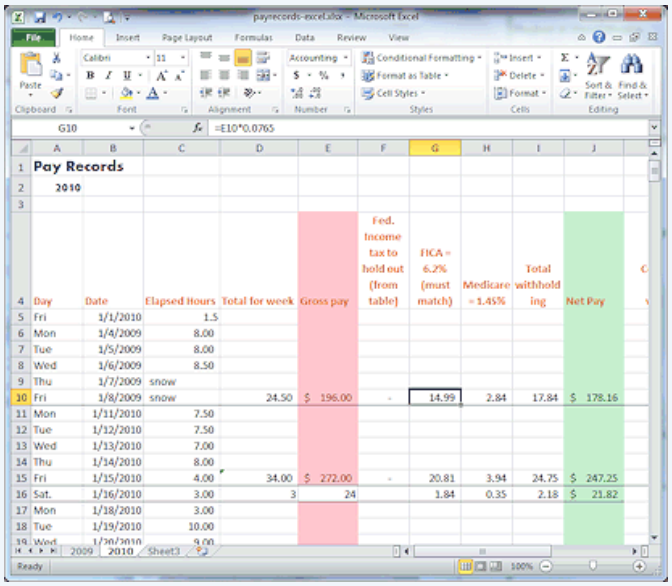
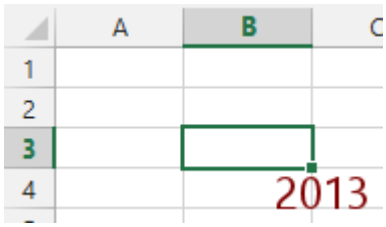
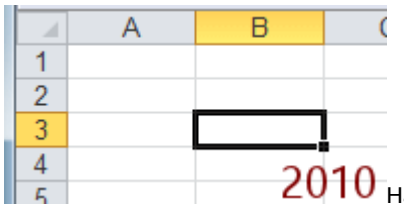
If you have worked with Windows programs before, you already know a lot about Excel's window. It has all the normal window parts, like the Status bar, Title bar, scroll bars. The Excel window is actually a lot like what you saw in Word. If you are not familiar with Word, you should consider working at least the first project of Working with Words: Word 2007, 2010, 2013, and 2016 before continuing. The lessons in Working with Numbers assume that you are somewhat experienced with basic word processing skills.

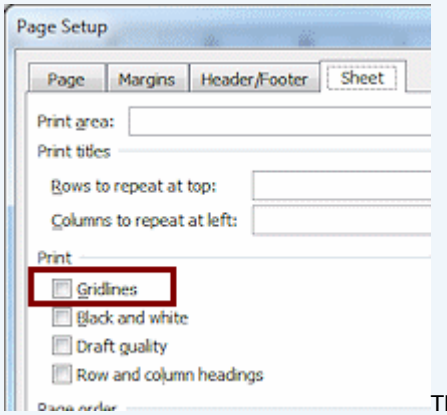
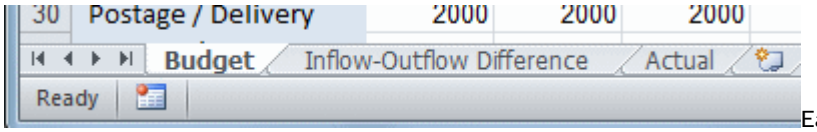


Blank Excel worksheet (Excel 2010)

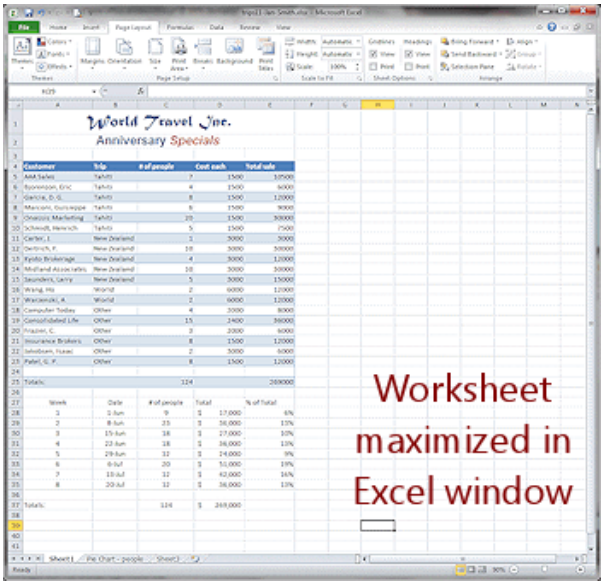
Spreadsheet Terms

Term	Explanation
spreadsheet	Document that is entirely made up of rows and columns. Used to list and analyze data. ?☹?**Point of Confusion:** People tend to use the word **spreadsheet** in two ways: • the entire Excel workbook file • an individual worksheet in a workbook
workbook	The basic document for Excel. The default workbook name is **Book1.xlsx** where the extension **xlsx** seems to come from 'E**x**ce**l** **s**preadsheet in **X**ML format'. Older versions of Excel use a different format, **xls**.

worksheet	A single sheet of data. One or more worksheets make a workbook.  Think of them as pieces of paper that are stacked on top of each other to form the workbook. The default workbook contains three worksheets, named **Sheet1**, **Sheet2**, **Sheet3**. (Excel 2016 has only 1 sheet by default) You will want to change these names to something more interesting and helpful! The maximum number of worksheets in a workbook depends on your computer's memory. A worksheet, also called just a **sheet** or **spreadsheet**, can have up to **1,048,576 rows** by **16,384 columns** with up to **32,767 characters in a single cell**. This is enough for most purposes!
workbook window	The document window inside an Excel window. (See next section for illustrations) **Excel 2013** and **2016** show each workbook in its own window.
columns	Named with letters in the following pattern: A, B, C,...Z, AA, AB, AC,...AZ, BA, BB, BC,...BZ, CA,...IA, IB,...IV... XFD, which is the last column possible.
rows	Named with numbers from 1 to 1,048,576.
cell	Intersection of a **row** and a **column** on a worksheet.
active cell	  Has a dark border around it and the row and column headers are colored. This is the cell that receives your keystrokes and commands. You make a cell the active cell when you **select** it, by clicking it or by moving into it with keys. The TAB or the arrow keys are handy for moving from cell to cell.

grid lines	 The gray lines that form the cells. By default they don't print. If you want to print the gridlines, there is a check box in the Page Setup dialog
sheet tab	 Each worksheet has a tab at the bottom of the workbook window with the name of the worksheet on it.
active worksheet	The worksheet that receives your keystrokes and commands. It has a white sheet tab with its name in bold. If you group two or more worksheets together, you can have more than one **active** sheet. This is a cool feature, when it is not a disaster because you did not realize that your typing was going to show up on more than one sheet!
workspace	The area below the ribbon that holds your documents

Excel 2007, 2010: Multiple Windows Inside Excel Window

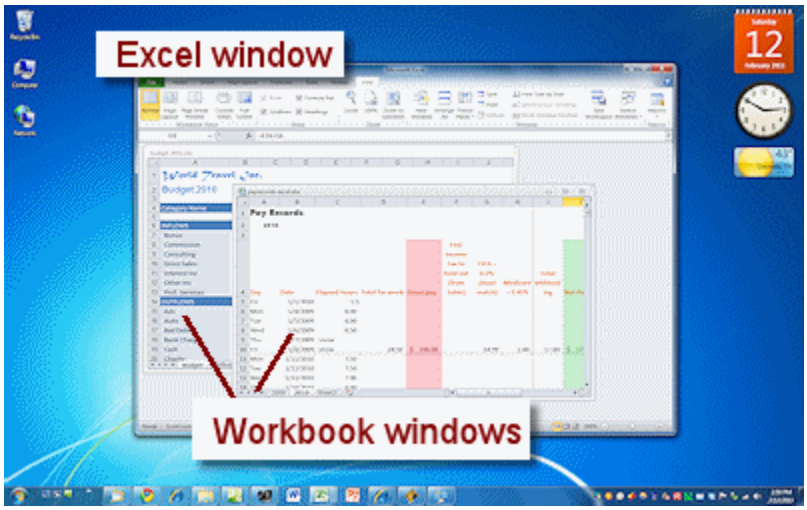


An Excel 2007 or 2010 window can contain several open workbooks at the same time. This Multiple Document Interface is the way older Office programs worked. (Excel 2013 and 2016 put each document in its own complete window like other Office 2013 and 2016 programs.)

By default each document is maximized inside the master Excel window, like the illustration above. You cannot tell from looking at the Excel window how many documents are open.

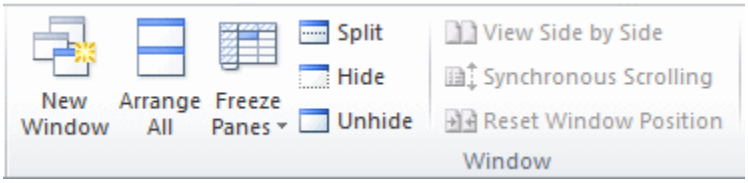
How to tell how many documents are open:

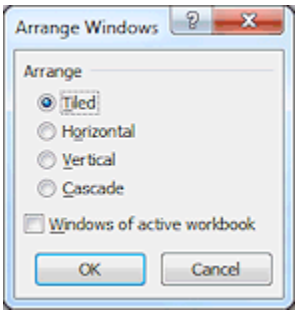
- **Switch Windows** button: On the View tab click the Switch Windows button to get a list of all open Excel documents.
- **Taskbar**: Depending on your version of Windows, the Windows Taskbar shows multiple Excel icons or a single icon with a right click menu listing the open documents.



To show a document in a *separate* window:
Open a new instance of Excel and then open the file that you want to see in it from *inside* Excel.

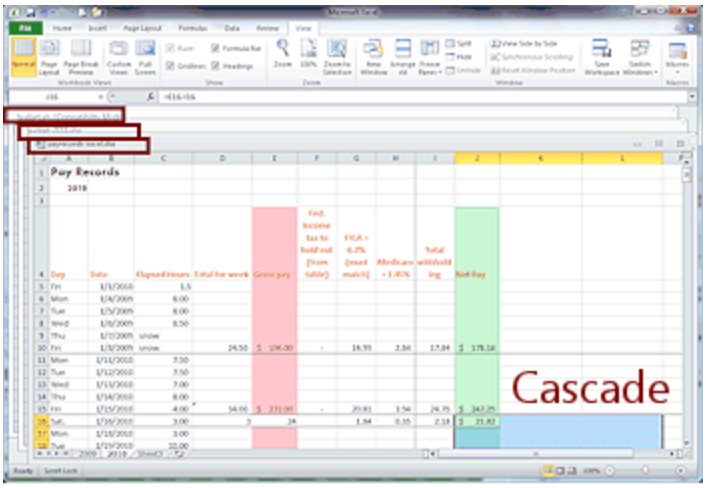
Arranging documents inside the Excel window:
You can show more than one workbook window at a time inside the big Excel window by lining them up in different ways. The illustration above shows two cascading windows inside the master Excel window. The windows have been resized from the default sizes. The master window has the ribbon.





To arrange document windows inside the Excel window, you can open the Arrange Windows dialog, View tab > Arrange All button. A dialog opens where you can choose an arrangement. Notice that there are a number of choices in this tab group!

Excel Window: 3 worksbooks tiled (Excel 2010)
Excel Window: 3 workbooks horizontal (Excel 2010)
Excel Window: 3 workbooks vertical (Excel 2010)



Excel window with 3 workbooks arranged: Tiled, Horizontal, Vertical, Cascade (Excel 2010)

You can also drag the document window edges to resize each one. Each document has its own Minimize, Maximize, and Close buttons. Minimizing a window minimizes it to the bottom of the Excel window, not to the Taskbar.

Excel 2013, 2016: Separate Windows

Excel 2013 and 2016 put each workbook into its own window with its own ribbon. It no longer allows multiple workbooks to show **inside** one main window. Excel has finally caught up with other Office programs with this behavior.



The View ribbon tab has buttons to help you manage your Excel windows.

The New Window button lets you open your current spreadsheet in a new window where you can pick a different sheet tab or show a different section of the current sheet. You still have just one document with Excel synchronizing the changes you make.

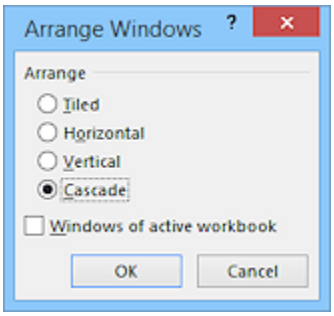


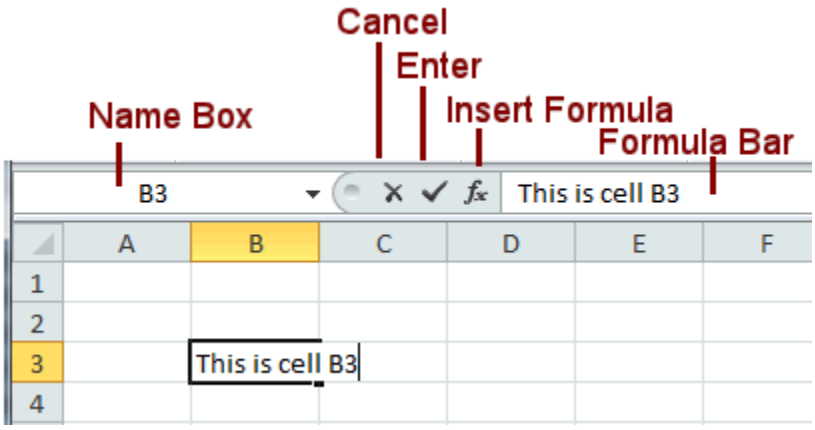
Figure 4.6.1: Copy and Paste Caption here. (Copyright; author via source)

The Arrange All button opens a dialog that lets you pick how you want to arrange the open Excel windows on the screen - Tiled, Horizontal, Vertical, or Cascade.

NEW for 2013 **Active Worksheets Only:** The check box 'Windows of active workbook' restricts the arranging to windows that show part of the current workbook. Uncheck that box to arrange windows containing different workbooks.


1
2
3
Tiled
1
2
3
Horizontal
1
2
3
Vertical
1 2 3
Cascade

The Worksheet & Formula Bar



The **Formula Bar** is a feature that is special to a spreadsheet program. To help keep life confusing, the term **Formula Bar** is used both for the whole bar you see above the cells and also for just the text box on the right above the cells, which displays what is in the selected cell. In older versions of Excel, you had to do all editing in the Formula Bar but recent versions let you edit directly in the cell. Much better!

The Formula bar behaves the same in Excel 2007, 2010, 2013, and 2016, except from some color differences.

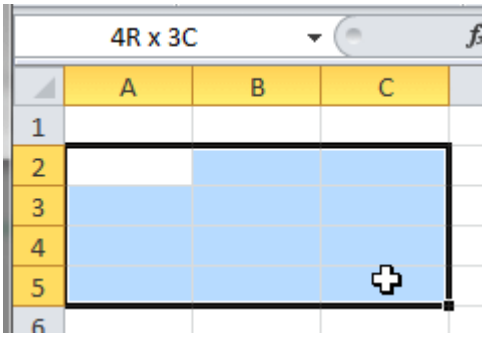
The **Name Box** shows the cell reference for the current cell or for the upper left cell of the current selection or the name of the selected cell or range of cells.

The buttons to the right of the Name Box apply to the Formula Bar.

- **Cancel:** Clears any changes.
- **Enter:** Accepts changes and exits Edit mode. More typing will *replace* cell contents.
- **Insert Formula:** Opens a dialog where you can choose one of Excel's pre-defined formulas. That dialog then opens the Function Arguments dialog, which has text boxes for you to fill in. No risk of typing errors messing up the formula you meant to enter!

Worksheet Terms

Term	Explanation
headings	The buttons at the top of columns (letters) and at the left end of rows (numbers). For a selected column or row the heading is colored.
enter data	Button: Enter - Formula Bar (Excel 2010) Select the cell, type your data, and press the ENTER key or click the Enter button on the Formula bar. What you typed is now contained in the cell.
Name Box	At the top left above the sheet cells and headings. Used to display cell references and to assign and display names for a cell or a range of cells.

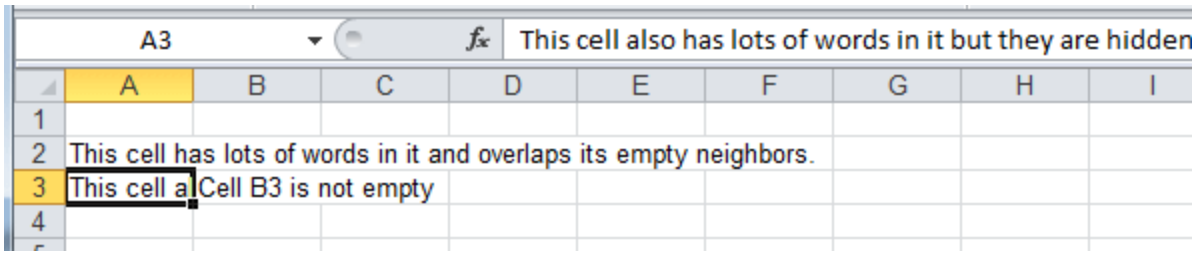
range	 A rectangular set of cells, referred to by using the upper left and lower right cell references with a colon between them, like A2:C5 for the range illustrated at the right. The **absolute reference** for the range would be $A$2:$C$5. You select a range by dragging, for example from the upper left cell to the lower right cell. As you drag, the Name Box shows the number of rows and columns that are selected. Once you quit dragging, the Name Box displays the upper left cell only.
Formula bar	 Shows the contents of a selected cell, whether it is plain text, numbers, or a formula. Sometimes the whole bar that contains the Name Box and the formula text box is called the Formula bar. Sometimes just the text box that shows the formula or text is meant.
formula	Looks rather like part of an algebra equation, like =SUM(A4:D7) or =AVERAGE(C3, F5, H10). Most formulas use cell references to get the values to calculate with.
cell reference or **relative reference**	The usual way we refer to a cell, using the letter of the cell's column followed by the number of the cell's row, like B3 or AD345. **Cool feature:** If you move the contents of a cell, any formula that contains a *relative reference* to that cell is changed to match the new cell reference. A very handy feature - most of the time.
absolute reference	When you don't want the cell reference to change in a formula as things are moved around, you must use an *absolute reference*, by putting a $ in front of both the column letter and the row number, like $B$3 or $AD$345.

Over-writing cell contents: If you select a cell and start typing, what you type *replaces* what is already in the cell!

Edit in place: Double-click the cell. You can use the same editing methods you've used in Word - arrow keys to move the cursor, BACKSPACE and DELETE keys to remove characters, etc.

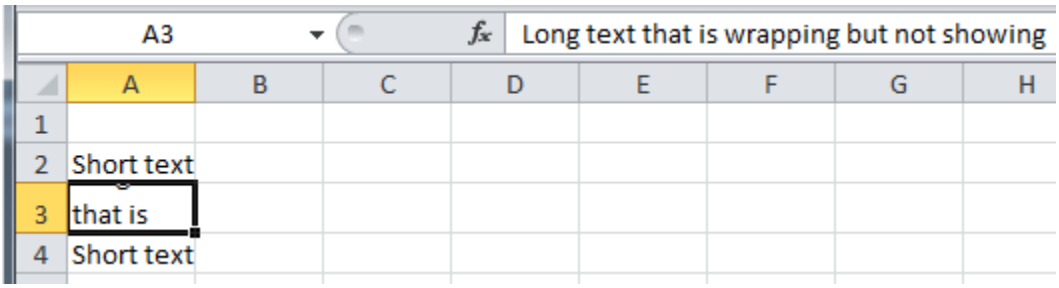
Edit in Formula bar: Select the cell and then click in the Formula bar and edit there. This is the only way older spreadsheets would allow you to work with the data. Data was only *displayed* in the cell. Typing had to be done in the Formula bar. Awkward!

Hidden contents - Cell Width: What happens when the data in a cell is wider than the cell? The contents of a cell will overlap the cell to the right *if* that cell is empty. If the cell to the right is *not* empty, what you see will be cropped to fit the size of the cell that it is in. None of the cell data is lost. You just can't see it. Cells A2 and A3 below have text that overlaps the cells to the right. But A3 shows only what will fit because the cell next to it, B3, is not empty. Compare what you see in cell A3 to what is in the Formula bar. The Formula bar shows all the text in the selected cell. You will learn what to do about this awkward situation later.



Cell B3 is not empty, which hides part of the text in A3 as you can see in the Formula bar.

Hidden contents - Cell Height: A cell with text wrapping can be too short to show all of the text. You may not be able to tell by looking!



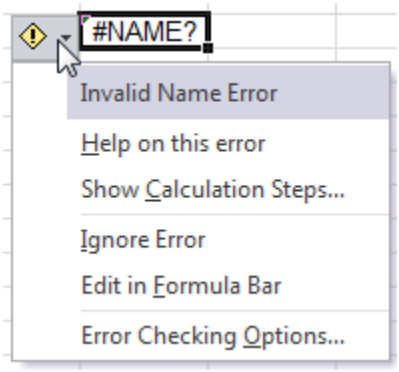
Cell A3 is too short to show all of the text that is wrapping to the cell, as you can see in the Formula bar.

Triangles in Cell Corners

Microsoft Excel uses small triangles in the corner of a cell to indicate formula errors or comments.

- #NAME? **Error** = Green triangle in upper left corner

  Click the cell and the Trace Error icon appears. Click the arrow next to the icon to see a menu of options.



- 282 **Comment** = Red triangle in upper right corner

  Hover over a cell to show an embedded comment.

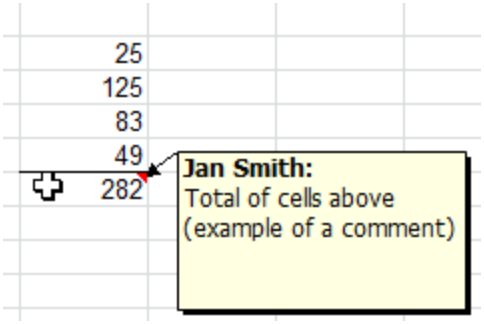
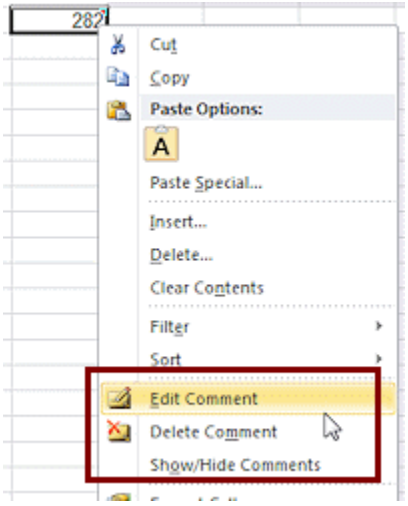
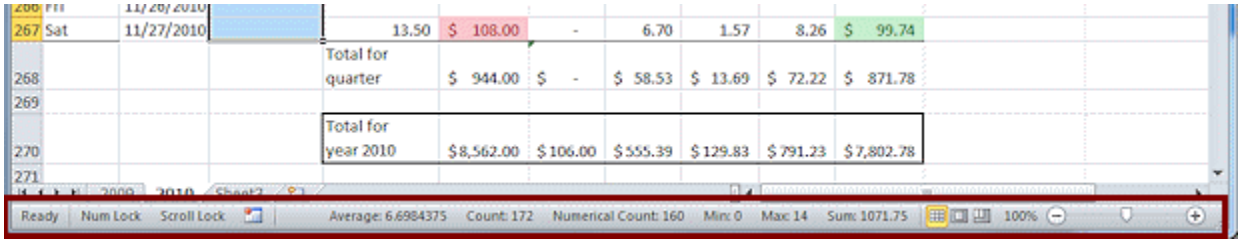


Figure 4.6.1: Copy and Paste Caption here. (Copyright; author via source)

Right click the cell for a menu that includes choices about the comment.



The Status Bar



Status Bar at the bottom of the window (Excel 2010)

The Status Bar hides down at the bottom of the window. It looks quite bare a lot of the time. Its job is to let you know what is going on - what the status is.

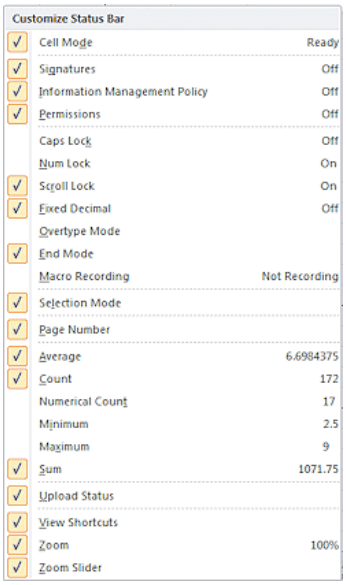
Left section: Indicates what is going on. 'Ready' means that the current cell is ready for you to type new data (replacing existing characters). 'Edit' means that you can edit existing data in the current cell.

Mode indicators show what special features are turned on, like Num Lock, Scroll Lock, and Macro Recording in the illustration above. Some indicators only show in certain views. For example, Page Number only appears in Page Layout View. That is actually logical.

Middle section: Shows calculations using the numbers in the *currently selected* cells. The illustration above shows all of the instant calculations: **Average** (of all values in the selection), **Count** (of selected cells that have data), **Numerical Count** (number of selected cells that contain a number), **Minimum** (of values in the selection), **Maximum** (of values in the selection), **Sum** (of all values in the selection).

The autocalculation values do not show on the Status Bar unless you have selected at least two cells that contain numbers.

Right section: Buttons for Views and Zoom controls



Customize Status Bar: You can pick what features to show on the Status Bar. Just right click the Status Bar to see a list. Click an item to toggle it on or off. The illustration at the right shows the default choices.

4.6.1: Intro- Interface- Ribbon

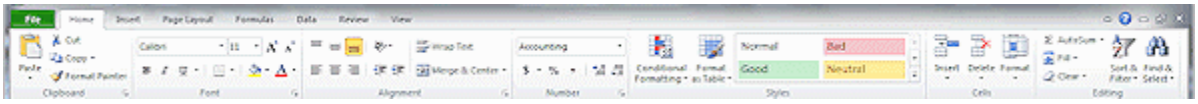
4.6.2: Intro- Interface- Smart Tags/Actions

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4.6.1: Intro- Interface- Ribbon

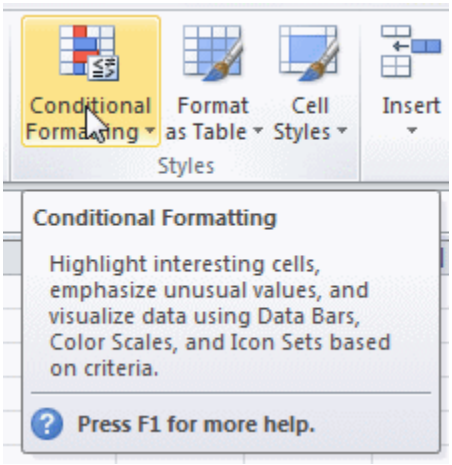
https://www.jegsworks.com/lessons/numbers-2/intro/ribbon.htm

The ribbon is part of what Microsoft calls the Fluent User Interface. They have tried to make the commands that are used most often easier to find by grouping them on several **tabs**. There are many more commands that are not on any tab. Anything that is not already on the ribbon can be added to the Quick Access Toolbar. In Excel 2010, 2013, and 2016, you can also create your own tab or add your own tab group to an existing tab.



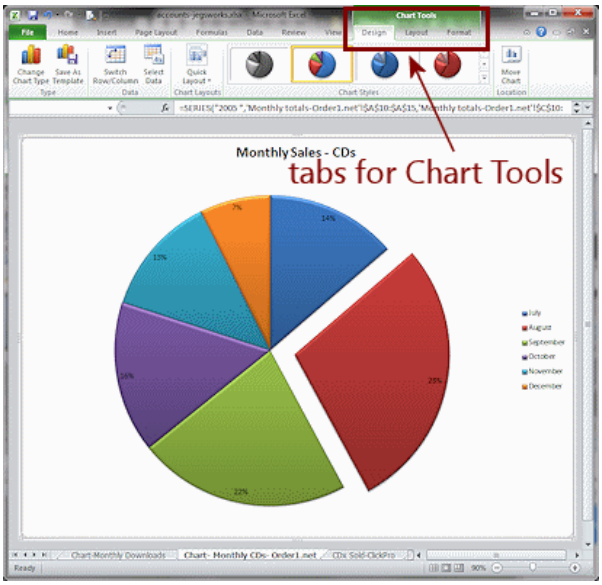
Home ribbon tab (Excel 2010)

Screen Tip:



Happily, when your mouse is over a ribbon control, a screen tip pops up to quickly let you know what the control does. You don't need a chart to figure out what that button is for!

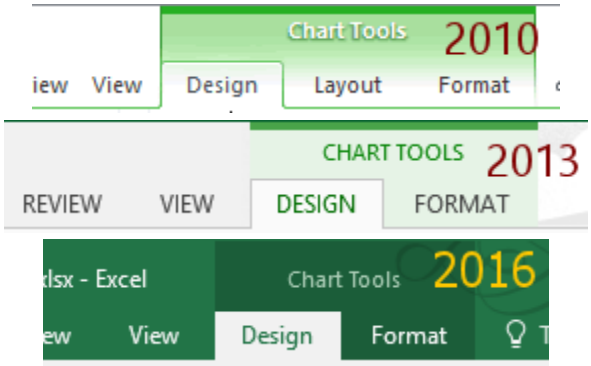
Context-sensitive tabs:
There are more ribbon tabs than those that show when Excel starts. Other tabs appear when they are needed. For example, you will not see the **Chart Tools** group of tabs (Design, Layout and Format) unless a chart is selected. That makes sense!



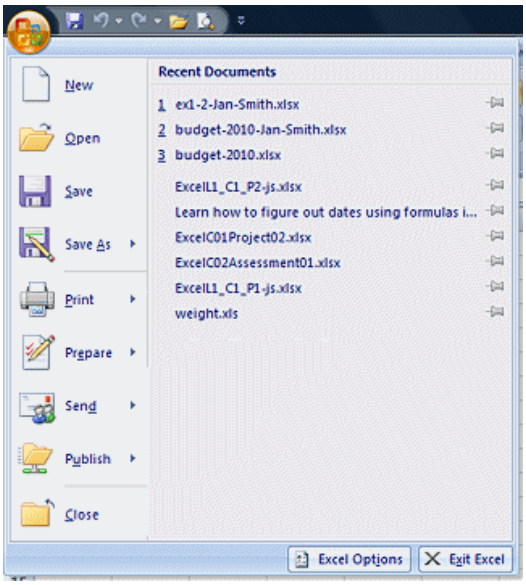
The **active tab** on the ribbon has a border plus a background different from the ribbon's background. In the directions in these lessons, the names of tabs will be formatted like: Home

Inactive tabs don't have a tab shape around the name. The name just sits there on the background of the ribbon.

Context tabs have a taller colored tab surrounding one or more tabs.

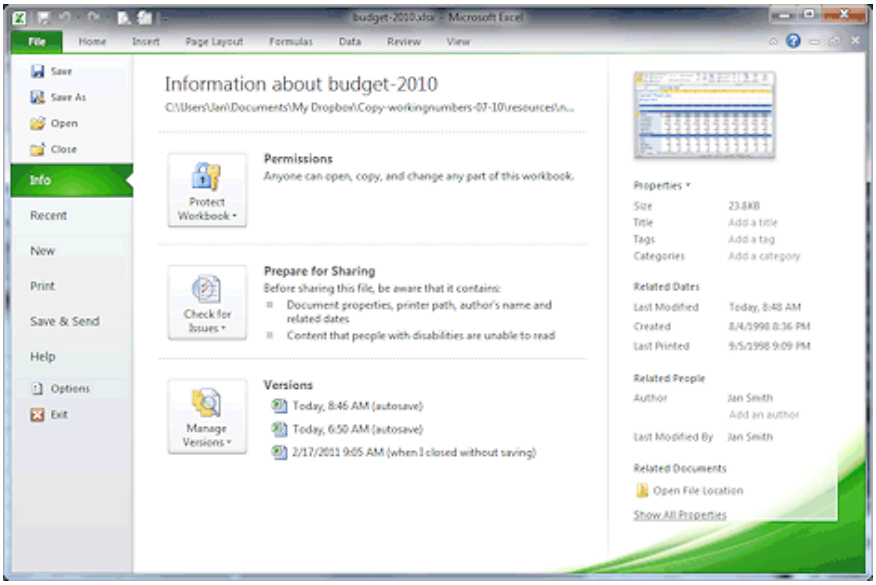


Excel 2007: Office button



At the far left of the ribbon in Excel 2007 is  the Office button. It opens a list of commands, similar to the File menu in previous versions of Excel. The list of Recent Documents can be much longer than in previous versions of Excel. Documents you open regularly can be pinned to the list so that they are quickly available.

 **Excel 2010, 2013, 2016:**



File tab 

At the far left of the ribbon in Excel 2010, 2013, and 2016 is the File tab, which is always colored, even when that tab is not open. A bit confusing.

This tab opens more than a ribbon tab. It opens the **Backstage view**, which is a big pane that hides your document. This pane includes commands that apply to the document as a whole, such as Open, Save, Save As, Print, Recent, Options, and Close.

Ribbon: File > Print (Excel 2010)

The Print pane includes a Print Preview and all of the settings that affect how and what is printed, like which printer, margins,

number of copies, which pages, what size paper. These were scattered in several different places before Office 2010.

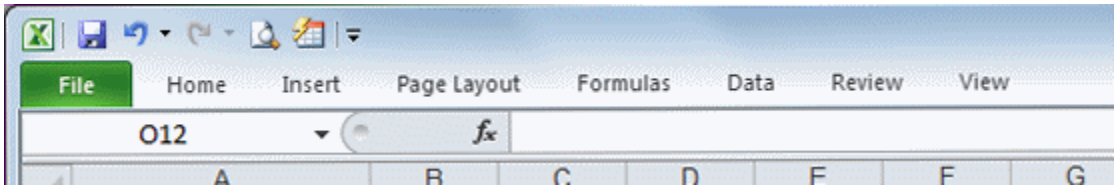
Customizing the Ribbon

You can't *change* much about the ribbon unless you can write programming code. That's no help for most of us!

In particular, for the ribbon that comes with Excel:

- You cannot add commands or groups of commands to the **existing tabs**.
- You cannot rearrange icons or change the image for an icon on the **existing tabs**.
- You cannot move the ribbon from the top of the window.
- You cannot switch back to the old toolbars and menus interface.

You **can minimize** the ribbon to hide it. Right click on a tab and select Minimize ribbon. Only the tab titles will show. To see the ribbon again *temporarily*, click on a tab. Right click a tab again and click on Minimize ribbon again to uncheck that command and keep the ribbon in view.

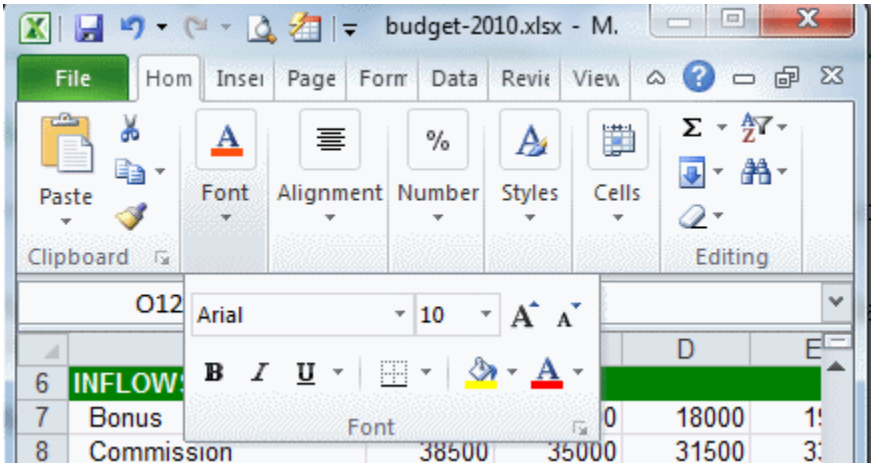


Minimized Ribbon

Excel 2010, 2013, 2016: Features for the ribbon that are not in Excel 2007

- **Custom tab or group:** You can add a custom tab to the ribbon or a custom group to one of the default tabs. You still cannot change anything about the existing tabs and their groups. You can only add your own.
- **Import/export ribbon:** You can transport your custom tab or group to a different computer that has Excel 2010, 2013, or 2016 installed.

Ribbon vs. Window Width



If the window is too narrow to show all of the ribbon items, tab groups on the ribbon will collapse. Some of the large buttons may go to a small size.

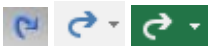
This illustration shows all of the groups on the Home tab that has collapsed in a very narrow window. Clicking the arrow at the bottom of the group opens a palette that shows what was hidden.

The Font group is opened in the illustration.

I don't think you really want to work with a window this narrow anyway!

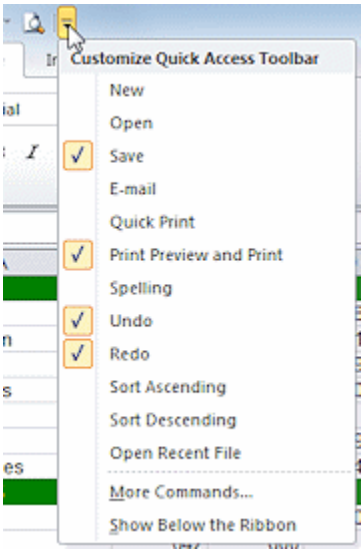
Just don't be surprised when you don't see what you are looking for on the ribbon in a window that is too narrow to show everything. You've been warned!

Quick Access Toolbar

Excel has a **Quick Access Toolbar** at the top left of the window. By default it holds just three icons:  Save,  Undo, and  Redo.

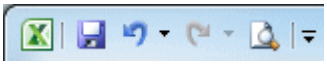
Excel remembers the last 100 actions! So the Undo button can back you up when you get carried away. If you back up too far, the Redo button will walk forward through the actions again.

Some actions can be repeated. By default Excel does not show the Repeat button in the Quick Access Toolbar. Other Office programs change the Redo button to the Repeat button  when an action can be repeated. You can add the Repeat button to the Quick Access Toolbar. But in many situations in Excel, actions can be repeated but the Repeat button does not show up. The key combo CTRL + Y may work in those situations.



The **More** arrow at the right end  of the Quick Access Toolbar opens a drop list of commands that you might want to add to the Quick Access Toolbar. A check mark in the list shows that the item is already on the bar. Just click on a command to add it.

You can add icons for other commands, using More Commands... at the bottom of the list. Choose buttons for things that you do often, but which are not on the tab that is usually open when you need that command. This dialog is also where you can change the order of the icons on the Quick Access toolbar.

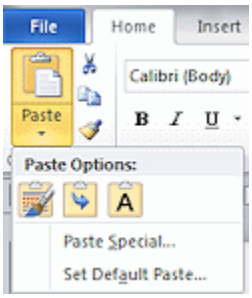
Example: **What I added to the Quick Access bar and Why** 

I added a button for Print Preview  . In Excel 2007 this replaces 3 actions: Office button > Print > Print Preview. In Excel 2010, 2013, and 2016, this replaces 2 actions: File > Print. You might find other commands useful to have on the Quick Access Toolbar, also.

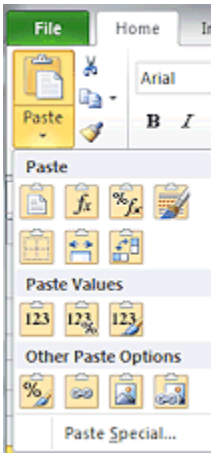
You will be adding a few buttons to the Quick Access Toolbar as you go through the lessons. Feel free to add any other items that you find helpful.

Similar Buttons - Different Actions

Many of the buttons on Excel's ribbon are quite similar to what you see in other Office programs, like Word. Just because the buttons *look* alike does not mean they *work* the same in different programs!



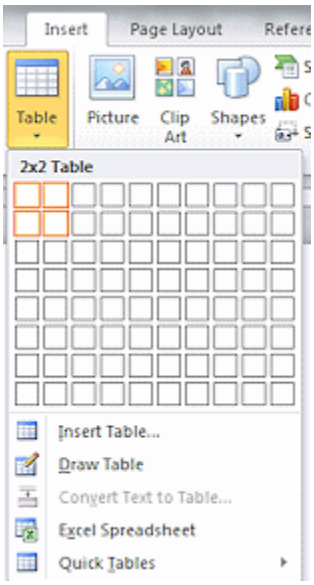
Example: Paste button



In Word the Paste button on the Home tab normally has only 3 options, as the first illustration at the right shows.

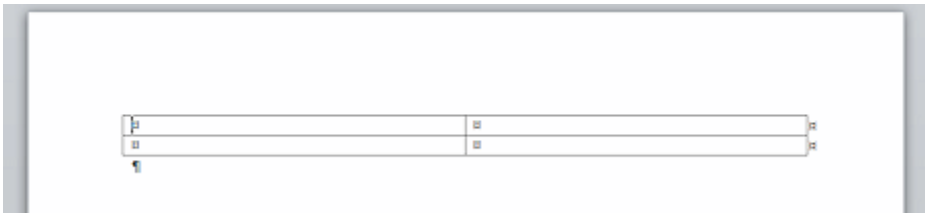
In Excel the Paste button can have *many* more options. The illustration at the right shows 14 options! The number of options depends on what you copied and where you are pasting.

Example: **Table button**

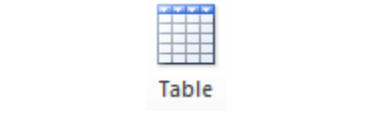


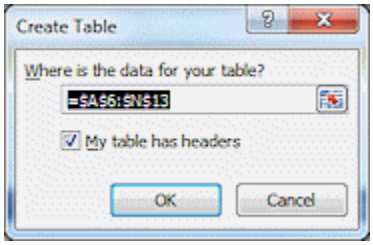
There is a Table button on the Insert tab in both Word and Excel.

In **Word** the Table button opens a palette for you to drag on to pick how many rows and columns you want. Then Word creates a *blank* table.



In **Excel**, the whole sheet is already in rows and columns. A 'table' means something very specific inside Excel.





INFLOWS	Column1	Column2	Column3
Bonus	20000	20000	20000
Commission	35000	35000	35000
Consulting	10000	10000	10000
Gross Sales	600000	600000	600000
Interest Inc	500	500	500
Other Inc	10000	10000	10000
Prof. Services	5000	5000	5000

The Table button opens a dialog where you select the data that goes in your 'table'. Excel then adds headers that can be used to

sort the table. This is a very different kind of 'table' than you get in Word.

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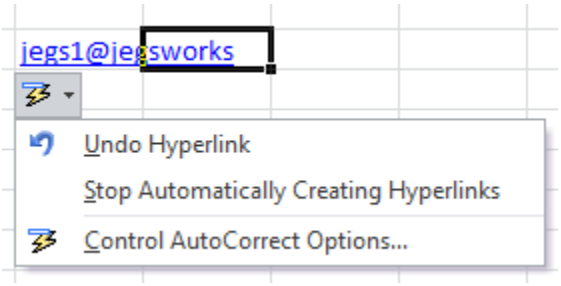
4.6.2: Intro- Interface- Smart Tags/Actions

https://www.jegsworks.com/lessons/numbers-2/intro/smarttags.htm

Other 'Smart' Buttons in Excel

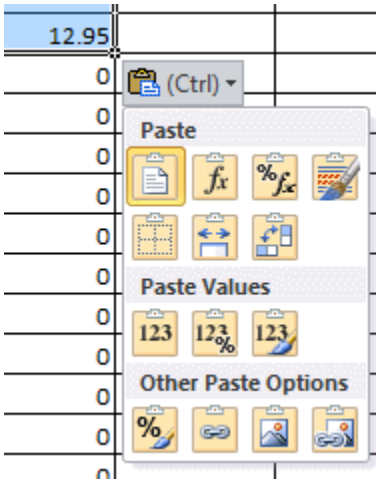
Excel has some similar buttons of its own which have options menu. The exact options may vary depending on exactly what you just did.

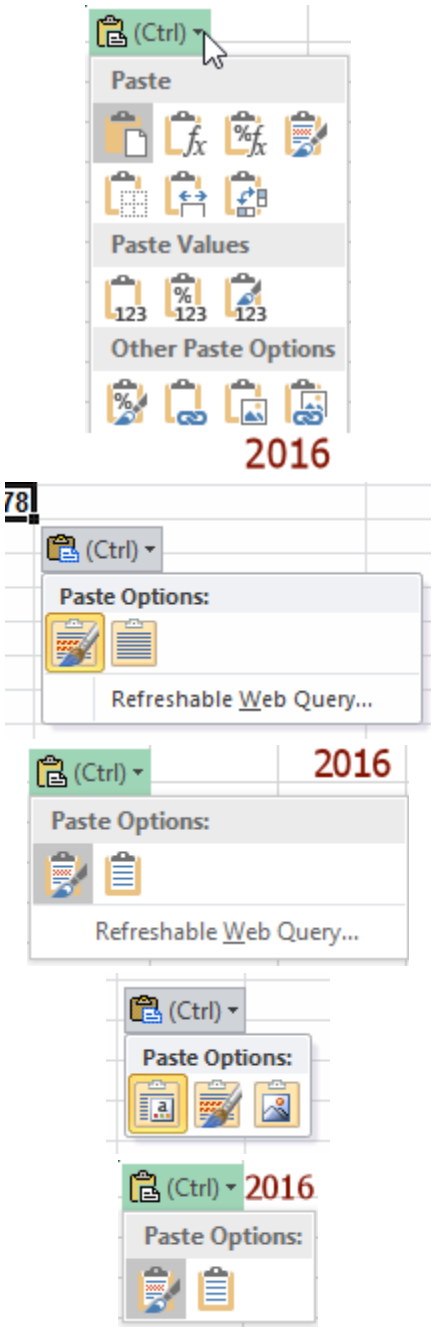
- **AutoCorrect Options**
  When Excel applies an AutoCorrection, the AutoCorrect Options button appears. Its menu offers to undo the autocorrection. You can even make Excel stop doing this type of autocorrection.



- **Paste Options**
  The choices that appear for pasting depend on what you have copied and whether it was already inside your spreadsheet or not. Office 2007 and 2010 use icons to illustrate the choices. Hovering over an icon makes a screen tip appear about the icon.

  The examples below are for pasting from inside Excel, from a web page, and a picture from a Word document.





Copy and paste: from inside Excel, from a web page, a picture from a Word document

- Paste
- Paste the formula
- Paste the formula and number formatting
- Keep source formatting
- Match destination formatting
- No borders

- Keep source column widths
- Transpose - rows and columns

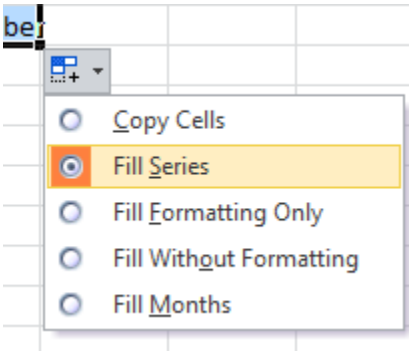
- Values only
- Values and number formatting
- Values and source formatting

- Paste formatting only
- Paste as a link
- Paste as a picture
- Paste as a linked picture

- **Auto Fill Options**

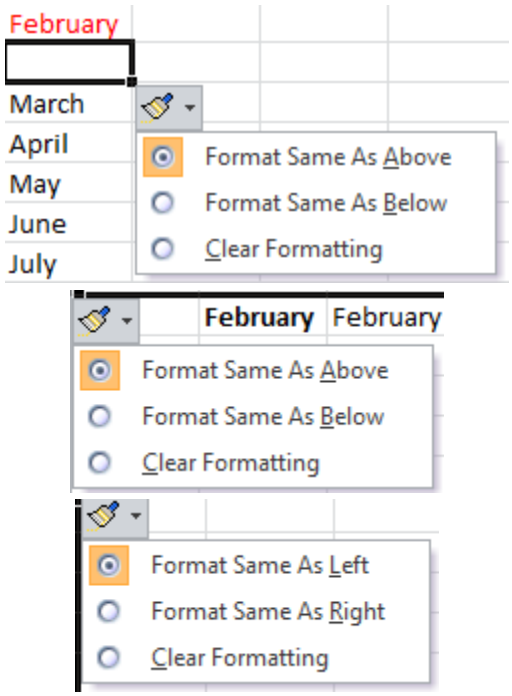
  When you drag the Fill handle (the small blank square in the bottom right corner of the selected cells), Excel looks to see if there is a pattern to the values you selected. If it sees one, it will can extend the **series** into the new cells.

  The AutoFill Options menu gives you the choice of filling the series (which also includes the formatting) or just the formatting or filling the series without the formatting. The example at the right also includes Fill Months because Excel thinks that the text is months of the year.



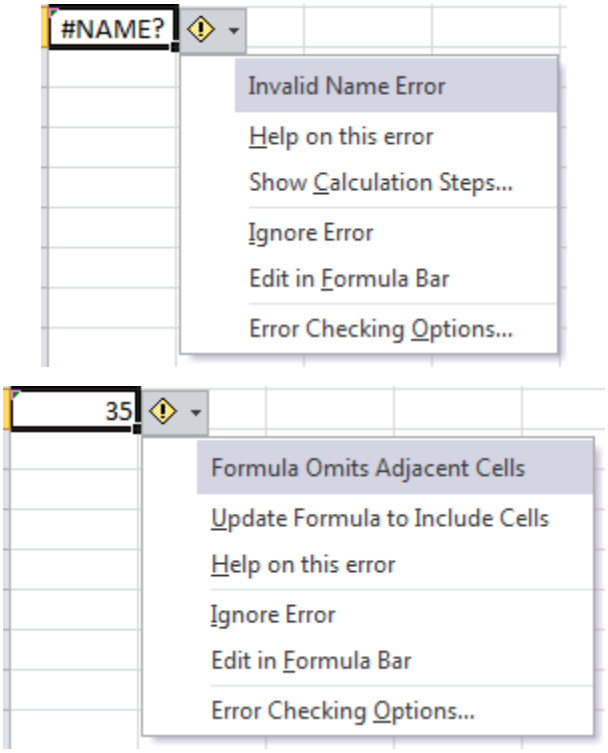
- **Insert Options**

  When you insert a cell or a row or a column, how do you want the inserted part formatted? Menu items vary depending on what you are inserting.



The illustrations are for a cell, a row, and a column.

- **Trace Error Options**
  A green triangle in upper left of cell means that Excel thinks your formula has an error. Click in the cell and then on the Trace Error icon. The menu should give you a hint about what the problem is.



Error	Description	Example

#NAME?	Typing error Typing a range name that does not exist Leaving off the quotation marks around a text string in a formula	=SUMN instead of =SUM = Total is&B44 instead of ="Total is "&B44
#DIV/0!	Tried to divide by zero. Either the cell's value was zero, it was blank, or it contained text instead of a number. Numbers that are *formatted* as text can cause this, too.	
#VALUE!	Tried to do something to data of the wrong type, like trying to add values when at least one is text instead of a number.	= 4 + "total" ="Total = "& 6
#REF!	Formula refers to a cell that you deleted or pasted over.	
#NUM!	Problem with a number in the formula. An argument is invalid. A calculated value is too large or too small to display.	=DATE(-72, 3, 15) which has as the year 72 BC. The DATE function cannot handle a negative number for the year. a value less than $-1*10^{307}$ or greater than $1*10^{307}$
#NULL!	The formula includes multiple ranges with a space in between instead of a comma, but the ranges do not overlap. When the ranges do overlap, the formula uses only the values from the *intersection* of the ranges.	=SUM(B7:B13 C7:D8)
Formula Omits Adjacent Cells	This one may not actually be an error! It depends on what your formula is supposed to do. The warning helps when your dragging missed a cell or two.	

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4.7: Creating a New Workbook

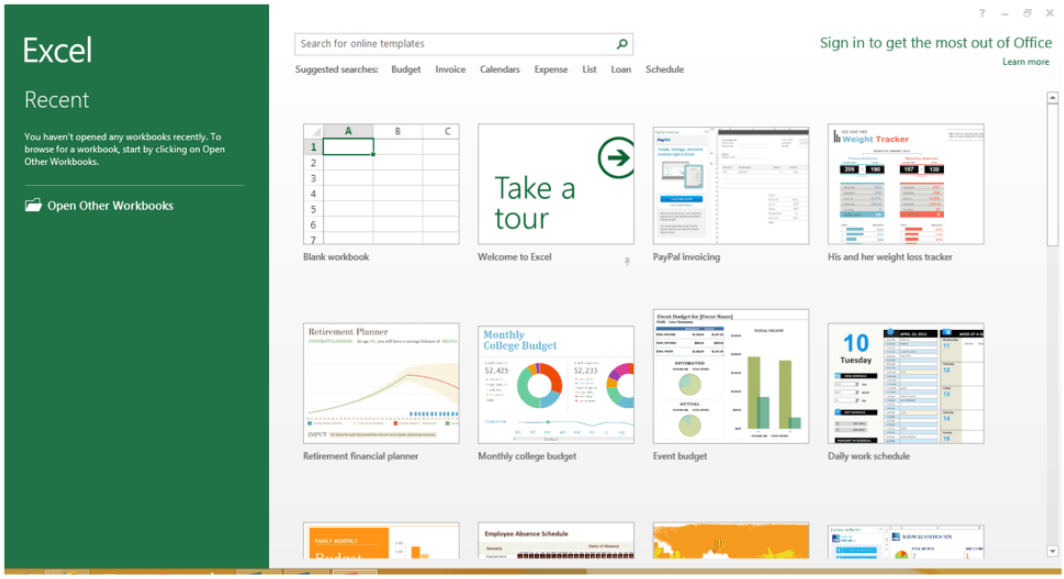
Learning Outcomes

- Create a new Excel workbook.

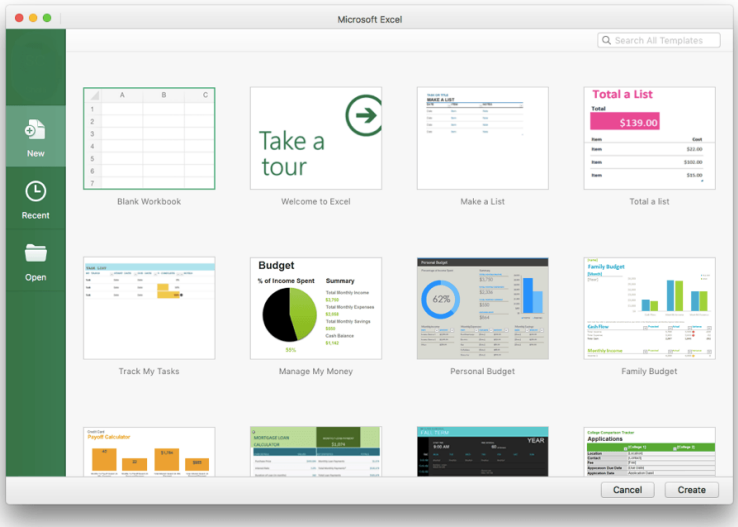
You can open Excel from the Start menu (or the Applications folder on a Mac) by clicking on the Excel icon. The Excel icon comes in a variety of forms depending on your OS and version of Excel, but it always features the color green and the letter X.



When you open Excel, some versions of Excel may take you straight to a new blank workbook. Newer versions such as Excel 2019 will take you to a menu called **backstage view** to choose to open a new blank workbook or open a new workbook from a template. If you already have a file open in Excel, you can create a new document by clicking File>New. You can also use the shortcut Ctrl+N (Cmnd+N for Mac).



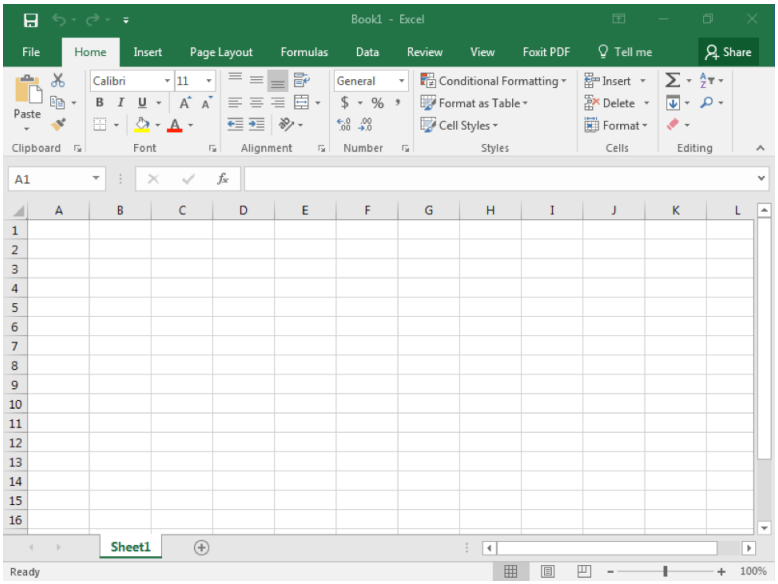
Note that the backstage view on a Mac computer is a little different.



Practice question

https://assessments.lumenlearning.co...essments/18618

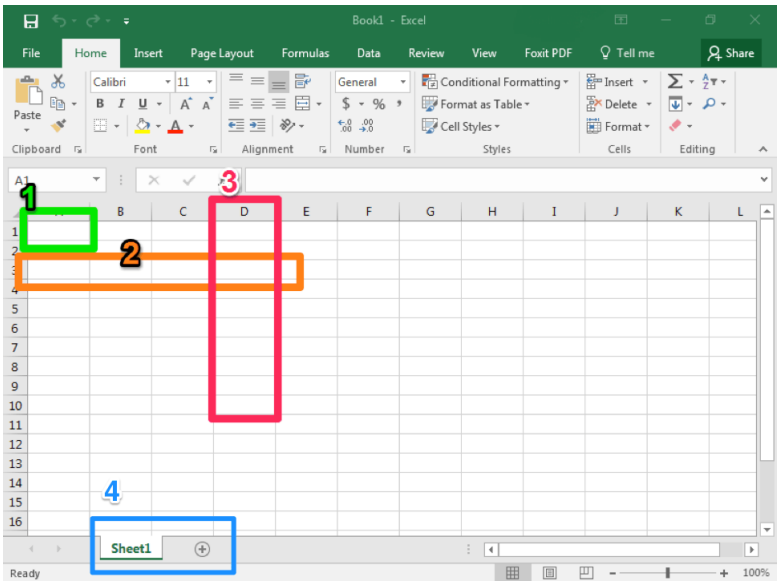
To open a blank workbook, double-click the blank workbook option.



Before using a workbook, it is helpful to know a few key terms.

Practice Question

https://assessments.lumenlearning.co...essments/18619



1. **Cell.** This is the area where you will enter data.
2. **Row.** Rows are cells aligned horizontally.
3. **Column.** Columns are cells aligned vertically.
4. **Worksheet.** A worksheet is a single page within a workbook. Like the tabs in an internet browser, the tabs in an Excel workbook show different pages, or worksheets. A workbook may have many worksheets included in it. In this screenshot, the workbook only has one worksheet and one tab, which is labeled Sheet1. The selected tab shows the selected worksheet. Clicking the + button will add another worksheet. When you save a workbook in Excel, all of the worksheets in that workbook are saved.

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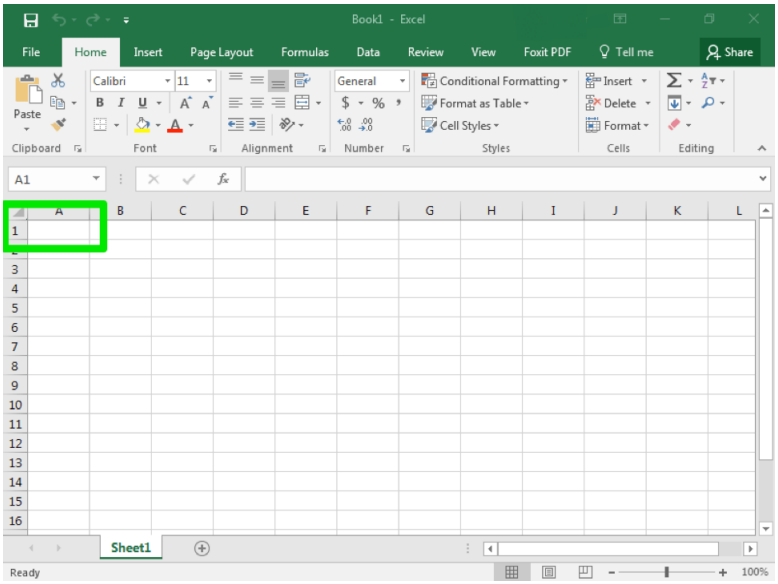
4.8: Entering Data

Learning Outcomes

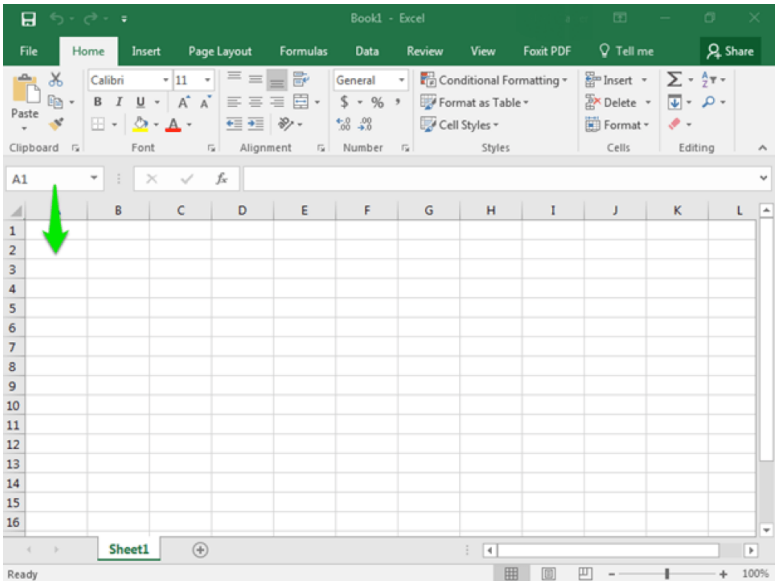
- Add data to a table.

Excel workbooks are used to organize data very clearly. Numerical data can be used in a variety of ways, some of which we will examine in later modules. The first step, however, is simply to enter data into a table.

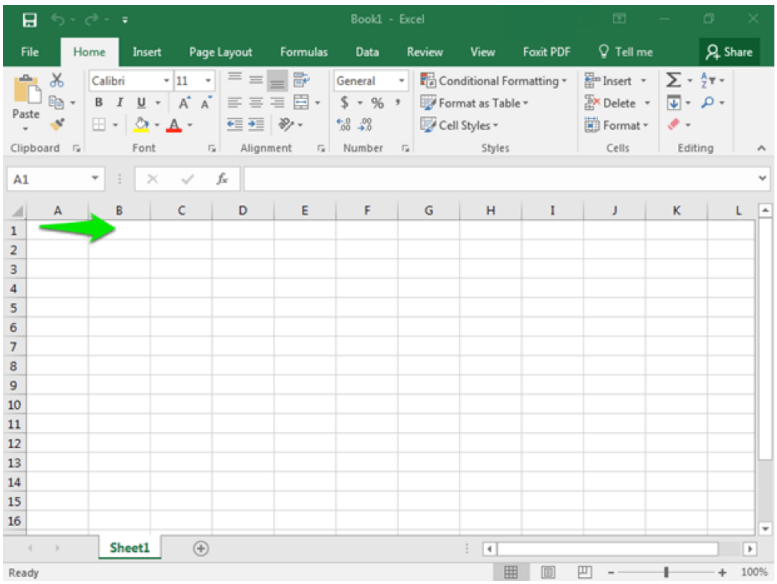
First, open a blank workbook. Next, click on the first cell for your data: this will almost always be A1.



If you wish to organize your data in a column, you will hit ENTER to move to the next cell down. In this case, A2.



If you wish to organize your data in a row, you will hit the Tab key to move to the next cell over. In this case, the next cell over is B1.



Enter all of your data into each individual cell until you are ready to save your workbook.

Practice Question

https://assessments.lumenlearning.co...essments/18620

https://assessments.lumenlearning.co...essments/18621

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4.9: Entering, Editing, and Managing Data

Learning Objectives

- Understand how to enter data into a worksheet.
- Examine how to edit data in a worksheet.
- Examine how Auto Fill is used when entering data.
- Understand how to delete data from a worksheet and use the Undo command.
- Examine how to adjust column widths and row heights in a worksheet.
- Understand how to hide columns and rows in a worksheet.
- Examine how to insert columns and rows into a worksheet.
- Understand how to delete columns and rows from a worksheet.
- Learn how to move data to different locations in a worksheet.

In this section, we will begin the development of the workbook shown in **Figure 1.1**. The skills covered in this section are typically used in the early stages of developing one or more worksheets in a workbook.

Entering Data

You will begin building the workbook shown in **Figure 1.1** by manually entering data into the worksheet. The following steps explain how the column headings in Row 2 are typed into the worksheet:

1. Click cell location A2 on the worksheet.
2. Type the word **Month**.
3. Press the RIGHT ARROW key. This will enter the word into cell A2 and activate the next cell to the right.
4. Type **Unit Sales** and press the RIGHT ARROW key.
5. Repeat step 4 for the words **Average Price** and then again for **Sales Dollars**.

Figure 1.15 shows how your worksheet should appear after you have typed the column headings into Row 2. Notice that the word **Price** in cell location C2 is not visible. This is because the column is too narrow to fit the entry you typed. We will examine formatting techniques to correct this problem in the next section.

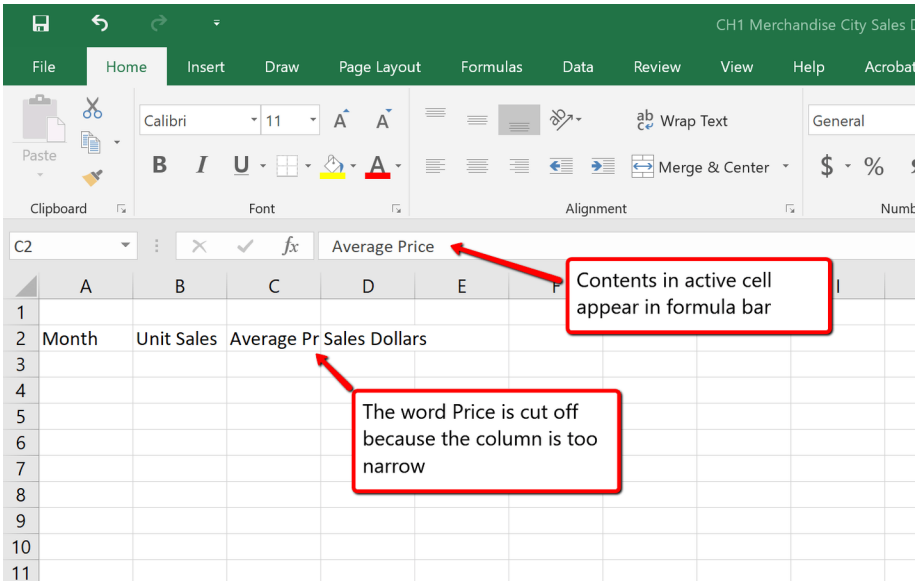


Figure 1.15 Entering Column Headings into a Worksheet

Integrity Check

Column Headings

It is critical to include column headings that accurately describe the data in each column of a worksheet. In professional environments, you will likely be sharing Excel workbooks with coworkers. Good column headings reduce the chance of someone misinterpreting the data contained in a worksheet, which could lead to costly errors depending on your career.

1. Click cell B3.
2. Type the number **2670** and press the ENTER key. After you press the ENTER key, cell B4 will be activated. Using the ENTER key is an efficient way to enter data vertically down a column.
3. Enter the following numbers in cells B4 through B14: **2160**, **515, 590, 1030, 2875, 2700, 900, 775, 1180, 1800**, and **4560**.
4. Click cell C3.
5. Type the number **9.99** and press the ENTER key.
6. Enter the following numbers in cells C4 through C14: **12.49, 14.99, 17.49, 14.99, 12.49, 9.99, 19.99, 19.99, 19.99, 17.49**, and **14.99**.
7. Click cell D3.
8. Type the number 26685 and press the ENTER key.
9. Enter the following numbers in cells D4 through D14: **26937, 7701, 10269, 15405, 35916, 26937, 17958, 15708, 23562, 31416**, and **75125**.
10. When finished, check that the data you entered matches **Figure 1.16**.

Why?

Avoid Formatting Symbols When Entering Numbers

When typing numbers into an Excel worksheet, it is best to avoid adding any formatting symbols such as dollar signs and commas. Although Excel allows you to add these symbols while typing numbers, it slows down the process of entering data. It is more efficient to use Excel's formatting features to add these symbols to numbers after you type them into a worksheet.

Integrity Check

Data Entry

It is very important to proofread your worksheet carefully, especially when you have entered numbers. Transposing numbers when entering data manually into a worksheet is a common error. For example, the number **563** could be transposed to **536.** Such errors can seriously compromise the integrity of your workbook.

Figure 1.16 shows how your worksheet should appear after entering the data. Check your numbers carefully to make sure they are accurately entered into the worksheet.

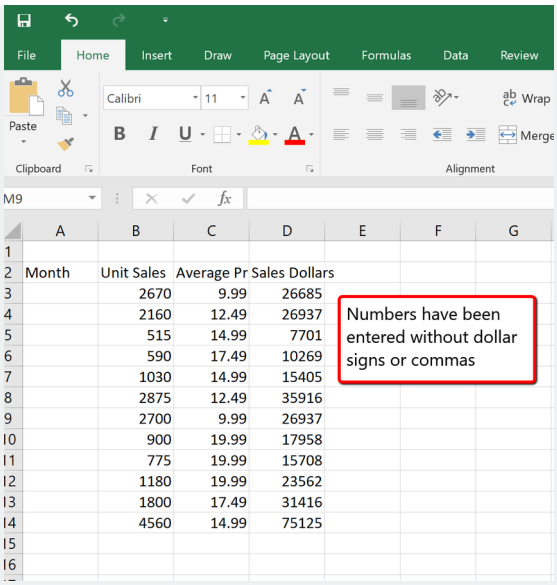


Figure 1.16 Completed Data Entry for Columns B, C, and D

Editing Data

Data that has been entered in a cell can be changed by double clicking the cell location or using the Formula Bar. You may have noticed that as you were typing data into a cell location, the data you typed appeared in the Formula Bar. The Formula Bar can be used for entering data into cells as well as for editing data that already exists in a cell. The following steps provide an example of entering and then editing data that has been entered into a cell location:

1. Click cell A15 in the Sheet1 worksheet.
2. Type the abbreviation **Tot** and press the ENTER key.
3. Click cell A15.
4. Move the mouse pointer up to the Formula Bar. You will see the pointer turn into a cursor. Move the cursor to the end of the abbreviation **Tot** and left click.
5. Type the letters **al** to complete the word Total.
6. Click the check mark to the left of the Formula Bar (see **Figure 1.17**). This will enter the change into the cell.

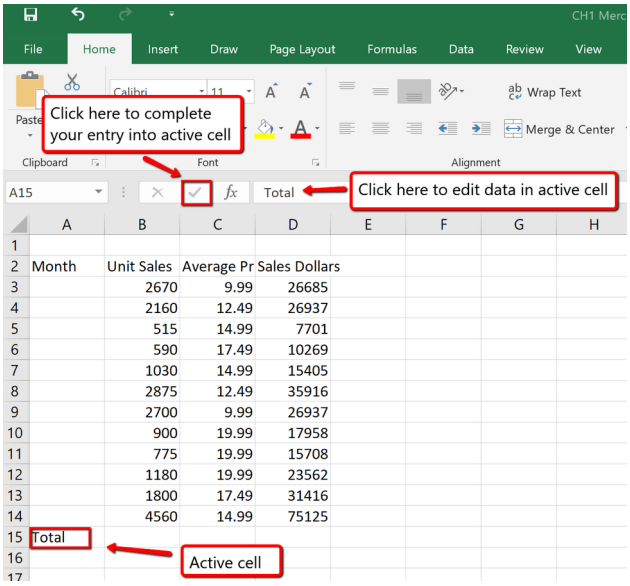


Figure 1.17 Using the Formula Bar to Edit and Enter Data

1. Double click cell A15.
2. Add a space after the word Total and type the word **Sales**.
3. Press the ENTER key.

Keyboard Shortcuts

Editing Data in a Cell

- Activate the cell that is to be edited and press the F2 key on your keyboard.
  - Same for Mac Users

Auto Fill

The Auto Fill feature is a valuable tool when manually entering data into a worksheet. This feature has many uses, but it is most beneficial when you are entering data in a defined sequence, such as the numbers 2, 4, 6, 8, and so on, or nonnumeric data such as the days of the week or months of the year. The following steps demonstrate how Auto Fill can be used to enter the months of the year in Column A:

1. Click cell A3 in the Sheet1 worksheet.
2. Type the word **January** and press the ENTER key.
3. Click cell A3 again.
4. Move the mouse pointer to the lower right corner of cell A3. You will see a small square in this corner of the cell; this is called the Fill Handle (See **Figure 1.18**) When the mouse pointer gets close to the Fill Handle, the white block plus sign will turn into a black plus (+) sign.

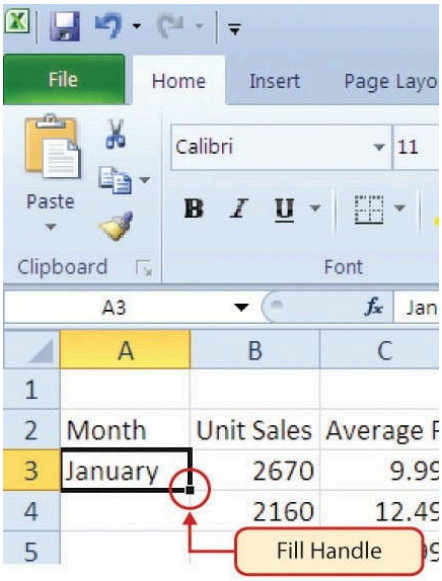


Figure 1.18 Fill Handle

Left click and drag the Fill Handle to cell A14. Notice that the Auto Fill tip box indicates what month will be placed into each cell (see **Figure 1.19**). Release the mouse button when the tip box reads “December.”

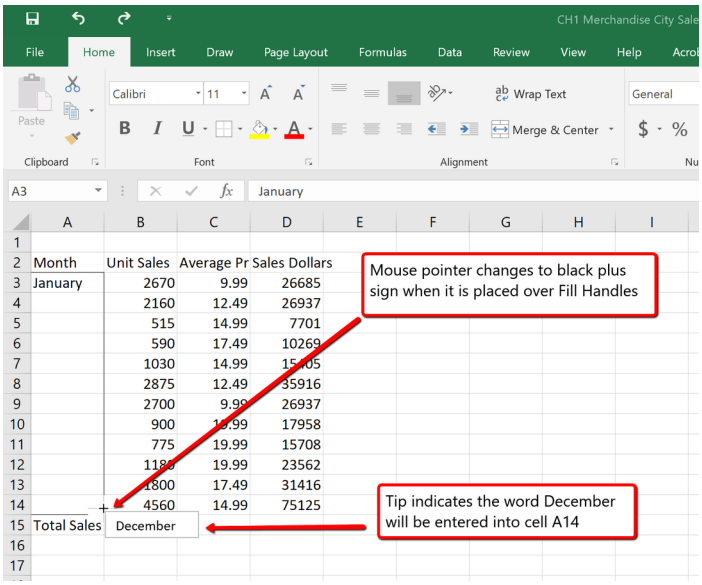


Figure 1.19 Using Auto Fill to Enter the Months of the Year

Once you release the left mouse button, all twelve months of the year should appear in the cell range A3:A14, as shown in **Figure 1.20**. You will also see the Auto Fill Options button. By clicking this button, you have several options for inserting data into a group of cells.

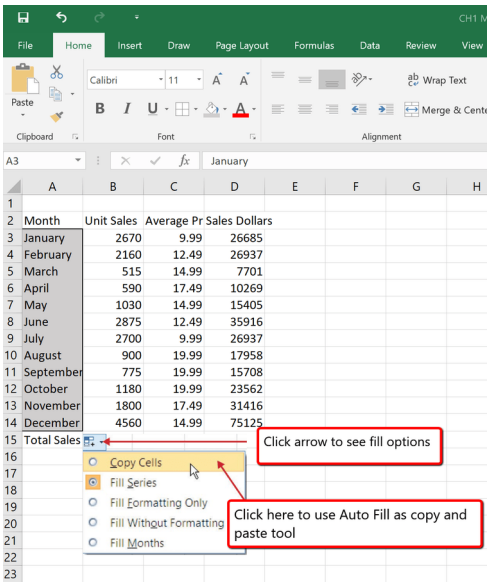


Figure 1.20 Auto Fill Options Button

1. Click the Auto Fill Options button.
2. Click the Copy Cells option. This will change the months in the range A4:A14 to January.
3. Click the Auto Fill Options button again.
4. Click the Fill Months option to return the months of the year to the cell range A4:A14. The Fill Series option will provide the same result.

Deleting Data and the Undo Command

There are several methods for removing data from a worksheet, a few of which are demonstrated here. With each method, you use the Undo command. This is a helpful command in the event you mistakenly remove data from your worksheet. The following steps demonstrate how you can delete data from a cell or range of cells:

1. Click cell C2.
2. Press the **DELETE** key on your keyboard. This removes the contents of the cell.

   Mac Users: Hold down the Fn key and press the Delete key
3. Highlight the range C3:C14. Then left click and drag the mouse pointer down to cell C14.
4. Place the mouse pointer over the Fill Handle. You will see the white block plus sign change to a black plus sign (+).
5. Click and drag the mouse pointer up to cell C3 (see **Figure 1.21**). Release the mouse button. The contents in the range C3:C14 will be removed.

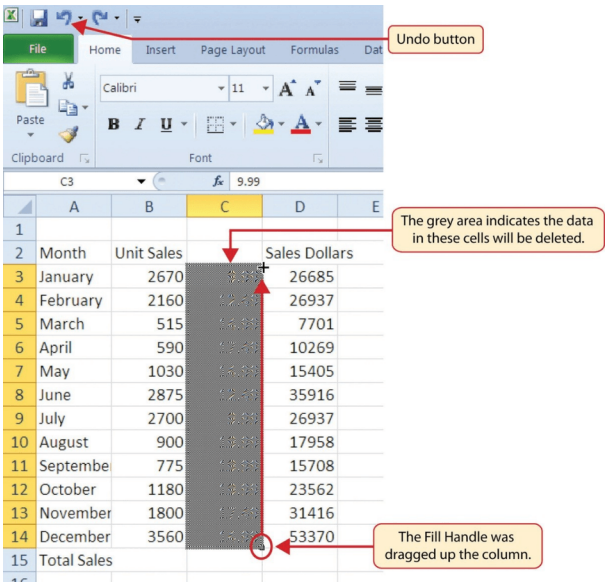


Figure 1.21 Using Auto Fill to Delete Contents of Cell

1. Click the Undo button in the Quick Access Toolbar (see **Figure 1.2**). This should replace the data in the range C3:C14.
2. Click the Undo button again. This should replace the data in cell C2.

Keyboard Shortcuts

Undo Command

- Hold down the CTRL key while pressing the letter Z on your keyboard.
  - Same for Mac Users.
- Highlight the range C2:C14 by placing the mouse pointer over cell C2. Then left click and drag the mouse pointer down to cell C14.
- Click the Clear button in the Home tab of the Ribbon, which is next to the Cells group of commands (see **Figure 1.22**). This opens a drop-down menu that contains several options for removing or clearing data from a cell. Notice that you also have options for clearing just the formats in a cell or the hyperlinks in a cell.
- Click the Clear All option. This removes the data in the cell range.
- Click the Undo button. This replaces the data in the range C2:C14.

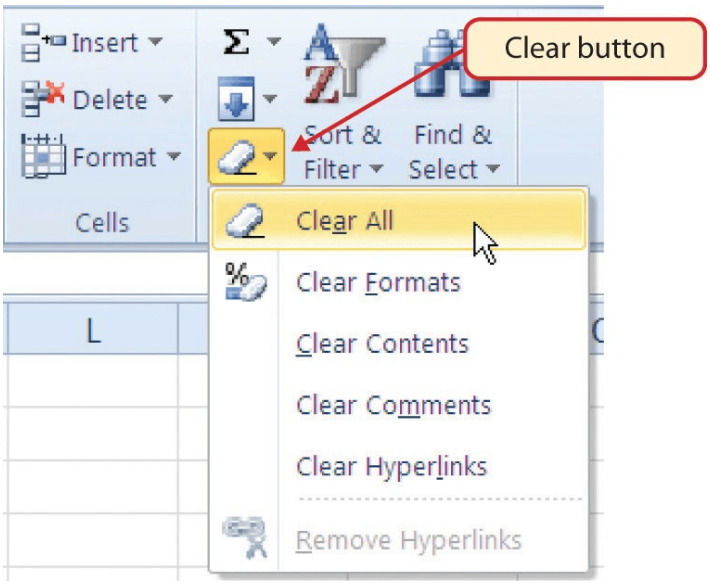


Figure 1.22 Clear Command Drop-Down Menu

Adjusting Columns and Rows

There are a few entries in the worksheet that appear cut off. For example, the last letter of the word September cannot be seen in cell A11. This is because the column is too narrow for this word. The columns and rows on an Excel worksheet can be adjusted to accommodate the data that is being entered into a cell using three different methods. The following steps explain how to adjust the column widths and row heights in a worksheet:

1. Bring the mouse pointer between Column A and Column B in the Sheet1 worksheet, as shown in **Figure 1.23**. You will see the white block plus sign turn into double arrows.
2. Click and drag the column to the right so the entire word September in cell A11 can be seen. As you drag the column, you will see the column width tip box. This box displays the number of characters that will fit into the column using the Calibri 11-point font which is the default setting for font/size.
3. Release the left mouse button.

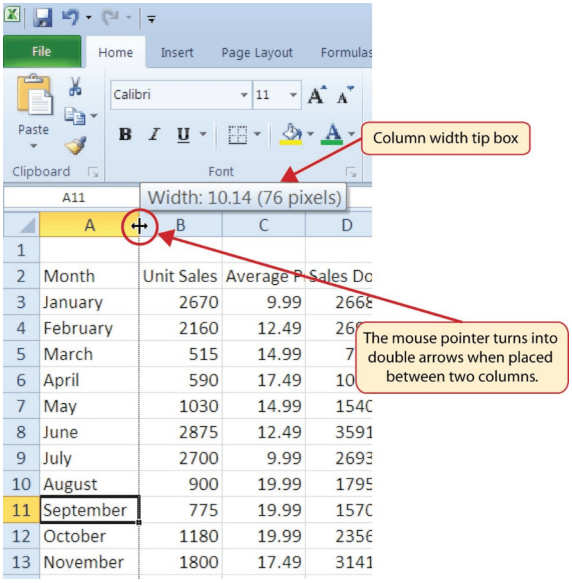


Figure 1.23 Adjusting Column Widths

You may find that using the click-and-drag method is inefficient if you need to set a specific character width for one or more columns. Steps 1 through 6 illustrate a second method for adjusting column widths when using a specific number of characters:

1. Click any cell location in Column A by moving the mouse pointer over a cell location and clicking the left mouse button. You can highlight cell locations in multiple columns if you are setting the same character width for more than one column.
2. In the Home tab of the Ribbon, left click the Format button in the Cells group.
3. Click the Column Width option from the drop-down menu. This will open the Column Width dialog box.
4. Type the number **13** and click the OK button on the Column Width dialog box. This will set Column A to this character width (see **Figure 1.24**).
5. Once again bring the mouse pointer between Column A and Column B so that the double arrow pointer displays and then double-click to activate AutoFit. This features adjusts the column width based on the longest entry in the column.
6. Use the Column Width dialog box (step 6 above) to reset the width to 13.

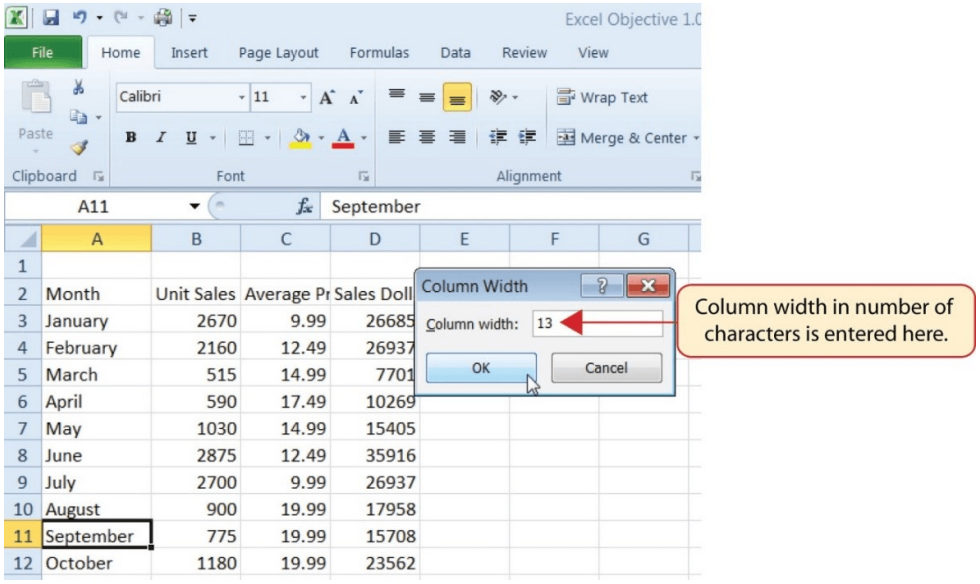


Figure 1.24 Column Width Dialog Box

Keyboard Shortcuts

Column Width

- Press the ALT key on your keyboard, then press the letters H, O, and W one at a time.
- This keyboard shortcut is not available for Excel for Mac

Steps 1 through 4 demonstrate how to adjust row height, which is similar to adjusting column width:

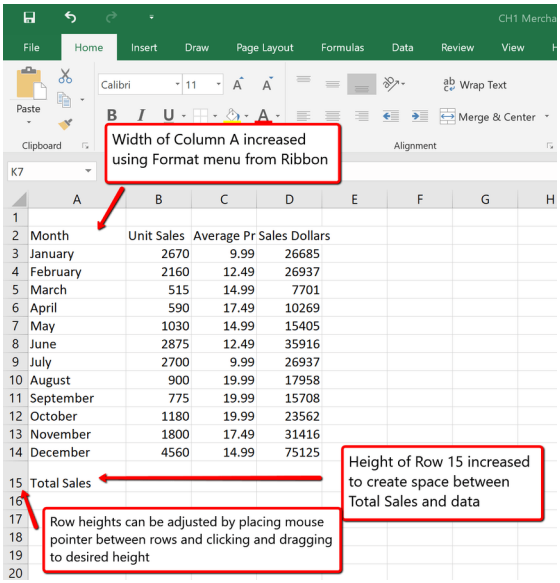
1. Click cell A15.
2. In the Home tab of the Ribbon, left click the Format button in the Cells group.
3. Click the Row Height option from the drop-down menu. This will open the Row Height dialog box.
4. Type the number **24** and click the OK button on the Row Height dialog box. This will set Row 15 to a height of 24 points. A point is equivalent to approximately 1/72 of an inch. This adjustment in row height was made to create space between the totals for this worksheet and the rest of the data.

Keyboard Shortcuts

Row Height

- Press the ALT key on your keyboard, then press the letters H, O, and H one at a time.
- This keyboard shortcut is not available for Excel for Mac

Figure 1.25 shows the appearance of the worksheet after Column A and Row 15 are adjusted.



	A	B	C	D
2	Month	Unit Sales	Average Pr	Sales Dollars
3	January	2670	9.99	26685
4	February	2160	12.49	26937
5	March	515	14.99	7701
6	April	590	17.49	10269
7	May	1030	14.99	15405
8	June	2875	12.49	35916
9	July	2700	9.99	26937
10	August	900	19.99	17958
11	September	775	19.99	15708
12	October	1180	19.99	23562
13	November	1800	17.49	31416
14	December	4560	14.99	75125
15	Total Sales			

Figure 1.25 Sales Data with Column A and Row 15 Adjusted

Skill Refresher

Adjusting Columns and Rows

1. Activate at least one cell in the row or column you are adjusting.
2. Click the Home tab of the Ribbon.
3. Click the Format button in the Cells group.
4. Click either Row Height or Column Width from the drop-down menu.
5. Enter the Row Height in points or Column Width in characters in the dialog box.
6. Click the OK button.

Hiding Columns and Rows

In addition to adjusting the columns and rows on a worksheet, you can also hide columns and rows. This is a useful technique for enhancing the visual appearance of a worksheet that contains data that is not necessary to display. These features will be demonstrated using the GMW Sales Data workbook. However, there is no need to have hidden columns or rows for this worksheet. The use of these skills here will be for demonstration purposes only.

1. Click cell C1.
2. Click the Format button in the Home tab of the Ribbon.
3. Place the mouse pointer over the Hide & Unhide option in the drop-down menu. This will open a submenu of options.
4. Click the Hide Columns option in the submenu of options (see **Figure 1.26**). This will hide Column C.

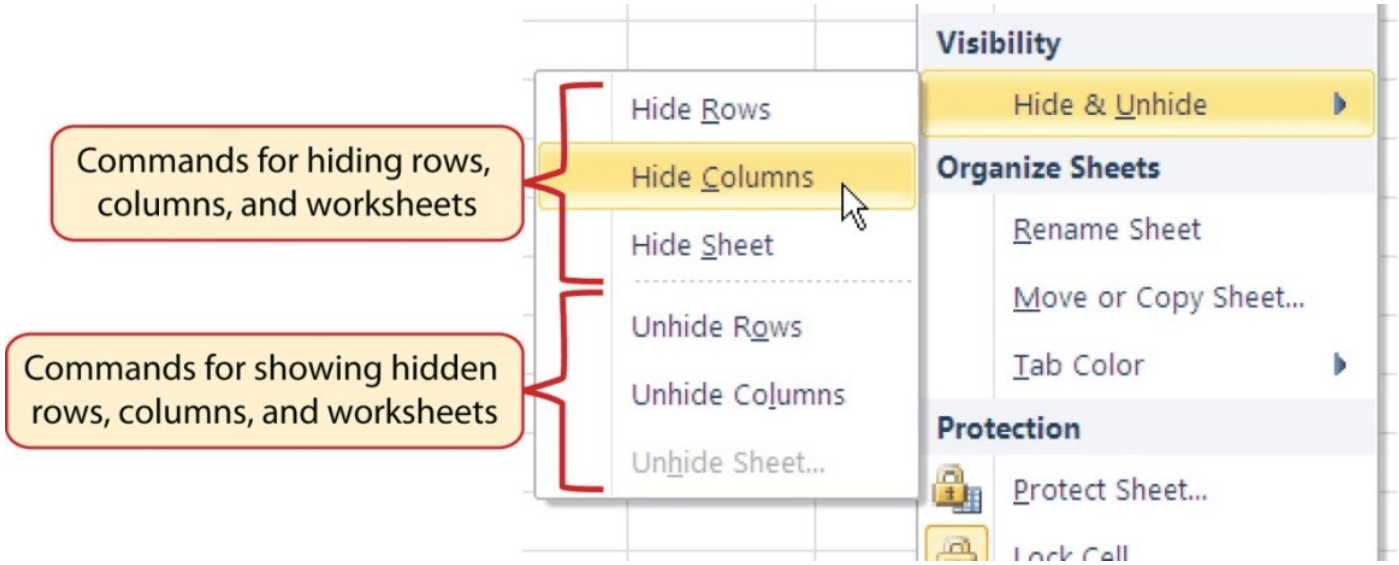


Figure 1.26 Hide & Unhide Submenu

Keyboard Shortcuts

Hiding Columns

- Hold down the CTRL key while pressing the number 0 on your keyboard.
  - Same for Mac Users

Figure 1.27 shows the workbook with Column C hidden in the Sheet1 worksheet. You can tell a column is hidden by the missing letter C.

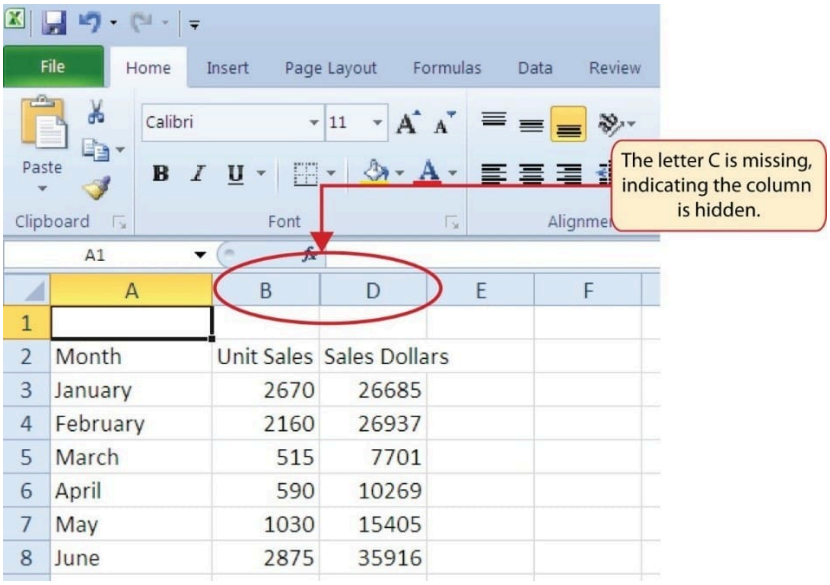


Figure 1.27 Hidden Column

To unhide a column, follow these steps:

1. Select the range B1:D1.
2. Click the Format button in the Home tab of the Ribbon.
3. Place the mouse pointer over the Hide & Unhide option in the drop-down menu.

4. Click the Unhide Columns option in the submenu of options. Column C will now be visible on the worksheet.

Keyboard Shortcuts

Unhiding Columns

- Highlight cells on either side of the hidden column(s), then hold down the CTRL key and the SHIFT key while pressing the close parenthesis key ()) on your keyboard.
- Mac Users: Hold down Control and Shift keys and press the number 0

The following steps demonstrate how to hide rows, which is similar to hiding columns:

1. Click cell A3.
2. Click the Format button in the Home tab of the Ribbon.
3. Place the mouse pointer over the Hide & Unhide option in the drop-down menu. This will open a submenu of options.
4. Click the Hide Rows option in the submenu of options. This will hide Row 3.

Keyboard Shortcuts

Hiding Rows

- Hold down the CTRL key while pressing the number 9 key on your keyboard.
  - Same for Mac Users

To unhide a row, follow these steps:

1. Select the range A2:A4.
2. Click the Format button in the Home tab of the Ribbon.
3. Place the mouse pointer over the Hide & Unhide option in the drop-down menu.
4. Click the Unhide Rows option in the submenu of options. Row 3 will now be visible on the worksheet.

Keyboard Shortcuts

Unhiding Rows

- Highlight cells above and below the hidden row(s), then hold down the CTRL key and the SHIFT key while pressing the open parenthesis key (() on your keyboard.
- Mac Users: Hold down Control and Shift keys and press the number 9

Integrity Check

Hidden Rows and Columns

In most careers, it is common for professionals to use Excel workbooks that have been designed by a coworker. Before you use a workbook developed by someone else, always check for hidden rows and columns. You can quickly see whether a row or column is hidden if a row number or column letter is missing.

Skill Refresher

Hiding Columns and Rows

1. Activate at least one cell in the row(s) or column(s) you are hiding.
2. Click the Home tab of the Ribbon.
3. Click the Format button in the Cells group.
4. Place the mouse pointer over the Hide & Unhide option.
5. Click either the Hide Rows or Hide Columns option.

Unhiding Columns and Rows

1. Highlight the cells above and below the hidden row(s) or to the left and right of the hidden column(s).
2. Click the Home tab of the Ribbon.
3. Click the Format button in the Cells group.
4. Place the mouse pointer over the Hide & Unhide option.
5. Click either the Unhide Rows or Unhide Columns option.

Inserting Columns and Rows

Using Excel workbooks that have been created by others is a very efficient way to work because it eliminates the need to create data worksheets from scratch. However, you may find that to accomplish your goals, you need to add additional columns or rows of data. In this case, you can insert blank columns or rows into a worksheet. The following steps demonstrate how to do this:

1. Click cell C1.
2. Click the down arrow on the Insert button in the Home tab of the Ribbon (see **Figure 1.28**).

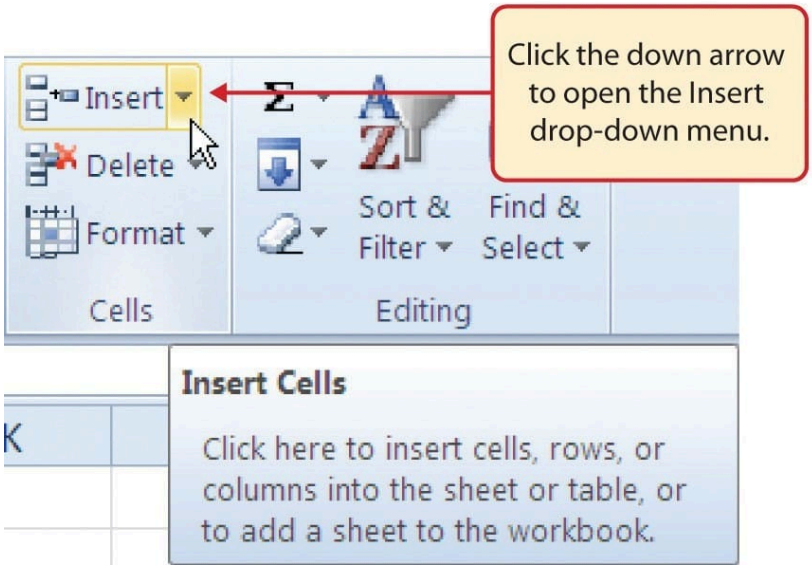


Figure 1.28 Insert Button (Down Arrow)

3. Click the Insert Sheet Columns option from the drop-down menu (see **Figure 1.29**). A blank column will be inserted to the left of Column C. The contents that were previously in Column C now appear in Column D. Note that columns are always inserted to the left of the activated cell.

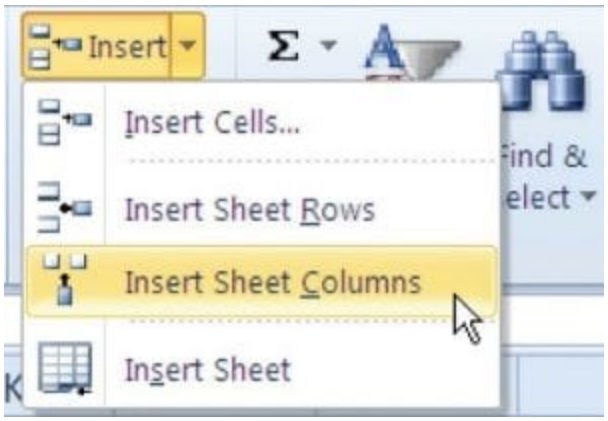


Figure 1.29 Insert Drop-Down Menu

Keyboard Shortcuts

Inserting Columns

- Press the ALT key and then the letters H, I, and C one at a time. A column will be inserted to the left of the activated cell.
- Mac Users: First hold down the Control key and press the spacebar to select the column; then hold down the Shift and Controls keys and press the + symbol

4. Click cell A3.
5. Click the down arrow on the Insert button in the Home tab of the Ribbon (see **Figure 1.28**).
6. Click the Insert Sheet Rows option from the drop-down menu (see **Figure 1.29**). A blank row will be inserted above Row 3. The contents that were previously in Row 3 now appear in Row 4. Note that rows are always inserted above the activated cell.

Keyboard Shortcuts

Inserting Rows

- Press the ALT key and then the letters H, I, and R one at a time. A row will be inserted above the activated cell.
- Mac Users: First hold down the Shift key and press the spacebar to select the row; then hold down the Shift and Controls keys and press the + symbol

Skill Refresher

Inserting Columns and Rows

1. Activate the cell to the right of the desired blank column or below the desired blank row.
2. Click the Home tab of the Ribbon.
3. Click the down arrow on the Insert button in the Cells group.
4. Click either the Insert Sheet Columns or Insert Sheet Rows option.

Moving Data

Once data are entered into a worksheet, you have the ability to move it to different locations. The following steps demonstrate how to move data to different locations on a worksheet:

1. Select the range D2:D15.
2. Bring the mouse pointer to the left edge of cell D2. You will see the white block plus sign change to cross arrows (see **Figure**

1.30). This indicates that you can left click and drag the data to a new location.

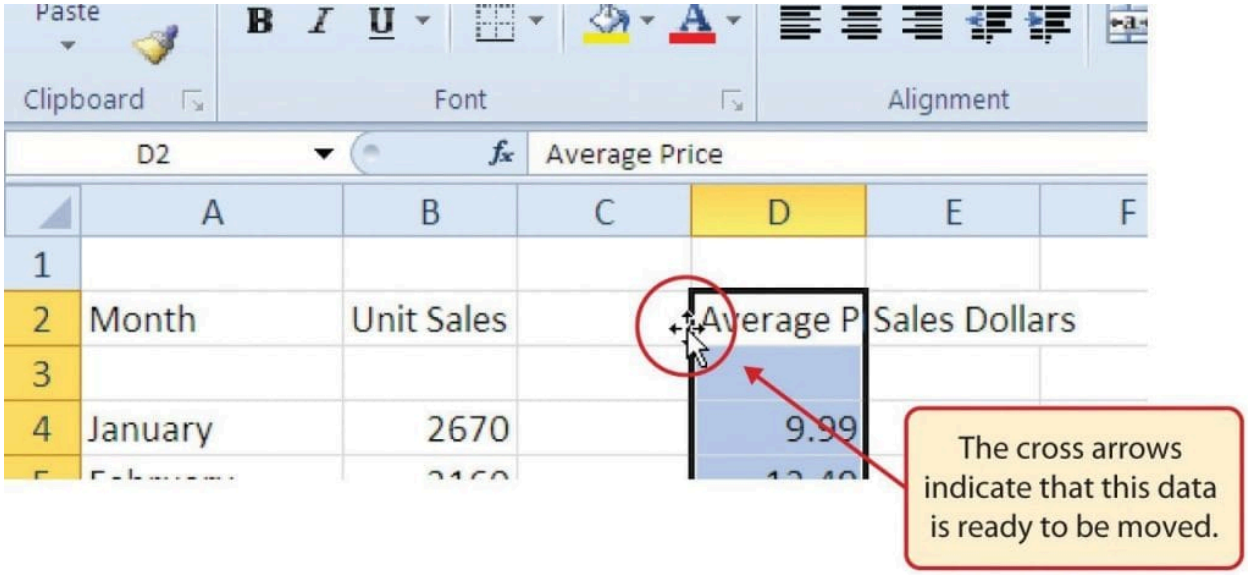


Figure 1.30 Moving Data

Mac Users: when the mouse hovers over the left edge of cell D2, the pointer will turn into a small hand that looks like th

3. Left Click and drag the mouse pointer to cell C2.
4. Release the left mouse button. The data now appears in Column C.
5. Click the Undo button in the Quick Access Toolbar. This moves the data back to Column D.

Integrity Check

Moving Data

Before moving data on a worksheet, make sure you identify all the components that belong with the series you are moving. For example, if you are moving a column of data, make sure the column heading is included. Also, make sure all values are highlighted in the column before moving it.

Deleting Columns and Rows

You may need to delete entire columns or rows of data from a worksheet. This need may arise if you need to remove either blank columns or rows from a worksheet or columns and rows that contain data. The methods for removing cell contents were covered earlier and can be used to delete unwanted data. However, if you do not want a blank row or column in your workbook, you can delete it using the following steps:

1. Click cell A3.
2. Click the down arrow on the Delete button in the Cells group in the Home tab of the Ribbon.
3. Click the Delete Sheet Rows option from the drop-down menu (see **Figure 1.31**). This removes Row 3 and shifts all the data (below Row 2) in the worksheet up one row.

Keyboard Shortcuts

Deleting Rows

- Press the ALT key and then the letters H, D, and R one at a time. The row with the activated cell will be deleted.

- Mac Users: First hold down the Shift key and press the spacebar to select the row; then hold down Control key and press the – symbol

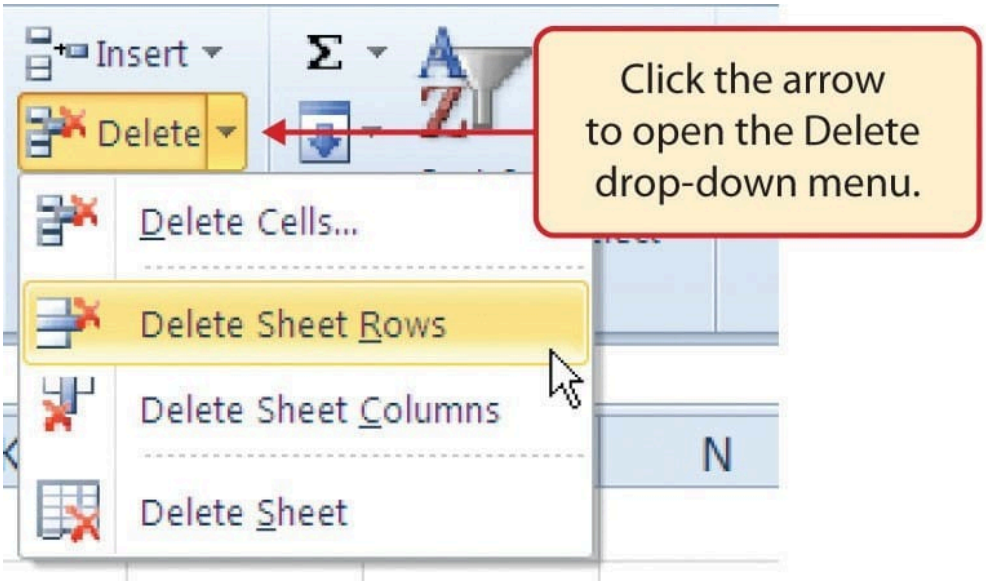


Figure 1.31 Delete Drop-Down Menu

4. Click cell C1.
5. Click the down arrow on the Delete button in the Cells group in the Home tab of the Ribbon.
6. Click the Delete Sheet Columns option from the drop-down menu (see **Figure 1.31**). This removes Column C and shifts all the data in the worksheet (to the right of Column B) over one column to the left.
7. Save the changes to your workbook by clicking either the **Save** button on the Home ribbon; or by selecting the **Save** option from the File menu.

Keyboard Shortcuts

Deleting Columns

- Press the ALT key and then the letters H, D, and C one at a time. The column with the activated cell will be deleted.
- Mac Users: First hold down the Control key and press the spacebar to select the column; then hold down Control key and press the – symbol

Skill Refresher

Deleting Columns and Rows

1. Activate any cell in the row or column that is to be deleted.
2. Click the Home tab of the Ribbon.
3. Click the down arrow on the Delete button in the Cells group.
4. Click either the Delete Sheet Columns or the Delete Sheet Rows option.

Key Takeaways

- Column headings should be used in a worksheet and should accurately describe the data contained in each column.
- Using symbols such as dollar signs when entering numbers into a worksheet can slow down the data entry process.

- Worksheets must be carefully proofread when data has been manually entered.
- The Undo command is a valuable tool for recovering data that was deleted from a worksheet.
- When using a worksheet that was developed by someone else, look carefully for hidden columns or rows.

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4.10: Formatting and Data Analysis

Learning Objectives

- Use formatting techniques as introduced in the Excel Spreadsheet Guidelines to enhance the appearance of a worksheet.
- Understand how to align data in cell locations.
- Examine how to enter multiple lines of text in a cell location.
- Understand how to add borders to a worksheet.
- Examine how to use the AutoSum feature to calculate totals.
- Use the Cut, Copy, and Paste commands to manipulate the data on a worksheet.
- Understand how to move, rename, insert, and delete worksheet tabs.

This section addresses formatting commands that can be used to enhance the visual appearance of a worksheet. It also provides an introduction to mathematical calculations. The skills introduced in this section will give you powerful tools for analyzing the data that we have been working with in this workbook and will highlight how Excel is used to make key decisions in virtually any career. Additionally, Excel Spreadsheet Guidelines for format and appearance will be introduced as a format for the course and spreadsheets submitted.

Formatting Data and Cells

Enhancing the visual appearance of a worksheet is a critical step in creating a valuable tool for you or your coworkers when making key decisions. There are accepted professional formatting standards when spreadsheets contain only currency data. For this course, we will use the following Excel Guidelines for Formatting. The first figure displays how to use Accounting number format when ALL figures are currency. Only the first row of data and the totals should be formatted with the Accounting format. The other data should be formatted with Comma style. There also needs to be a Top Border above the numbers in the total row. If any of the numbers have cents, you need to format all of the data with two decimal places.

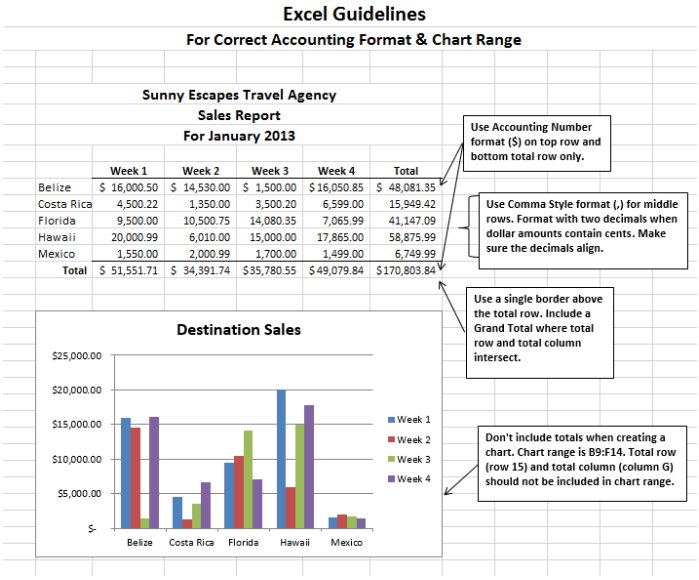
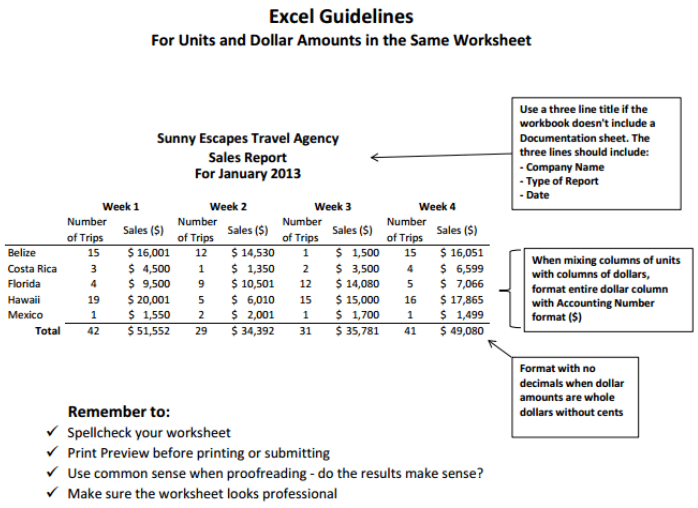


Figure 1.31a

Often, your Excel spreadsheet will contain values that are both currency and non-currency in nature. When that is the case, you'll want to use the guidelines in the following figure:



	Week 1		Week 2		Week 3		Week 4	
	Number of Trips	Sales ($)	Number of Trips	Sales ($)	Number of Trips	Sales ($)	Number of Trips	Sales ($)
Belize	15	$ 16,001	12	$ 14,530	1	$ 1,500	15	$ 16,051
Costa Rica	3	$ 4,500	1	$ 1,350	2	$ 3,500	4	$ 6,599
Florida	4	$ 9,500	9	$ 10,501	12	$ 14,080	5	$ 7,066
Hawaii	19	$ 20,001	5	$ 6,010	15	$ 15,000	16	$ 17,865
Mexico	1	$ 1,550	2	$ 2,001	1	$ 1,700	1	$ 1,499
Total	42	$ 51,552	29	$ 34,392	31	$ 35,781	41	$ 49,080

Figure 1.31b

The following steps demonstrate several fundamental formatting skills that will be applied to the workbook that we are developing for this chapter. Several of these formatting skills are identical to ones that you may have already used in other Microsoft applications such as Microsoft Word or Microsoft PowerPoint.

1. Select the range A2:D2. Click the Bold button in the Font group of commands in the Home tab of the ribbon.
2. Click the Border button in the Font group of commands in the Home tab of the Ribbon (see Figure 1.32). Select the Bottom Border option from the list to achieve the goal of a border on the bottom of row 2 below the column headings.

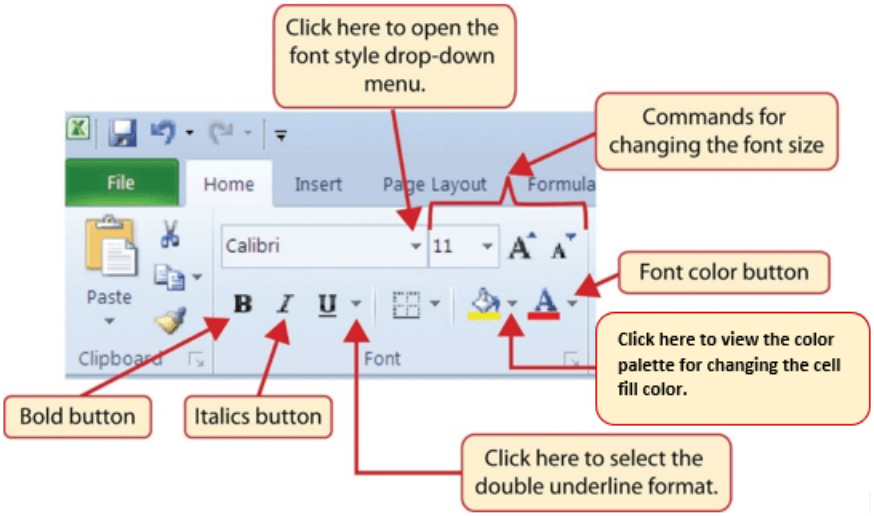


Figure 1.32 Font Group of Commands

Keyboard Shortcuts

Bold Format

- Hold down the CTRL key while pressing the letter B on your keyboard.
- Mac Users: Hold the Control key and press the letter B **or** hold down the Command key and press the letter B

1. Select the range A15:D15.
2. Click the Bold button in the Font group of commands in the Home tab of the Ribbon.
3. Click the Border button in the Font group of commands in the Home tab of the Ribbon (see **Figure 1.32**). Select the Top Border option from the list to achieve the goal of a border on the top of row 15 where totals will eventually display.

Keyboard Shortcuts

Italics Format

- Hold the CTRL key while pressing the letter I on your keyboard.
- Mac Users: Hold the Control key and press the letter I **or** hold down the Command key and press the letter I

Keyboard Shortcuts

Underline Format

- Hold the CTRL key while pressing the letter U on your keyboard.
- Mac Users: Hold the Control key and press the letter U **or** hold down the Command key and press the letter U

Why?

Format Column Headings and Totals

Applying formatting enhancements to the column headings and column totals in a worksheet is a very important technique, especially if you are sharing a workbook with other people. These formatting techniques allow users of the worksheet to clearly see the column headings that define the data. In addition, the column totals usually contain the most important data on a worksheet with respect to making decisions, and formatting techniques allow users to quickly see this information.

1. Select the range B3:B14.
2. Click the Comma Style button in the Number group of commands in the Home tab of the Ribbon. This feature adds a comma as well as two decimal places. (see **Figure 1.33**).
   quot;)." width="448" height="226"/>
   Figure 1.33 Number Group of Commands
3. Since the figures in this range do not include cents, click the Decrease Decimal button in the Number group of commands in the Home tab of the Ribbon two times (see **Figure 1.33**).
4. The numbers will also be reduced to zero decimal places.
5. Select the range C3:C14.
6. Click the Accounting Number Format button in the Number group of commands in the Home tab of the Ribbon (see **Figure 1.33**). This will add the US currency symbol and two decimal places to the values. This format is common when working with pricing data. As discussed above in the Formatting Data and Cells section, you will want to use Accounting format on all values in this range since the worksheet contains non-currency as well as currency data.
7. Select the range D3:D14.
8. Again, select the Accounting Number Format; this will add the US currency symbol to the values as well as two decimal places.
9. Click the Decrease Decimal button in the Number group of commands in the Home tab of the Ribbon.
10. This will add the US currency symbol to the values and reduce the decimal places to zero since there are no cents in these figures.
11. Select the range A1:D1.
12. Click the down arrow next to the Fill Color button in the Font group of commands in the Home tab of the Ribbon (see **Figure 1.34**). This will add background fill color the range for a worksheet title when entered.

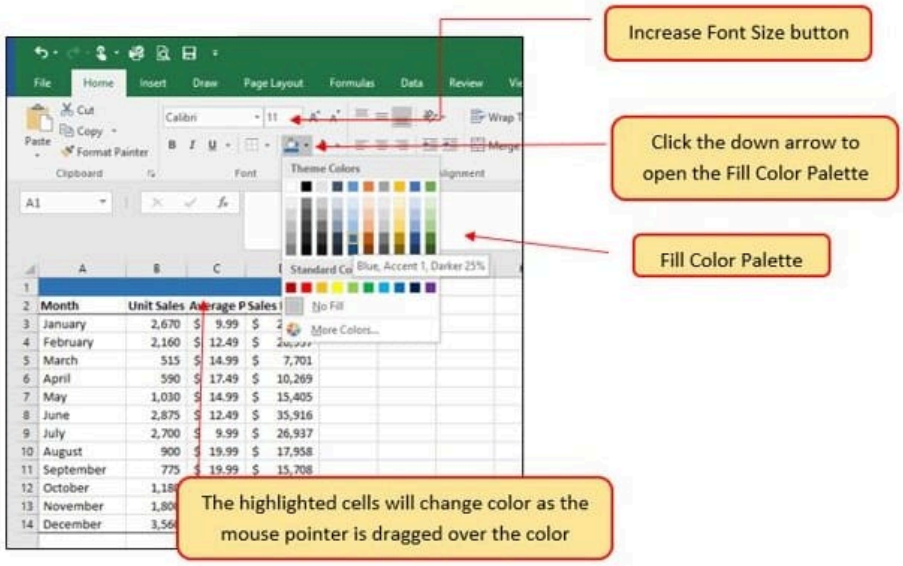


Figure 1.34 Fill Color Palette

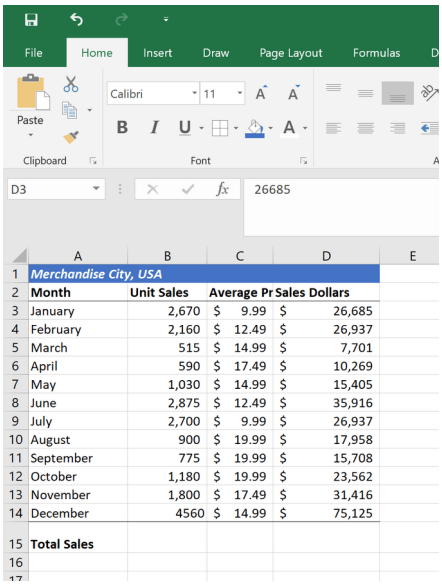
13. Click the Blue, Accent 1, Darker 25% color from the palette (see **Figure 1.34**). Notice that as you move the mouse pointer over the color palette, you will see a preview of how the color will appear in the highlighted cells. Experiment with this feature.
14. Click on A1 and enter the worksheet title: **Merchandise City, USA** and click on the check mark in the formula bar to enter this information.
15. Since the black font is difficult to read on the blue background, you'll change the font color to be more visible. Click the down arrow next to the Font Color button in the Font group of commands in the Home tab of the Ribbon; select **White** as the font color for this range (see **Figure 1.32**).
16. Select the range A1:D1 and format for **Italics** by clicking on "I" in the Font group.
17. Click the drop-down arrow on the right side of the Font button in the Home tab of the Ribbon; select Arial as the font for this range and format for **Bold** click on "B**"** in the Font group. (see **Figure 1.32**).
18. Notice that as you move the mouse pointer over the font style options, you can see the font change in the highlighted cells.
19. Expand the column width of Column D to 14 characters.

Why?

Pound Signs (####) Appear in Columns

When a column is too narrow for a long number, Excel will automatically convert the number to a series of pound signs (####). In the case of words or text data, Excel will only show the characters that fit in the column. However, this is not the case with numeric data because it can give the appearance of a number that is much smaller than what is actually in the cell. To remove the pound signs, increase the width of the column.

Figure 1.35 shows how the Sheet1 worksheet should appear after the formatting techniques are applied.



	A	B	C	D	E
1	*Merchandise City, USA*				
2	**Month**	**Unit Sales**	**Average Pr**	**Sales Dollars**	
3	January	2,670	$ 9.99	$ 26,685	
4	February	2,160	$ 12.49	$ 26,937	
5	March	515	$ 14.99	$ 7,701	
6	April	590	$ 17.49	$ 10,269	
7	May	1,030	$ 14.99	$ 15,405	
8	June	2,875	$ 12.49	$ 35,916	
9	July	2,700	$ 9.99	$ 26,937	
10	August	900	$ 19.99	$ 17,958	
11	September	775	$ 19.99	$ 15,708	
12	October	1,180	$ 19.99	$ 23,562	
13	November	1,800	$ 17.49	$ 31,416	
14	December	4560	$ 14.99	$ 75,125	
15	**Total Sales**				
16					

Figure 1.35 Formatting Techniques Applied

Data Alignment (Wrap Text, Merge Cells, and Center)

The skills presented in this segment show how data are aligned within cell locations. For example, text and numbers can be centered in a cell location, left justified, right justified, and so on. In some cases you may want to stack multiword text entries vertically in a cell instead of expanding the width of a column. This is referred to as wrapping text. These skills are demonstrated in the following steps:

1. Select the range A2:D2.
2. Click the Center button in the Alignment group of commands in the Home tab of the Ribbon (see **Figure 1.36**). This will center the column headings in each cell location.

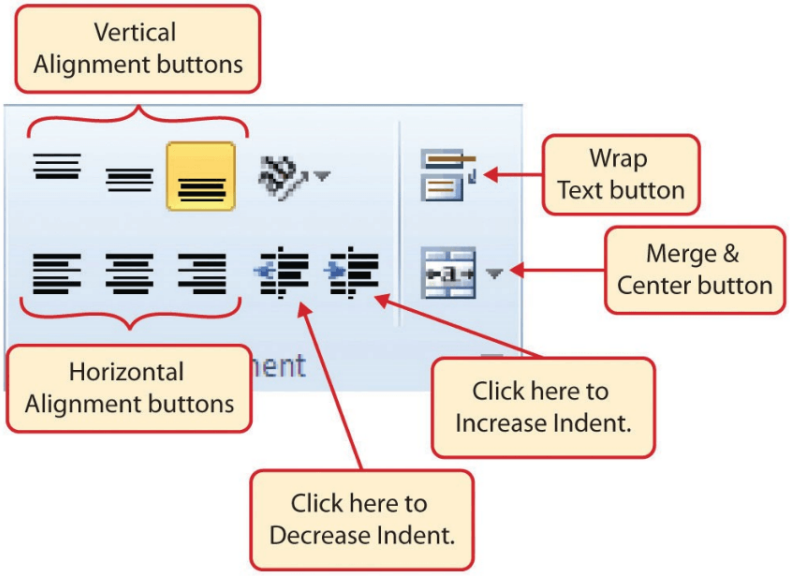


Figure 1.36 Alignment Group in Home Tab

3. Click the Wrap Text button in the Alignment group (see **Figure 1.36**). The height of Row 2 automatically expands, and the words that were cut off because the columns were too narrow are now stacked vertically.

Keyboard Shortcuts

Wrap Text

- Press the ALT key and then the letters H and W one at a time.
- There is no equivalent shortcut for Excel for Mac

Why?

Wrap Text

The benefit of using the Wrap Text command is that it significantly reduces the need to expand the column width to accommodate multiword column headings. The problem with increasing the column width is that you may reduce the amount of data that can fit on a piece of paper or one screen. This makes it cumbersome to analyze the data in the worksheet and could increase the time it takes to make a decision.

4. Select the range A1:D1.
5. Click the down arrow on the right side of the Merge & Center button in the Alignment group of commands in the Home tab of the Ribbon.
6. Click the Merge & Center option (see **Figure 1.37**). This will create one large cell location running across the top of the data set and center the text in that cell.

Keyboard Shortcuts

Merge Commands

- Merge & Center: Press the ALT key and then the letters H, M, and C one at a time.
- Merge Cells: Press the ALT key and then the letters H, M, and M one at a time.
- Unmerge Cells: Press the ALT key and then the letters H, M, and U one at a time.
    - There are no equivalent shortcuts for Excel for Mac

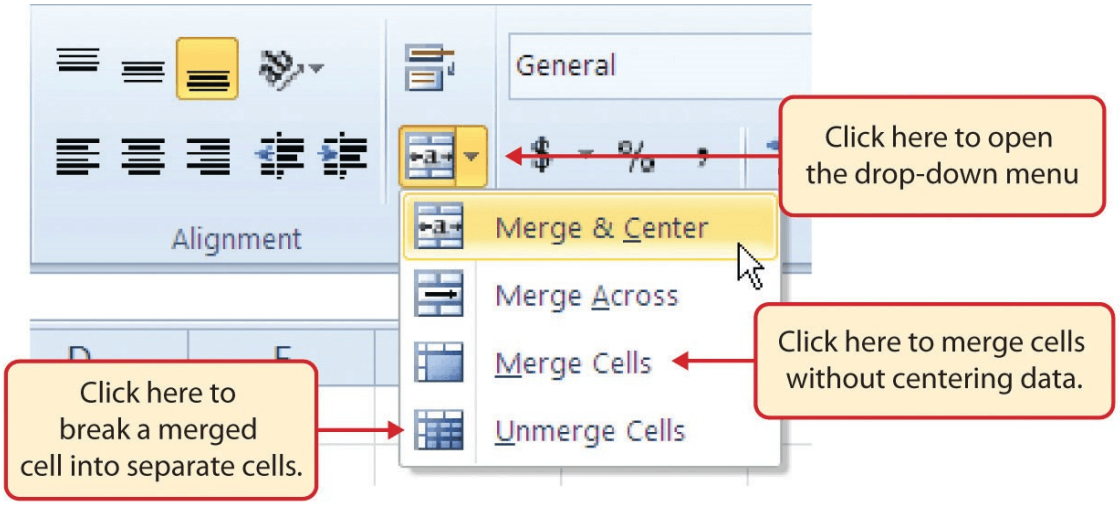


Figure 1.37 Merge Cell Drop-Down Menu

Why?

Merge & Center

One of the most common reasons the Merge & Center command is used is to center the title of a worksheet directly above the columns of data. Once the cells above the column headings are merged, a title can be centered above the columns of data. It is very difficult to center the title over the columns of data if the cells are not merged.

Figure 1.38 shows the Sheet1 worksheet with the data alignment commands applied. The reason for merging the cells in the range A1:D1 will become apparent in the next segment.

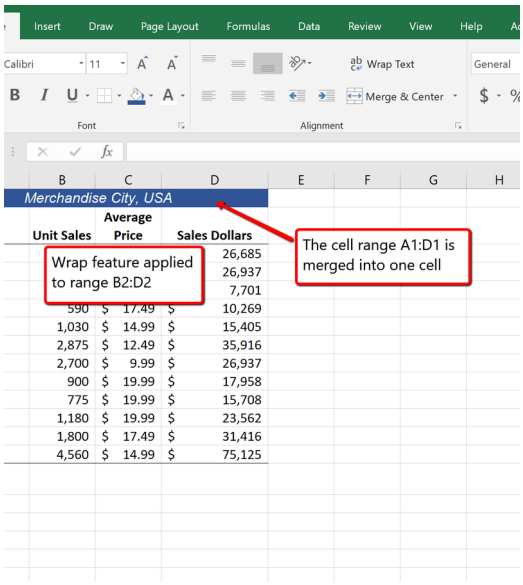


Figure 1.38 Data Alignment Features Added

Skill Refresher

Wrap Text

1. Activate the cell or range of cells that contain text data.
2. Click the Home tab of the Ribbon.
3. Click the Wrap Text button.

Merge Cells

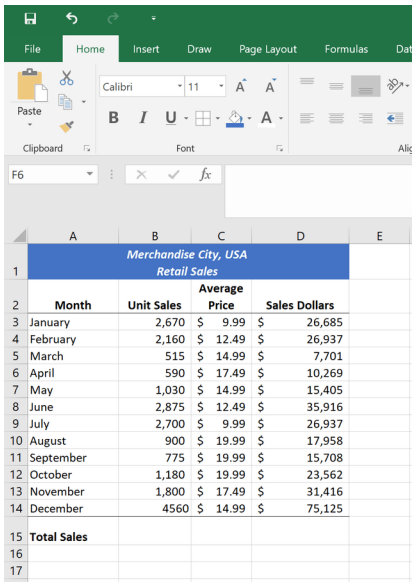
1. Highlight a range of cells that will be merged.
2. Click the Home tab of the Ribbon.
3. Click the down arrow next to the Merge & Center button.
4. Select an option from the Merge & Center list.

Entering Multiple Lines of Text

In the Sheet1 worksheet, the cells in the range A1:D1 were merged for the purposes of adding a title to the worksheet. This worksheet will contain both a title and a subtitle. The following steps explain how you can enter text into a cell and determine where you want the second line of text to begin:

1. Click cell A1. Since the cells were merged, clicking cell A1 will automatically activate the range A1:D1. Position your mouse to the end of the title, directly after the “A” in the word “USA” and double-click to get a cursor (flashing I-beam).

2. Hold down the ALT key and press the ENTER key. This will start a new line of text in this cell location.
3. Type the text **Retail Sales** and press the ENTER key.
4. Select cell A1. Then click the Bold buttons in the Font group of commands in the Home tab of the Ribbon so that the titles are now in Bold and Italics.
5. Increase the height of Row 1 to 30 points. Once the row height is increased, all the text typed into the cell will be visible (see **Figure 1.39**).



	A	B	C	D	E
1	*Merchandise City, USA* *Retail Sales*				
2	**Month**	**Unit Sales**	**Average Price**	**Sales Dollars**	
3	January	2,670	$ 9.99	$ 26,685	
4	February	2,160	$ 12.49	$ 26,937	
5	March	515	$ 14.99	$ 7,701	
6	April	590	$ 17.49	$ 10,269	
7	May	1,030	$ 14.99	$ 15,405	
8	June	2,875	$ 12.49	$ 35,916	
9	July	2,700	$ 9.99	$ 26,937	
10	August	900	$ 19.99	$ 17,958	
11	September	775	$ 19.99	$ 15,708	
12	October	1,180	$ 19.99	$ 23,562	
13	November	1,800	$ 17.49	$ 31,416	
14	December	4560	$ 14.99	$ 75,125	
15	**Total Sales**				
16					
17					

Figure 1.39 Title & Subtitle Added to the Worksheet

Skill Refresher

Entering Multiple Lines of Text

1. Activate a cell location.
2. Type the first line of text.
3. Hold down the ALT key and press the ENTER key.
4. Type the second line of text and press the ENTER key.

Borders (Adding Lines to a Worksheet)

In Excel, adding custom lines to a worksheet is known as adding borders. Borders are different from the grid lines that appear on a worksheet and that define the perimeter of the cell locations. The Borders command lets you add a variety of line styles to a worksheet that can make reading the worksheet much easier. The following steps illustrate methods for adding preset borders and custom borders to a worksheet:

1. Click the down arrow to the right of the Borders button in the Font group of commands in the Home page of the Ribbon to view border options. (see **Figure 1.40**).

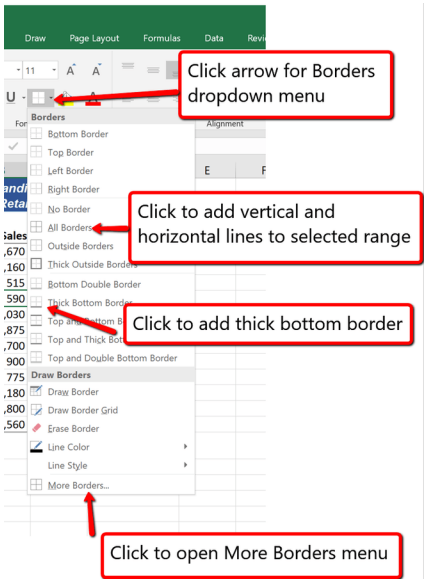


Figure 1.40 Borders Dropdown Menu

2. Select the range A1:D15. Left click the All Borders option from the Borders drop-down menu (see **Figure 1.40**). This will add vertical and horizontal lines to the range A1:D15.
3. Select the range A2:D2 .
4. Click the down arrow to the right of the Borders button.
5. Left click the Thick Bottom Border option from the Borders drop-down menu.
6. Select the range A14:D14 and apply a Thick Bottom Border from the drop-down menu. The thick border will help maintain the Excel Formatting Guidelines.
7. Select the range A1:D15.
8. Click the down arrow to the right of the Borders button.
9. Click More Borders... at the bottom of the List.
10. This will open the Format Cells dialog box (see **Figure 1.41**). You can access all formatting commands in Excel through this dialog box.
11. In the Style section of the Borders tab, click the thickest line style (see **Figure 1.41**).
12. Click the Outline button in the Presets section (see **Figure 1.41**).
13. Click the OK button at the bottom of the dialog box (see **Figure 1.41**).

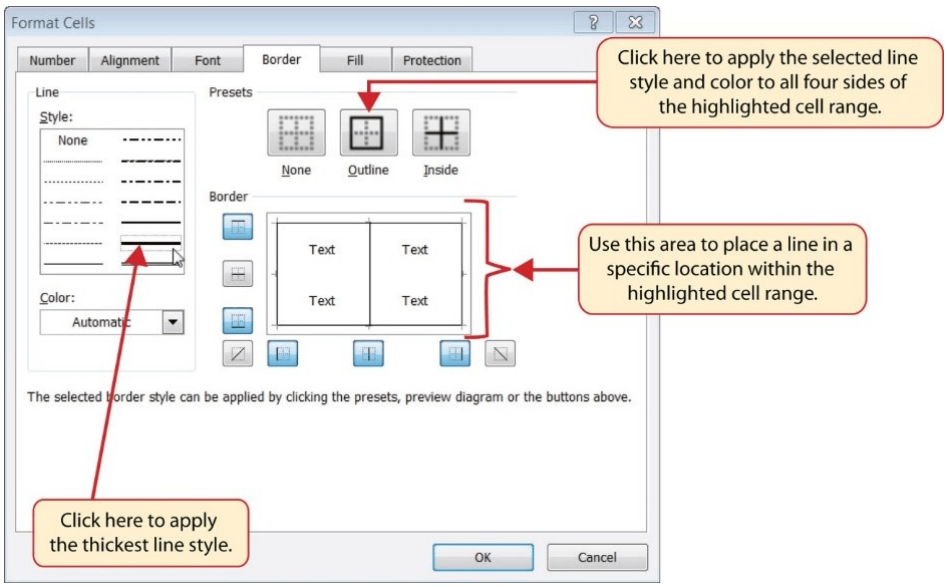


Figure 1.41 Borders Tab of the Format Cells Dialog Box

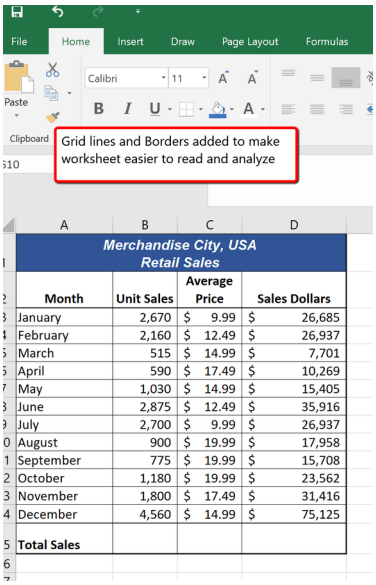


Figure 1.42 Borders Added to the Worksheet

Skill Refresher

Preset Borders

1. Highlight a range of cells that require borders.
2. Click the Home tab of the Ribbon.
3. Click the down arrow next to the Borders button.
4. Select an option from the preset borders list.

Custom Borders

1. Highlight a range of cells that require borders.
2. Click the Home tab of the Ribbon.
3. Click the down arrow next to the Borders button.
4. Select the More Borders option at the bottom of the options list.
5. Select a line style and line color.
6. Select a placement option.
7. Click the OK button on the dialog box.

AutoSum

You will see at the bottom of Figure 1.42 that Row 15 is intended to show the totals for the data in this worksheet. Applying mathematical computations to a range of cells is accomplished through functions in Excel. Chapter 2 will review mathematical formulas and functions in detail. However, the following steps will demonstrate how you can quickly sum the values in a column of data using the AutoSum command:

1. Click cell B15 in the Sheet1 worksheet.
2. Click the Formulas tab of the Ribbon.
3. Click the down arrow below the AutoSum button in the Function Library group of commands (see **Figure 1.43**). ***Note that the AutoSum button can also be found in the Editing group of commands in the Home tab of the Ribbon.***

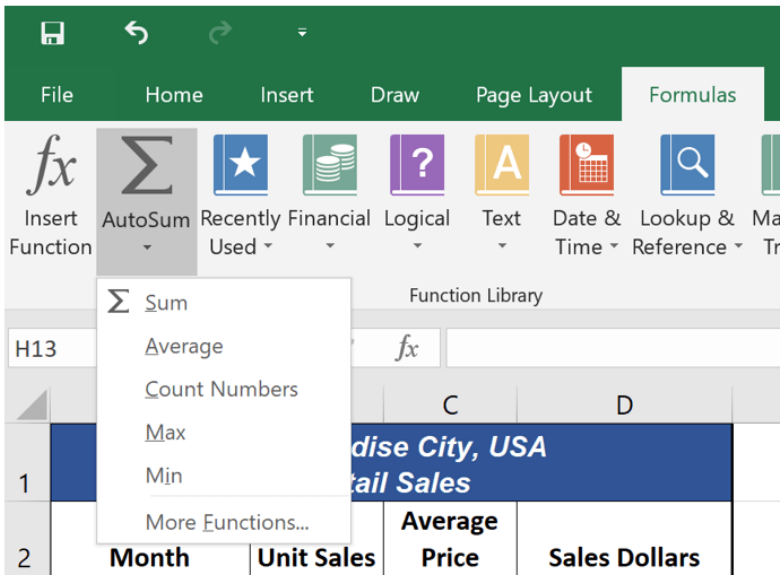


Figure 1.43 AutoSum List

4. Click the Sum option from the AutoSum drop down menu. The first click will display a flashing marquee around the range. Click the check mark next to the Formula bar to complete the function.
5. Excel will provide a total for the values in the Unit Sales column.
6. Click cell D15. It would not make sense to total the averages in column C so C15 will be left blank.
7. Repeat steps 3 through 5 to sum the values in the Sales Dollars column (see **Figure 1.44**).
8. Click cell C15 to explore other AutoSum selections. Select the COUNT function from the list; Excel will return "12" for the number of months (rows). Excel will also display indicators of a green arrow in the corner of C15 and an exclamation point in yellow. These indicate that the function in this cell varies from the other functions in row 15. They can be ignored and do not print.
9. Click cell C15 again; this time selecting the MAX option from the list. Excel will display $19.99. This reflects the Maximum Average Price in column C.
10. Click cell C15 and delete the contents in this cell.

	A	B	C	D
	Merchandise City, USA Retail Sales			
	Month	**Unit Sales**	**Average Price**	**Sales Dollars**
	January	2,670	$ 9.99	$ 26,685
	February	2,160	$ 12.49	$ 26,937
	March	515	$ 14.99	$ 7,701
	April	590	$ 17.49	$ 10,269
	May	1,030	$ 14.99	$ 15,405
	June	2,875	$ 12.49	$ 35,916
	July	2,700	$ 9.99	$ 26,937
10	August	900	$ 19.99	$ 17,958
11	September	775	$ 19.99	$ 15,708
12	October	1,180	$ 19.99	$ 23,562
13	November	1,800	$ 17.49	$ 31,416
14	December	4,560	$ 14.99	$ 75,125
15	**Total Sales**	21,755		$ 313,619
16				

Figure 1.44 Totals Added to the Sheet1 Worksheet

Skill Refresher

AutoSum

1. Highlight a cell location below or to the right of a range of cells that contain numeric values.
2. Click the Formulas tab of the Ribbon.
3. Click the down arrow below the AutoSum button.
4. Select a mathematical function from the list.

Moving, Renaming, Inserting, and Deleting Worksheets

The default names for the worksheet tabs at the bottom of workbook are Sheet1, Sheet2, and so on. However, you can change the worksheet tab names to identify the data you are using in a workbook. Additionally, you can change the order in which the worksheet tabs appear in the workbook. The following steps explain how to rename and move the worksheets in a workbook:

1. Double click the Sheet1 worksheet tab at the bottom of the workbook (see **Figure 1.45**). Type the name **Sales by Month**.
2. Press the ENTER key on your keyboard.
3. Click the + to the right of the newly named worksheet.
4. Type the name **Unit Sales Rank** to prepare the worksheet for future use.
5. Press the ENTER key on your keyboard.

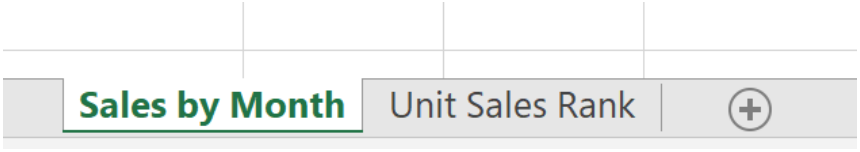


Figure 1.45 Renaming a Worksheet Tab

1. Click the + to add another worksheet tab.
2. Click the Home tab of the Ribbon.
3. Click the down arrow on the Delete button in the Cells group of commands.
4. Click the Delete Sheet option from the drop-down list. This removes the unneeded worksheet.
5. Click the Delete button on the Delete warning box (if a warning box appears).
6. Complete the steps above to delete the newly named **Unit Sales Rank** worksheet since it's decided that worksheet is also unnecessary so that you are left with just one worksheet.
7. Excel incorporates **Spell Check** which is located on the **Review** Ribbon. Clicking on the tool will allow Excel to check Spelling of alphabetic entries and allow for corrections. It's a good habit to always use Spell Check your work before saving/printing.

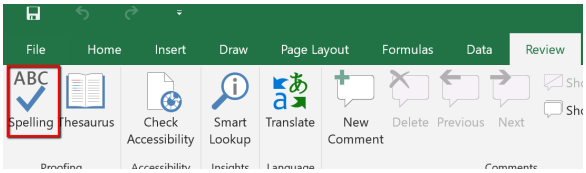


Figure 1.45a Spell Check Tool

8. Save the changes to your workbook by clicking either the **Save** button on the Home ribbon; or by selecting the **Save** option from the File menu.

Integrity Check

Deleting Worksheets

Be very cautious when deleting worksheets that contain data. Once a worksheet is deleted, you cannot use the Undo command to bring the sheet back. Deleting a worksheet is a permanent command.

Keyboard Shortcuts

Inserting New Worksheets

- Press the SHIFT key and then the F11 key on your keyboard. Same for Excel for Mac.

Figure 1.46 shows the final appearance of the Merchandise City, USA workbook.

	A	B	C	D
1	*Merchandise City, USA Retail Sales*			
2	**Month**	**Unit Sales**	**Average Price**	**Sales Dollars**
3	January	2,670	$ 9.99	$ 26,685
4	February	2,160	$ 12.49	$ 26,937
5	March	515	$ 14.99	$ 7,701
6	April	590	$ 17.49	$ 10,269
7	May	1,030	$ 14.99	$ 15,405
8	June	2,875	$ 12.49	$ 35,916
9	July	2,700	$ 9.99	$ 26,937
10	August	900	$ 19.99	$ 17,958
11	September	775	$ 19.99	$ 15,708
12	October	1,180	$ 19.99	$ 23,562
13	November	1,800	$ 17.49	$ 31,416
14	December	4,560	$ 14.99	$ 75,125
15	**Total Sales**	21,755		$ 313,619
16				
17				

Figure 1.46 Final Appearance of the Merchandise City, USA Workbook

Skill Refresher

Renaming Worksheets

1. Double click the worksheet tab.
2. Type the new name.
3. Press the ENTER key.

Moving Worksheets

1. Left click the worksheet tab.
2. Drag it to the desired position.

Deleting Worksheets

1. Open the worksheet to be deleted.
2. Click the Home tab of the Ribbon.
3. Click the down arrow on the Delete button.
4. Select the Delete Sheet option.
5. Click Delete on the warning box.

Key Takeaways

- Formatting skills are critical for creating worksheets that are easy to read and have a professional appearance.
- A series of pound signs (####) in a cell location indicates that the column is too narrow to display the number entered.

- Using the Wrap Text command allows you to stack multiword column headings vertically in a cell location, reducing the need to expand column widths.
- Use the Merge & Center command to center the title of a worksheet directly over the columns that contain data.
- Adding borders or lines will make your worksheet easier to read and helps to separate the data in each column and row.
- You cannot use the Undo command to bring back a worksheet that has been deleted.

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4.11: Introduction to Basic Formatting and Layout

What you'll learn to do: change formatting, layout, and styles in Excel.

Like any Microsoft program, Excel will default to certain fonts, texts, and styles when you create a new worksheet. It is also very easy within Excel to format individual cells with cell styles or multiple cells with a table style. Not only can formatting help make your tables more attractive, but it can also help indicate information about the contents, such as whether the data in a cell reaches a target goal. In this section, we will address how to change several default styles within Excel.

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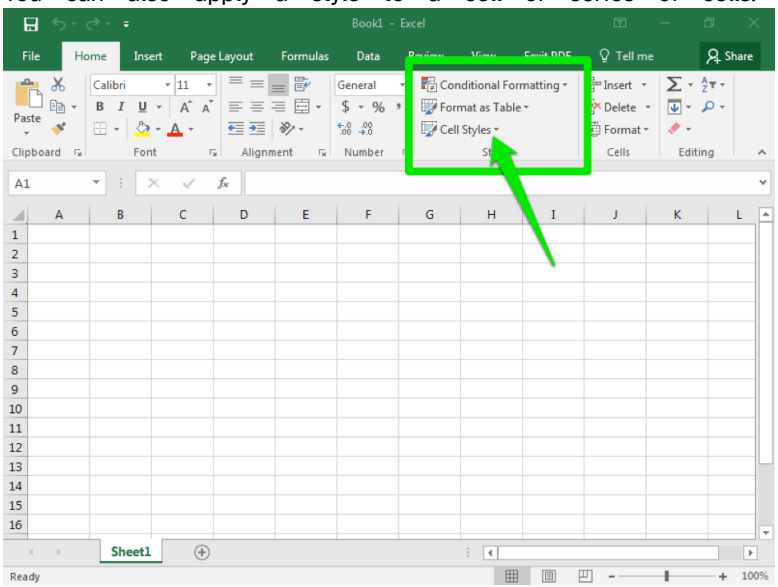
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4.12: Cell Styles

Learning Outcomes

- Apply cell styles.

You can also apply a style to a cell or series of cells. There are many default cell styles within Excel.



In order to apply a particular cell style:

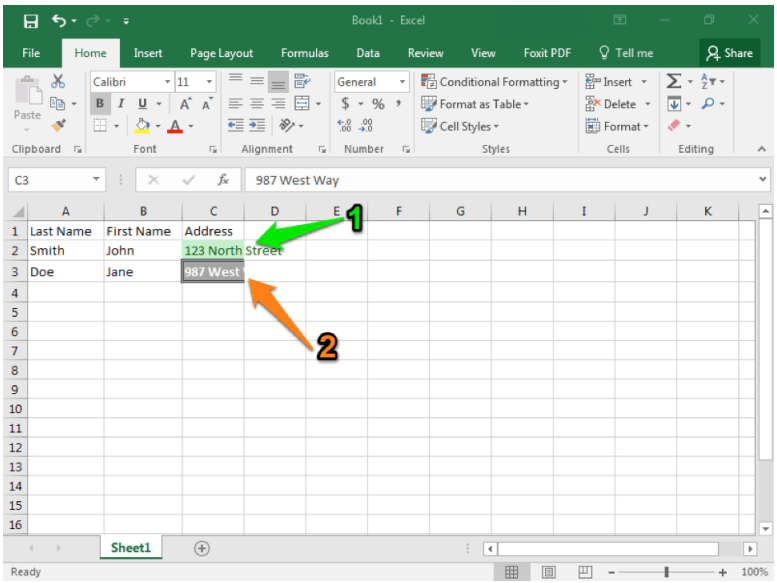
1. Select the cell(s) you wish to format.
2. Click on the appropriate style for your cell.

Practice Question

https://assessments.lumenlearning.co...essments/18624

In the screenshot below, two cells have a style applied.

1. “Good” cell indicates the data in that cell is good or correct.
2. “Check” cell indicates you may need to verify the information in that cell.



Practice Question

https://assessments.lumenlearning.co...essments/18625

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4.13: Cell Format

Learning Objectives

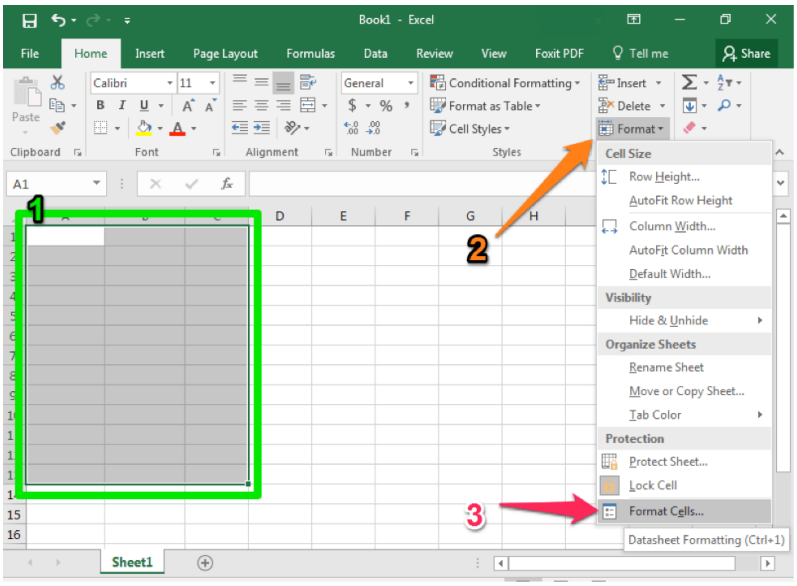
- Change cell format.

As mentioned previously, Excel will default to certain styles when you create a new worksheet. In particular, this includes the way that numbers are displayed and whether or not commas are automatically included. In this section, we will take a look at changing these defaults.

When you type numbers into an Excel workbook, it will often default to a specific format. For example, if you type “12/15/17,” Excel will convert this to read “12/15/2017,” assuming you were entering month, day, and abbreviated year. Similarly, “3/4” will display at “4-Mar,” the fourth day of March. However, it is possible that you may have been entering fractions, so “3/4” was meant to indicate three-quarters instead.

If this is the case, you will need to format your cells to properly display the information you are entering. When possible, consider formatting your cells before you enter the data. Otherwise, Excel may convert some of the entries and you will need to re-enter that information.

Method 1

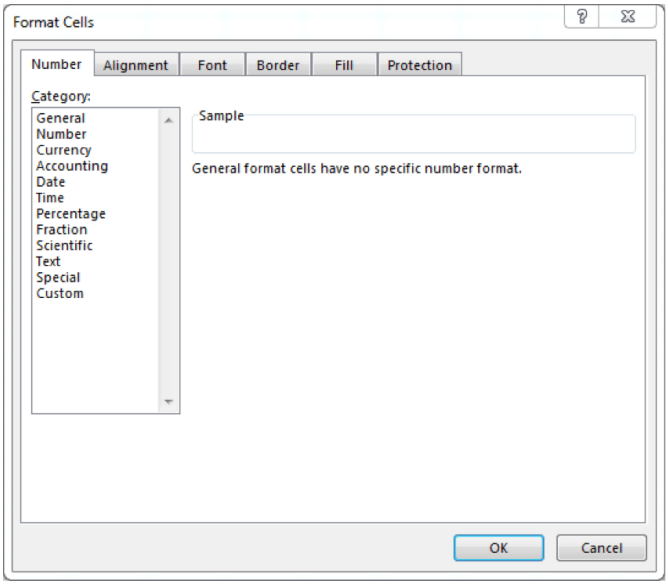


1. Begin by highlighting the cells you plan to use.
2. Select the Format dropdown from the Cells group of the ribbon.
3. Select the Format cells option at the bottom of the dropdown menu.

Practice question

https://assessments.lumenlearning.co...essments/18626

There are several available format options for cells in Excel. When you select one, Excel will provide you with a description and examples of how the information will display in the cells.

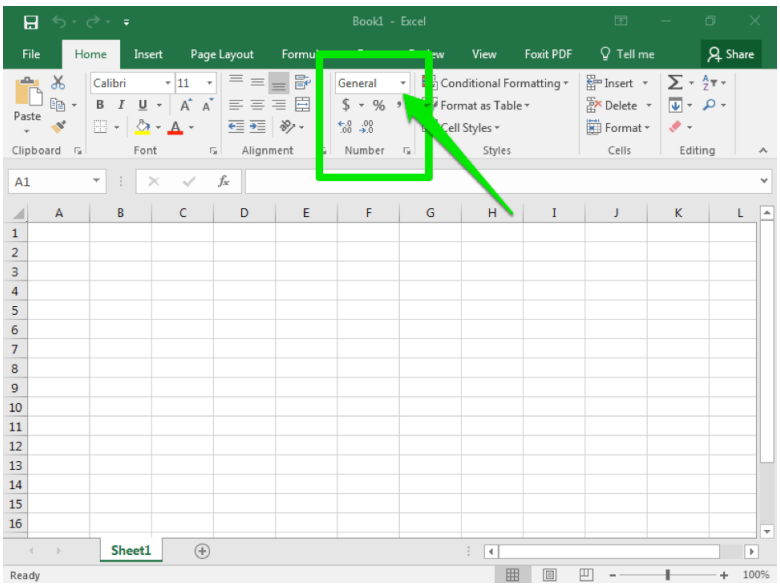


Practice question

https://assessments.lumenlearning.co...essments/18627

Method 2

You can perform the same actions using the “Number” group in the ribbon. In this case, you simply select the cell format you wish to apply using the dropdown menu.



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4.14: Comma Styles

Learning Objectives

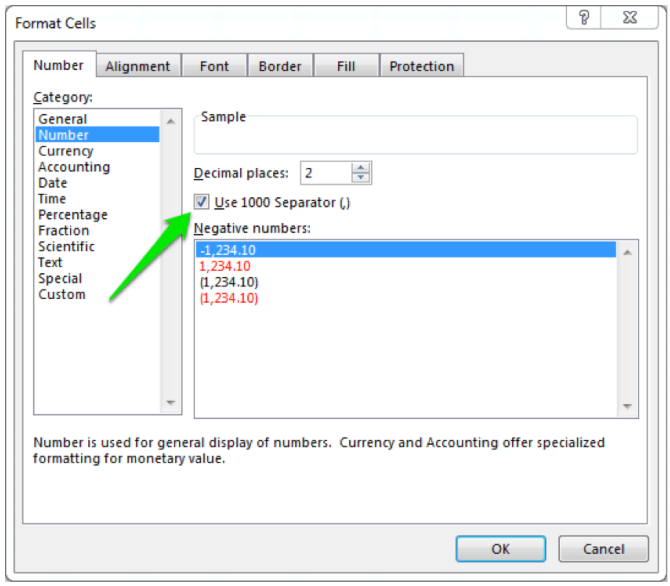
- Change comma style.

At times, you may also wish to use a specific comma style with numbers entered into an Excel worksheet. For example, you may wish “1234” to display as typed or with a comma like “1,234.”

Comma styles are easy to change in Excel using a quick select option in the Number group in the ribbon.

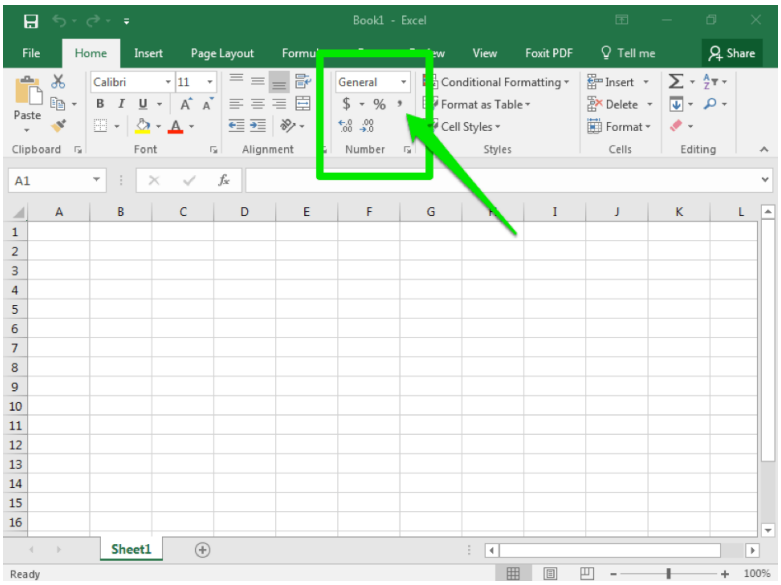
Method 1

When using the Format cell dropdown option from this area, select the “Use 1000 Separator (,)” option to include a comma. You can also choose if you would like any decimal places to be displayed in this same window.



Method 2

The easiest option to include a comma is simply to click on the Comma Style button in the Number group.



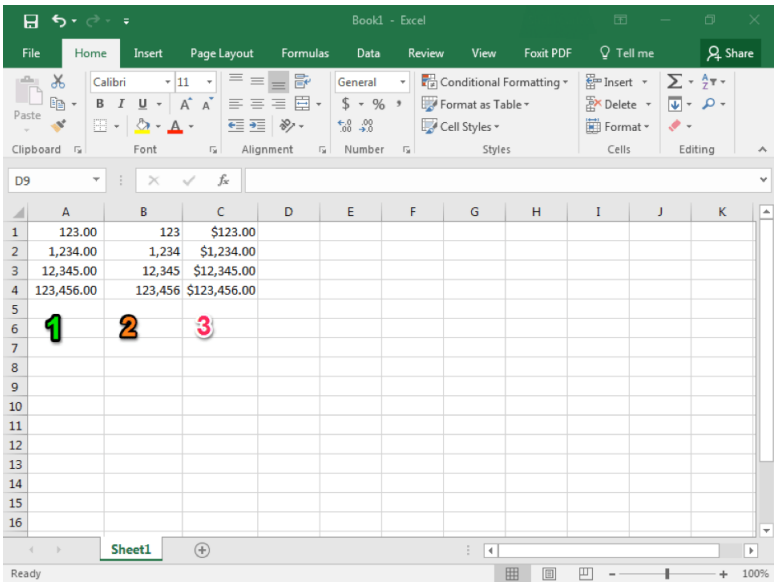
When clicking the comma style button, the comma style default is to display numbers with a comma in the thousands place and include two decimal places (Ex: “1200” becomes “1,200.00). This will also change the visible cell styles in the Style” area of the ribbon so you can easily select different options for comma and display format.

Practice question

https://assessments.lumenlearning.co...essments/18629

Below are three different options for comma and display format.

1. **Comma**: Comma with two decimal points
2. **Comma [0]**: Comma with no decimal points
3. **Currency**: Comma with two decimal points and a dollar sign



Practice question

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4.15: Rearranging Tables

Learning Objectives

- Add, delete, and move columns and rows.

At times, you may find it necessary to change the number of rows or columns within your table, move columns or rows, or even alter the standard width of rows and columns. All these tasks are easy to accomplish within Excel, often with only a few clicks of your mouse.

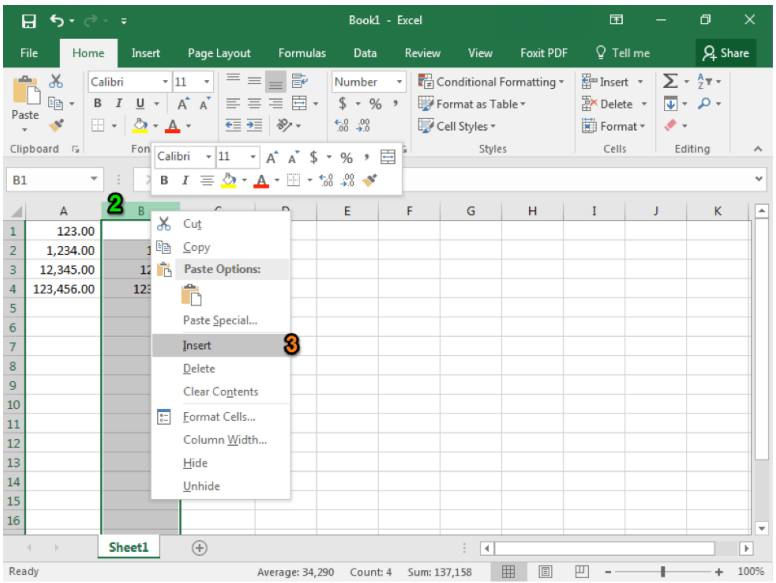
Add Columns and Rows

Note for this section, the word *column* will be used throughout but the same steps can be used to add a row.

Method 1

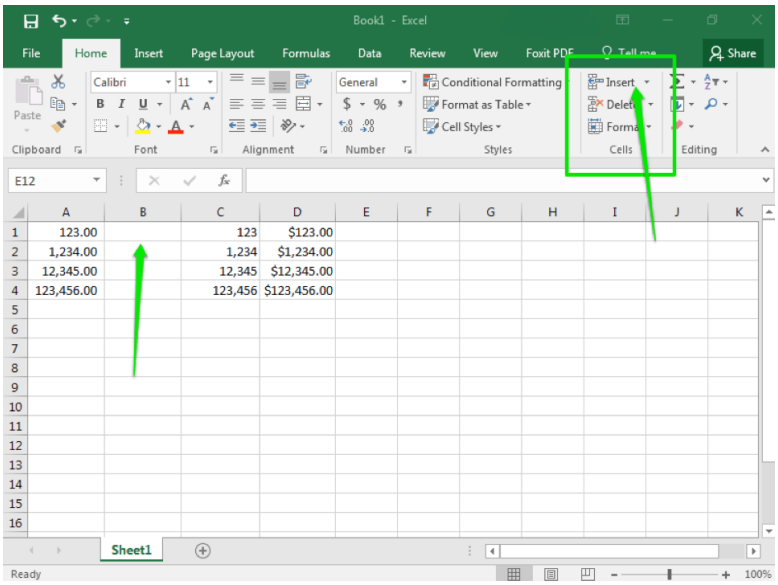
After you have entered several columns of data into a worksheet, you may realize you need to add another column in the middle of what you have already typed. The easiest way to add a column within an existing set of columns involves only two clicks of your mouse.

1. Identify the area where you want to insert a new column.
2. Right-click on the column to the immediate right of the area where you wish to add a column.
3. From the menu select Insert.
4. A new column will appear to the left of the column that you right-clicked.



Method 2

The same result can be achieved using the Insert button in the Cells group of the ribbon. The new column will be inserted to the left of the column you clicked on. In this screenshot, a column has been inserted.



Note that when you insert a new row, it will appear above the row you click on.

Practice Question

https://assessments.lumenlearning.co...essments/18630

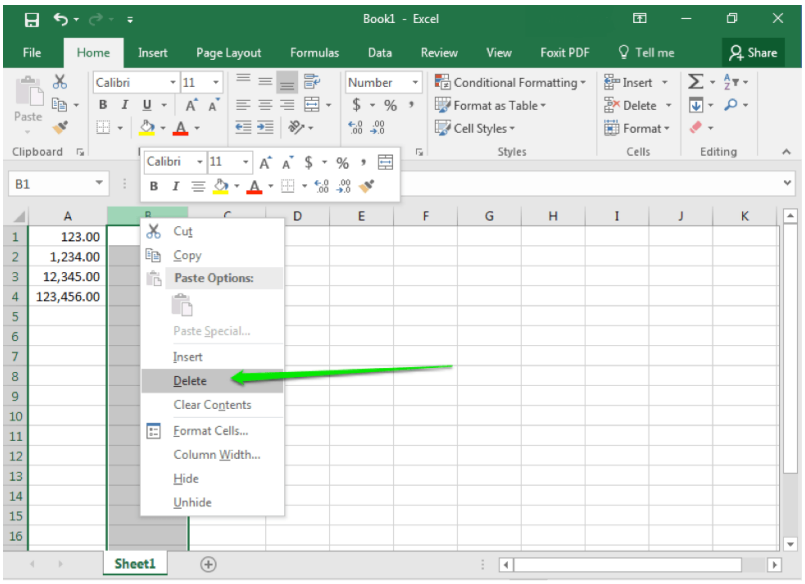
Delete Columns and Rows

Note for this section, the word *column* will be used throughout, but the same steps can be used to delete a row.

Method 1

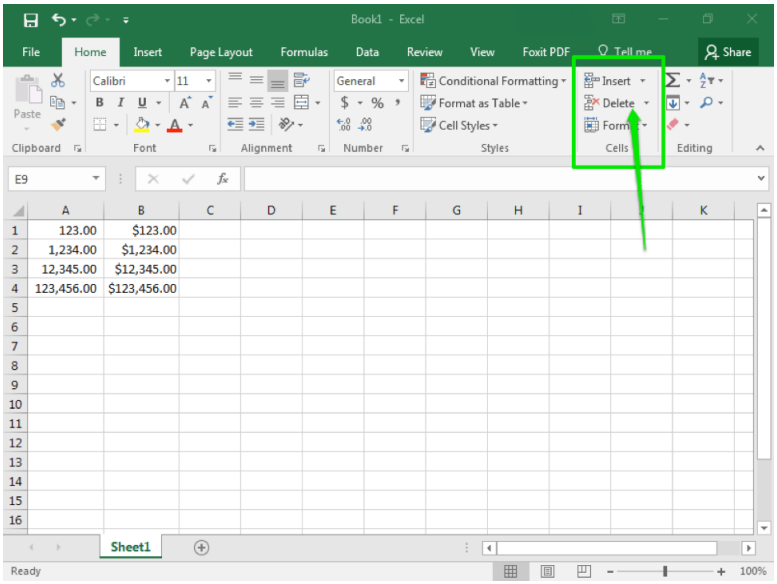
After you have entered several columns of data into a worksheet, you may realize you need to remove one column. The easiest way to delete a column uses two clicks of your mouse.

1. Right-click on the column you wish to delete.
2. From the menu select Delete.



Method 2

The same result can be achieved using the Delete button in the Cells group of the ribbon. The column currently selected will be the one deleted. In this screenshot the column has been deleted.



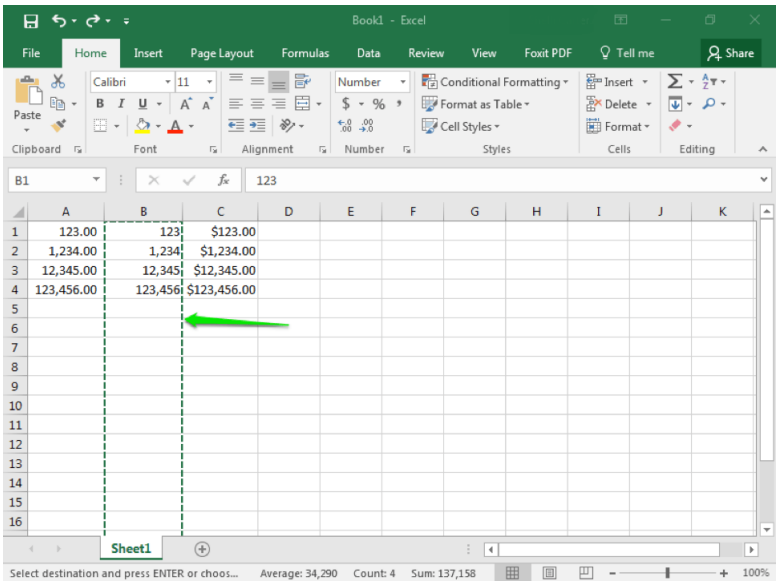
Move Columns and Rows

Note for this section, the word *column* will be used throughout, but the same steps can be used to move a row.

Method 1

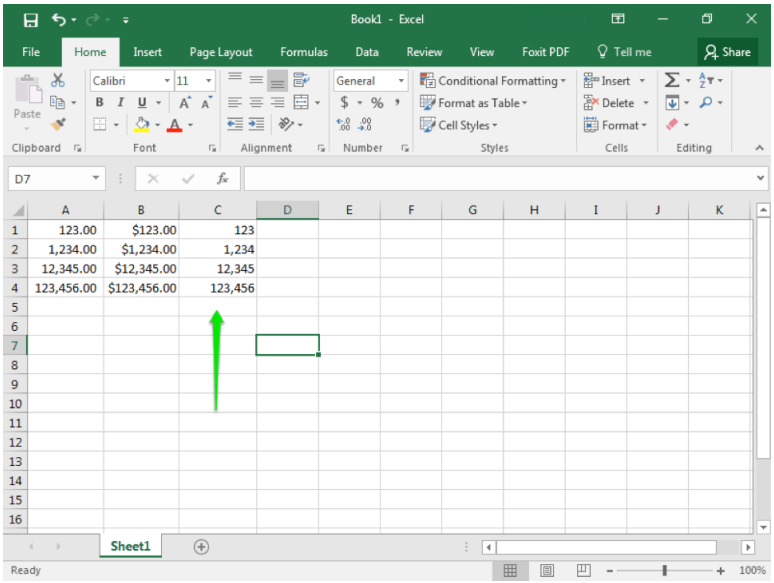
After you have entered several columns of data into a worksheet, you may realize you need to move a column to a different location within the set. Once again, Excel makes it quite easy to move data around a worksheet.

1. Right-click on the column you wish to move.
2. From the pop-up window select Cut. The column you have selected should become outlined in a dashed border.



3. Next, right-click on the column you wish to move your column to the LEFT of.
4. A new dialog window will appear. Select Insert Cut Cells. The column you selected to move should then appear in this new location.

Method 2



The same result can be achieved using a combination of keyboard shortcuts and dialog windows.

1. Right-click on the column you wish to move.
2. Press Ctrl+X. The column you have selected should become outlined in a dashed border.
3. Next, right-click on the column you wish to move your column to the LEFT of.
4. A dialog window will appear. From it select Insert Cut Cells. The column you wish to move should then appear in the new location.

Practice Question

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4.16: Changing Width of Columns and Rows

Learning Outcomes

- Change width of columns and rows.

After you have entered several columns of data into a worksheet, you may realize you cannot read all the information in every cell. In this case you may want to resize the column. Microsoft Excel allows you resize column width to **AutoFit** the text, meaning each column will be sized according to the longest string of text in the column. Alternatively, for visual appeal, you may want all the columns in your table to have the same length; you can easily change multiple columns at the same time to have the same width. As in previous pages, the steps below explain how to resize a column, but the same steps can be used to resize a row as well.

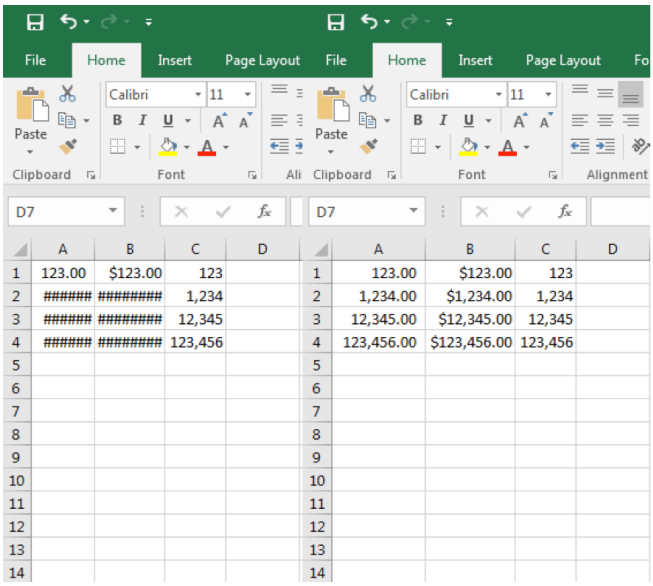
AutoFit Column Width to Text

First, we will discuss making a column width AutoFit to the length of text in that column. Note that when you AutoFit column widths, Excel will make the column length match that of the longest string of text in any cell in that column.

Method 1

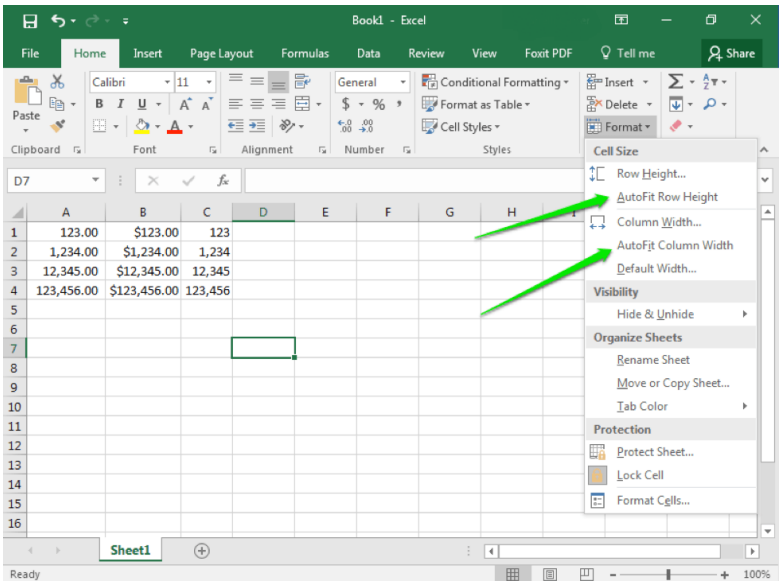
1. Identify the column you wish to resize.
2. Hover your mouse on the right boundary of the topmost cell of that column so that you see a cross or *T* shape. (If you are resizing a row, you will hover over the bottom boundary)
3. Double-click on that right boundary.
4. The column will automatically resize to fit the longest string of text in that column.

Compare the three columns on the left with the three on the right to see the results.



Method 2

You may also use the Format button in the Cells group of the ribbon to achieve the same results. From the dropdown menu, you will choose AutoFit Column Width or AutoFit Row Height. Note that if you wish to resize multiple columns, simply select them all before clicking on the Format button.



Practice Question

https://assessments.lumenlearning.co...essments/18632

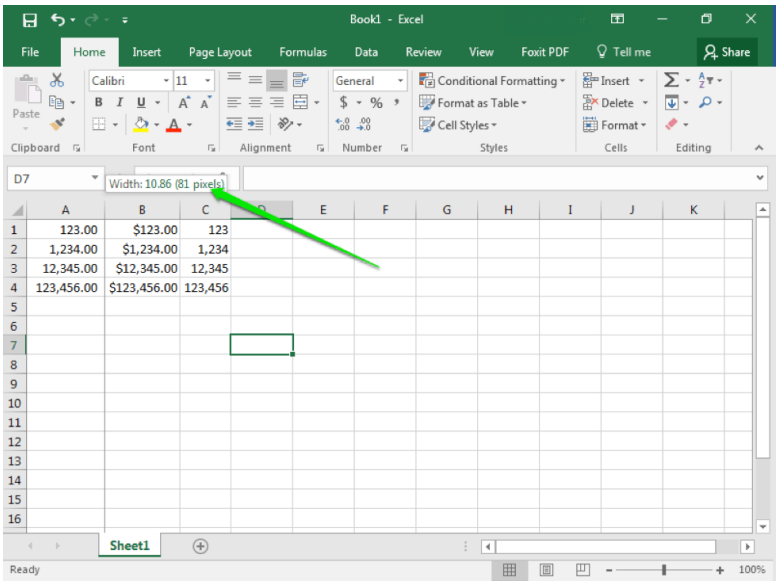
Set all columns to the same width

At other times, from visual reasons you may wish all columns (or rows) to have the same width (or height), regardless of the amount of text in them. Or you may want a single column to have a specified width.

Method 1

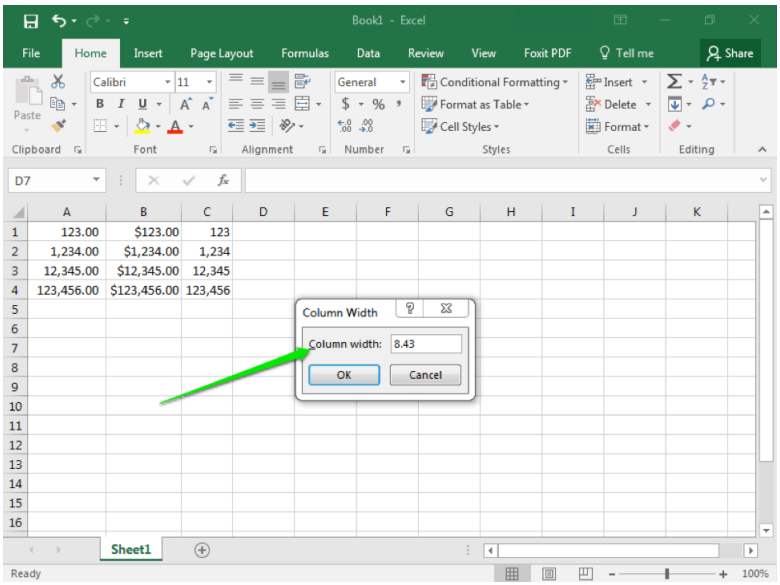
In this case, you will use the pixel information provided by Excel to manually resize the columns.

1. Identify the column width you wish to resize.
2. Hover your mouse on the right boundary of that column so that you see a cross or *T* shape. (If you are resizing a row, you will hover over the bottom boundary)
3. Hold down your mouse button and drag the right boundary until you reach the desired pixel width. The pixels will be displayed in the parentheses.
4. Release the mouse button.



Method 2

You may also use the Format button in the Cells group of the ribbon to set a specific column width. From the dropdown menu, you will choose Column Width or Row Height and manually type in the size you wish each column (or row) to be. Again, if you wish to resize multiple columns, simply select them all before clicking on the Format button.



Practice Question

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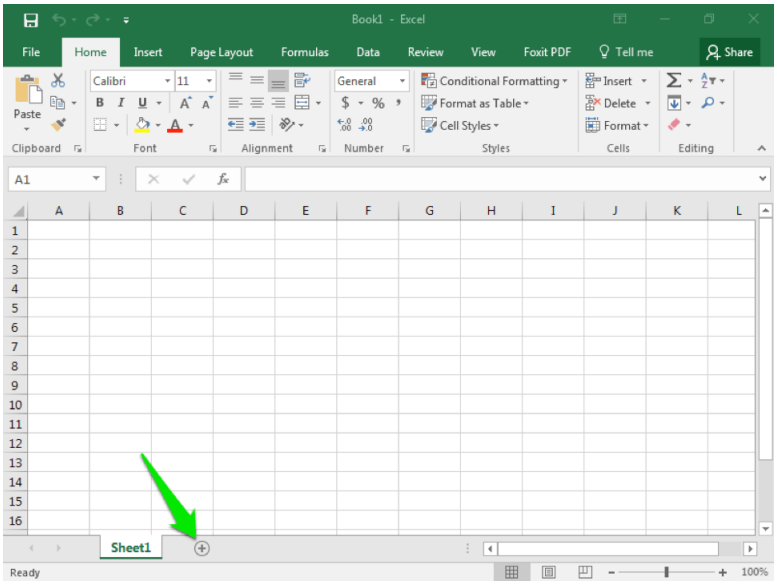
4.17: Creating a Workbook with Multiple Worksheets

Learning Objectives

- Create a new workbook with more than one worksheet.

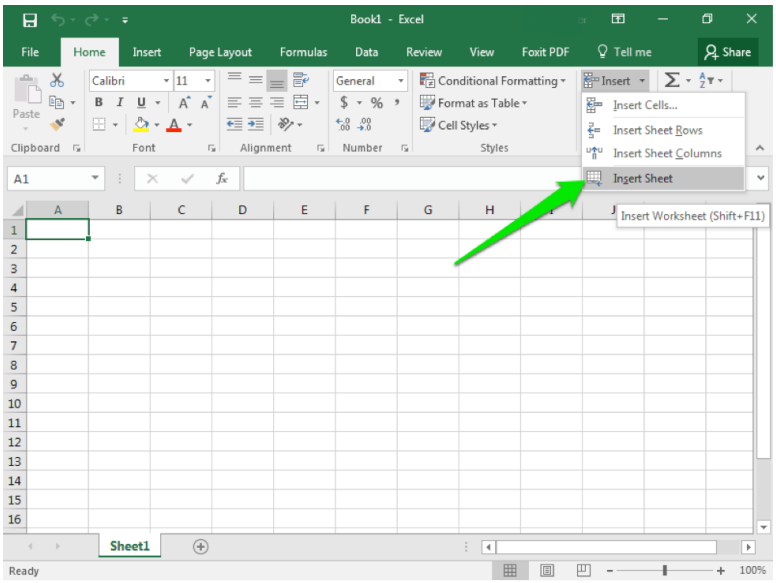
Method 1

The easiest method to add additional worksheets to a workbook is by using the Insert Worksheet shortcut represented by the + button at the bottom of the workbook window. You can use this shortcut button multiple times to insert additional worksheets into your workbook.



Method 2

You can also use the menu option Insert>Insert Sheet from the Cells group of the ribbon.



Practice Questions

https://assessments.lumenlearning.co...essments/18634

https://assessments.lumenlearning.co...essments/18635

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4.18: Printing

Learning Objectives

- Use the Page Layout tab to prepare a worksheet for printing.
- Add headers and footers to a printed worksheet.
- Examine how to print worksheets and workbooks.

Once you have completed a workbook, it is good practice to select the appropriate settings for printing. These settings are in the Page Layout tab of the Ribbon and discussed in this section of the chapter.

Page Setup

Before you can properly print the worksheets in a workbook, you must establish appropriate settings. The following steps explain several of the commands in the Page Layout tab of the Ribbon used to prepare a worksheet for printing:

1. Open the **CH1 Merchandise City Sales Data** workbook, if it is not already open.
2. Click the Page Layout tab of the Ribbon.
3. Click the Margins button in the Page Setup group of commands. This will open a drop-down list of options for setting the margins of your printed document.
4. Click the Wide option from the Margins drop-down list. (see **Figure 1.47**)
5. Click the Orientation button in the Page Setup and select Landscape.
6. Click on the arrow to the bottom right of the Page Setup category to launch the Page Setup options dialog box. Mac Users: there is no “arrow at the bottom right of the Page Setup category”. Simply click the Page Setup button 

on the Page Layout tab.
7. Click the Margins tab and locate “Center on Page”. Click the boxes to **Horizontally** and **Vertically** center the data on the worksheet. Click OK.

Why?

Use Print Settings

Because professionals often share Excel workbooks, it is a good practice to select the appropriate print settings in the Page Layout tab even if you do not intend to print the worksheets in a workbook. It can be extremely frustrating for recipients of a workbook who wish to print your worksheets to find that the necessary print settings have not been selected. This may reflect poorly on your attention to detail, especially if the recipient of the workbook is your boss.

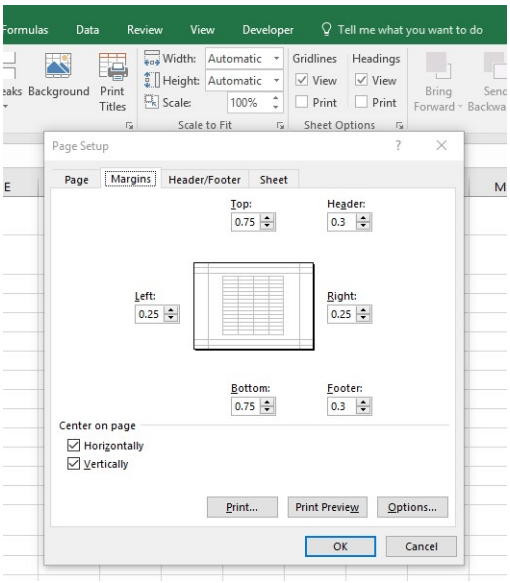


Figure 1.47 Page Layout Commands for Printing

Table 1.2 Printing Resources: Purpose and Use for Page Setup Commands

Command	Purpose	Use
Margins	Sets the top, bottom, right, and left margin space for the printed document	1. Click the Page Layout tab of the Ribbon. 2. Click the Margin button. 3. Click one of the preset margin options or click Custom Margins.
Orientation	Sets the orientation of the printed document to either portrait or landscape	1. Click the Page Layout tab of the Ribbon. 2. Click the Orientation button. 3. Click one of the preset orientation options.
Size	Sets the paper size for the printed document	1. Click the Page Layout tab of the Ribbon. 2. Click the Size button. 3. Click one of the preset paper size options or click More Paper Sizes.
Print Area	Used for printing only a specific area or range of cells on a worksheet	1. Highlight the range of cells on a worksheet that you wish to print. 2. Click the Page Layout tab of the Ribbon. 3. Click the Print Area button. 4. Click the Set Print Area option from the drop-down list.
Breaks	Allows you to manually set the page breaks on a worksheet	1. Activate a cell on the worksheet where the page break should be placed. Breaks are created above and to the left of the activated cell. 2. Click the Page Layout tab of the Ribbon. 3. Click the Breaks button.

Command	Purpose	Use
		4. Click the Insert Page Break option from the drop-down list.
Background	Adds a picture behind the cell locations in a worksheet	1. Click the Page Layout tab of the Ribbon. 2. Click the Background button. 3. Select a picture stored on your computer or network.
Print Titles	Used when printing large data sets that are several pages long. This command will repeat the column headings at the top of each printed page.	1. Click the Page Layout tab of the Ribbon. 2. Click the Print Titles button. 3. Click in the Rows to Repeat at Top input box in the Page Setup dialog box. 4. Click any cell in the row that contains the column headings for your worksheet. 5. Click the OK button at the bottom of the Page Setup dialog box.

Headers and Footers

When printing worksheets from Excel, it is common to add headers and footers to the printed document. Information in the header or footer could include the date, page number, file name, company name, and so on. The following steps explain how to add headers and footers to the Merchandise City, USA Retail Sales worksheet.

1. Click the **Insert** Ribbon and click on **Header & Footer** at the right end of the ribbon (located in the **Text** group). You will see the Design tab added to the Ribbon; this is used for creating the headers and footers for the printed worksheet. Also, this will convert the view of the worksheet from Normal to Page Layout (see **Figure 1.48**). This Page Layout view makes adding Headers & Footers easy and provides key features to incorporate.
2. Click on the Current Date icon to add the date to the left section of the worksheet Header. The &[Date] symbols which will toggle to a Date format when you click outside of this area.

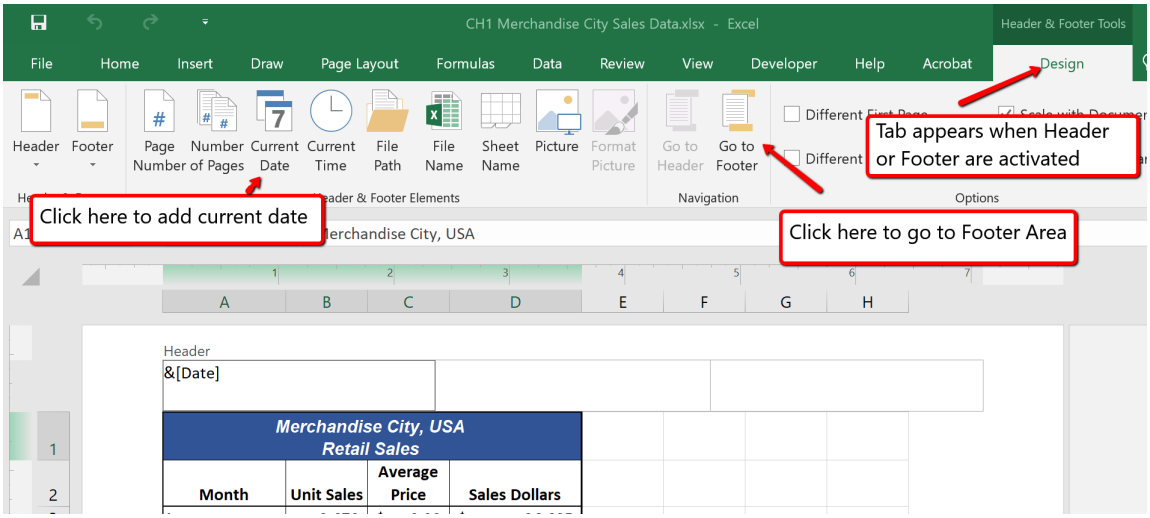


Figure 1.48 Design Tab for Creating Headers and Footers

3. Type your name in the center section of the Header.
4. Place the mouse pointer over the left section of the Header and left click (see **Figure 1.48**).
5. Click the Go to Footer button in the Navigation group of commands in the Design tab of the Ribbon.

6. Place the mouse pointer over the far right section of the footer and left click.
7. Click the Page Number button (you may need to click on the Design tab again) in the Header & Footer Elements group of commands in the Design tab of the Ribbon. This view will display as &[Page] until printed or until you return to normal view.
8. Click any cell location outside the header or footer area. The Design tab for creating headers and footers will disappear.
9. Click the Normal view button in the lower right side of the Status Bar (see **Figure 1.49**).

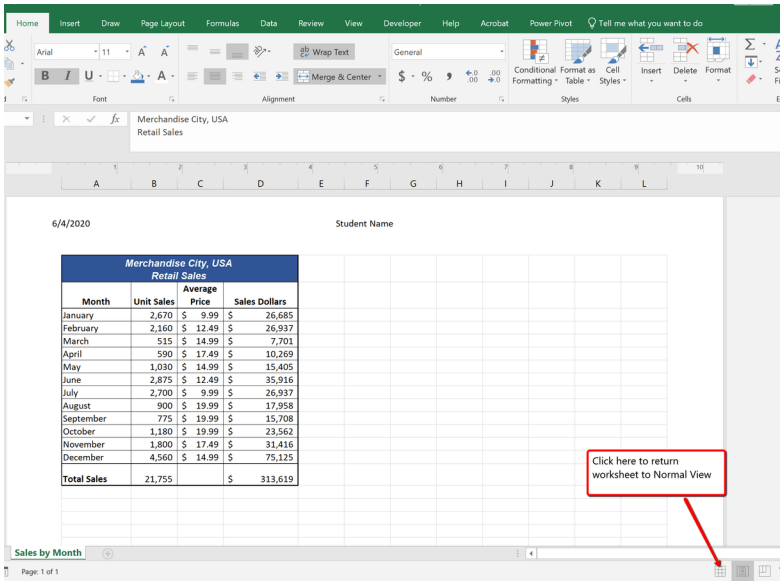


Figure 1.49 Worksheet in Page Layout View

Printing Worksheets and Workbooks

Once you have established the print settings for the worksheets in a workbook and have added headers and footers, you are ready to print your worksheets. The following steps explain how to print the worksheets in the **Merchandise City, USA Sales** workbook:

1. Click the File tab on the Ribbon.
2. Click the Print option on the left side of the Backstage view (see **Figure 1.50**). On the right side of the Backstage view, you will be able to see a preview of your printed worksheet.

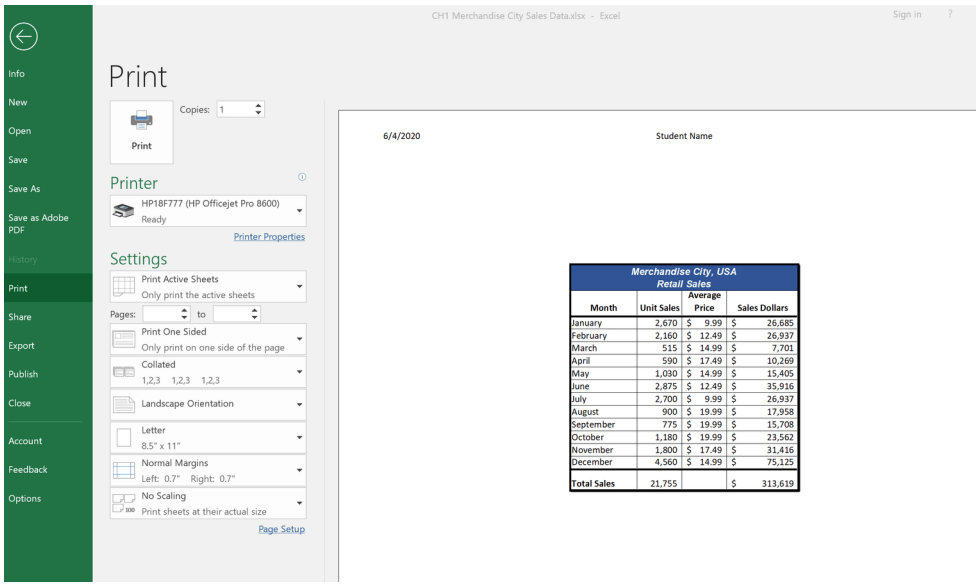


Figure 1.50 Backstage View Print option

3. Click the Print Active Sheets button in the Print section of the Backstage view (see **Figure 1.50**).

4. If your instructor has asked you to print your work, click the Print button.
5. Click the Home tab of the Ribbon.
6. Save and close the workbook.

Key Takeaways

- The commands in the Page Layout tab of the Ribbon are used to prepare a worksheet for printing.
- You can add headers and footers to a worksheet to show key information such as page numbers, the date, the file name, your name, and so on.
- The Print commands are in the File tab of the Ribbon.

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4.19: Chapter Practice

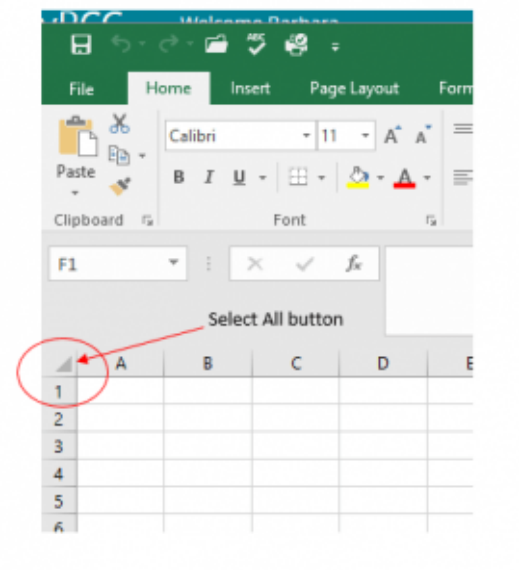
To assess your understanding of the material covered in the chapter, complete the following assignment.

Basic Monthly Budget for Medical Office

Download Data File: PR1 Data

Creating and maintaining budgets are common practices in many careers. Budgets play a critical role in helping a business or household control expenditures. In this exercise you will create a budget for a hypothetical medical office while reviewing the skills covered in this chapter.

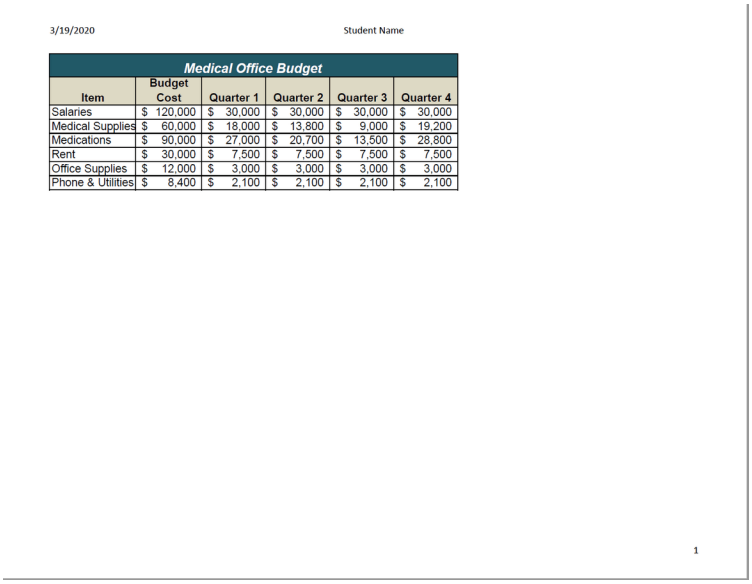
1. Open the file name **PR1 Data**, then Save As **PR1 Medical Office Budget**.
2. Activate all the cell locations in the Sheet1 worksheet by clicking the Select All button in the upper left corner of the worksheet.



3. In the Home tab of the Ribbon, set the font style to Arial and the font size to 12 points. Then click any cell to Deselect.
4. Increase the width of Column A so all the entries in the range A3:A8 are visible. Place the mouse pointer between the letter A and letter B of Column A and Column B. When the mouse pointer changes to a double arrow, left click and drag it to the right until the character width is approximately 18.00.
5. Enter **Quarter 1** in cell B2.
6. Use AutoFill to complete the headings in the range C2:E2. Activate cell B2 and place the mouse pointer over the Fill Handle.
7. Select the range B2:E2 and click the Format button in the Home tab of the Ribbon. Click the Column Width option, type 11.57 in the Column Width dialog box, and then click the OK button in the Column Width dialog box.
8. Enter the words **Medical Office Budget** in cell A1.
9. Insert a blank column between Columns A and B by clicking on any cell in Column B. Then, click the drop-down arrow of the Insert button in the Home tab of the Ribbon. Click the Insert Sheet Columns option.
10. Enter the words **Budget Cost** in cell B2.
11. Adjust the width of Column B to approximately 12.0 characters.
12. Select the range A1:F1 and click the Merge & Center button in the Home tab of the Ribbon to merge the cells in that range.
13. Make the following format adjustments to the range A1:F1: bold; italics; change the font size to 14 points; change the cell fill color to Aqua, Accent 5, Darker 50%; and change the font color to white.
14. Increase the height of Row 1 to approximately 24.75 points.
15. Make the following format adjustment to the range A2:F2: bold; and fill color to Tan, Background 2, Darker 10%. Center the

column titles so that they are horizontally centered in each cell.

16. Select B2 and choose the Wrap Text button in the Home tab of the Ribbon. Increase the height of Row 2 to approximately 30 points.
17. Copy cell C3 and paste the contents into the range D3:F3.
18. Copy the contents in the range C6:C8 by highlighting the range and clicking the Copy button in the Home tab of the Ribbon. Then, highlight the range D6:F8 and click the Paste button in the Home tab of the Ribbon.
19. Calculate the total budget for all four quarters for the salaries. Click cell B3 and click the down arrow on the AutoSum button in the Formulas tab of the Ribbon. Click the Sum option from the drop-down list. Then, highlight the range C3:F3 and press the ENTER key on your keyboard.
20. Copy the formula in cell B3 and paste them into the range B4:B8.
21. Format the range B3:F8 with Accounting format and zero decimal places.
    If any of the cells display pound symbols (######), simply widen the column to display the values again.
22. Select the range A1:F8 and click the down arrow next to the Borders button in the Home tab of the Ribbon. Select the All Borders option from the drop-down list.
23. Double click the Sheet1 worksheet tab to change the name of Sheet1 to the word **Budget**, and press the ENTER key. Delete any unnecessary worksheets.
24. Change the orientation of the Budget worksheet so it prints landscape instead of portrait.
25. Use Fit to 1 page so the Budget worksheet prints on one piece of paper, if it does not already.
26. Add a header to the Budget worksheet that shows the date in the upper left corner and your name in the center.
27. Add a footer to the Budget worksheet that shows the page number in the lower right corner.
28. Check the spelling on the worksheet and make any necessary changes. Save **PR1 Medical Office Budget** workbook.
29. Compare your work to the screenshot below and then submit the **PR1 Medical Office Budget** workbook as directed by your instructor.



3/19/2020 Student Name

Medical Office Budget					
Item	Budget Cost	Quarter 1	Quarter 2	Quarter 3	Quarter 4
Salaries	$ 120,000	$ 30,000	$ 30,000	$ 30,000	$ 30,000
Medical Supplies	$ 60,000	$ 18,000	$ 13,800	$ 9,000	$ 19,200
Medications	$ 90,000	$ 27,000	$ 20,700	$ 13,500	$ 28,800
Rent	$ 30,000	$ 7,500	$ 7,500	$ 7,500	$ 7,500
Office Supplies	$ 12,000	$ 3,000	$ 3,000	$ 3,000	$ 3,000
Phone & Utilities	$ 8,400	$ 2,100	$ 2,100	$ 2,100	$ 2,100

1

PR 1 Medical Office Budget Solution Screenshot

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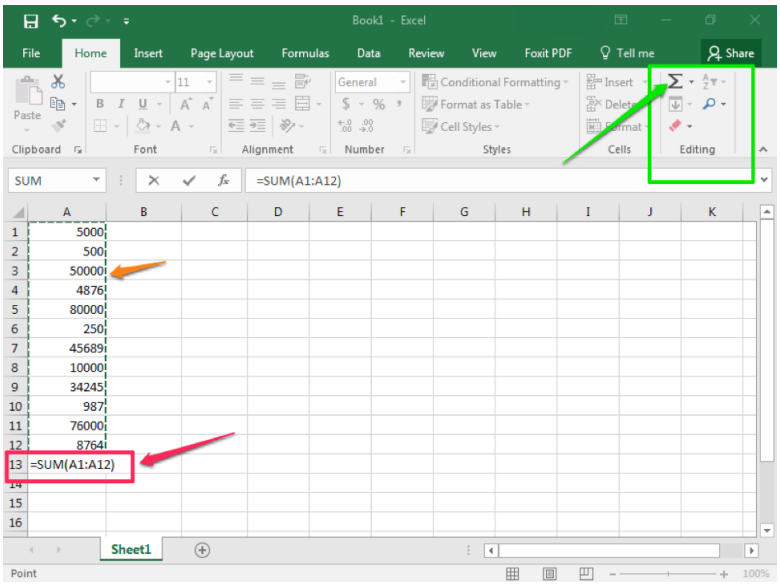
4.20: SUM Data

Learning Outcomes

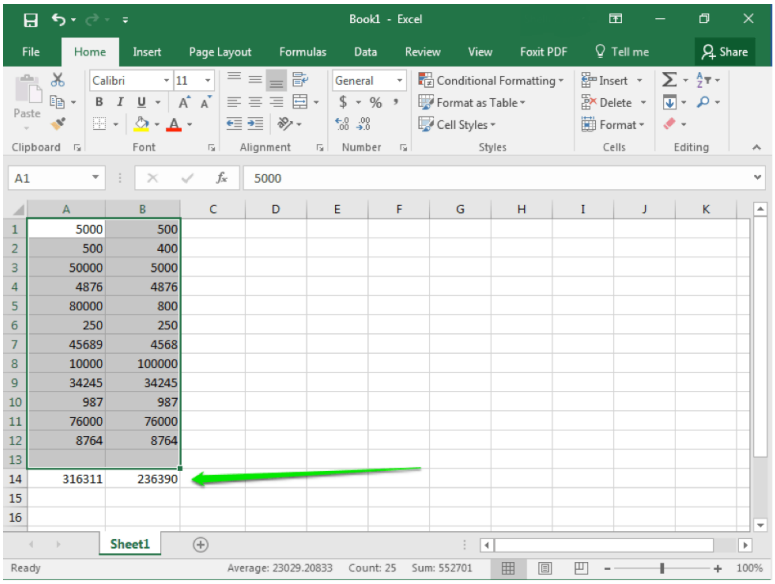
- Use AutoSum button.

One of the main uses for Excel is to organize and manipulate numerical data. Often you may wish to add up all the numbers in a column or row. Excel has formulas and commands to automatically add your data, and the easiest way to use this feature is the AutoSum button.

1. Once your numbers are organized in either a row or column, click on the cell where you would like the total sum to display. In the screenshot below this was A13.
2. Click on the AutoSum button from the Editing group of the ribbon.
3. Excel will highlight the cells that it is adding up and will apply the SUM formula.
4. Hit Enter to accept the highlighted cells and see the total value of your data.



Note that it is possible to SUM several columns (or rows) at once. Select all the cells you wish to display a SUM and click AutoSum. Excel will individually add up the columns.

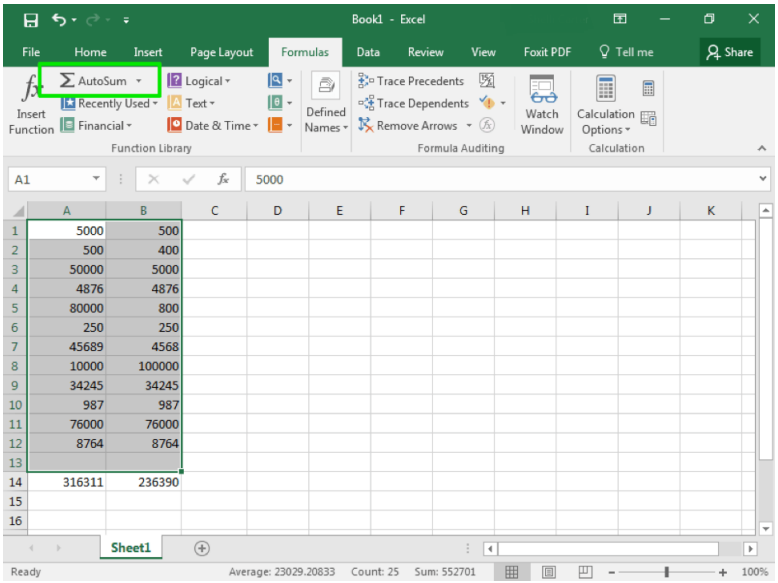


Practice Question

https://assessments.lumenlearning.co...essments/18644

The AutoSum option can be found in two areas:

- It is contained in the Editing group of the ribbon, as shown in the first example above.
- It can also be found under the Formulas tab.



Practice Question

https://assessments.lumenlearning.co...essments/18645

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4.21: Simple Math

Learning Objectives

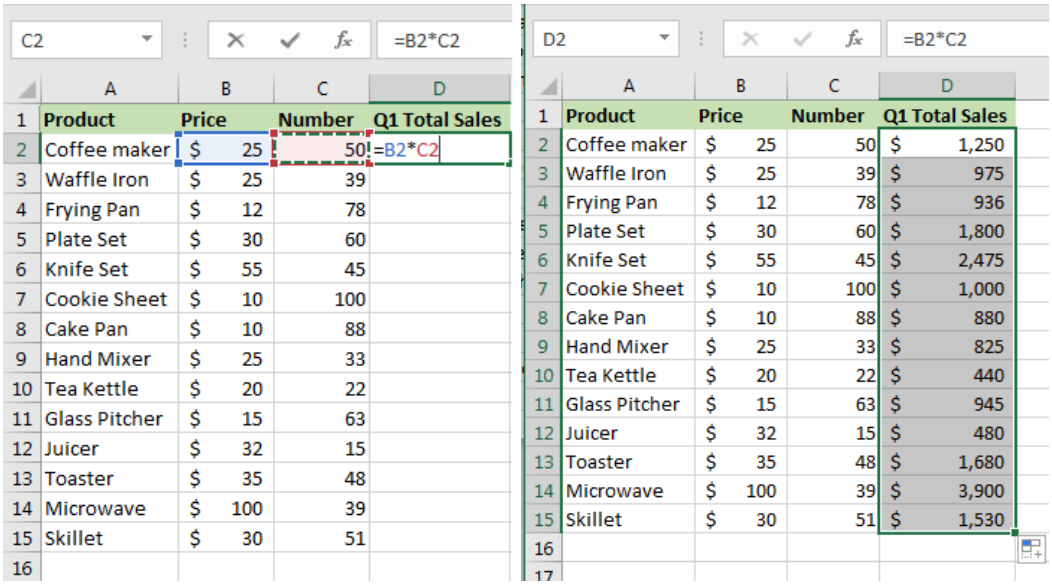
- Complete simple math functions in Excel

Excel spreadsheets are often used for calculating numbers with simple math. There are a few things to learn to set up using simple math calculations in Excel. You've already learned about the SUM function. This next section will teach other simple math steps to use in spreadsheets.

The basic math calculation steps in Excel are set up with the background of first quarter sales numbers for a department store. The example table includes the product type, sales price, number of items sold and the total for each item. Start by figuring out the total sales for each product type for the quarter.

Multiplication

- Total sales for each product requires the multiplication of sales price and number sold.
- Select the cell in Q1 total sales column and type in **= Price Cell * Number Cell.**
- Press the keyboard **Enter** key and the total is calculated.
- Type the same formula in for each cell or use the flash fill way by dragging the bottom right corner down the entire column and it will fill with the total sales for each product.



C2 =B2*C2

	A	B	C	D
1	Product	Price	Number	Q1 Total Sales
2	Coffee maker	$ 25	50	=B2*C2
3	Waffle Iron	$ 25	39	
4	Frying Pan	$ 12	78	
5	Plate Set	$ 30	60	
6	Knife Set	$ 55	45	
7	Cookie Sheet	$ 10	100	
8	Cake Pan	$ 10	88	
9	Hand Mixer	$ 25	33	
10	Tea Kettle	$ 20	22	
11	Glass Pitcher	$ 15	63	
12	Juicer	$ 32	15	
13	Toaster	$ 35	48	
14	Microwave	$ 100	39	
15	Skillet	$ 30	51	
16				

D2 =B2*C2

	A	B	C	D
1	Product	Price	Number	Q1 Total Sales
2	Coffee maker	$ 25	50	$ 1,250
3	Waffle Iron	$ 25	39	$ 975
4	Frying Pan	$ 12	78	$ 936
5	Plate Set	$ 30	60	$ 1,800
6	Knife Set	$ 55	45	$ 2,475
7	Cookie Sheet	$ 10	100	$ 1,000
8	Cake Pan	$ 10	88	$ 880
9	Hand Mixer	$ 25	33	$ 825
10	Tea Kettle	$ 20	22	$ 440
11	Glass Pitcher	$ 15	63	$ 945
12	Juicer	$ 32	15	$ 480
13	Toaster	$ 35	48	$ 1,680
14	Microwave	$ 100	39	$ 3,900
15	Skillet	$ 30	51	$ 1,530
16				
17				

Practice Question

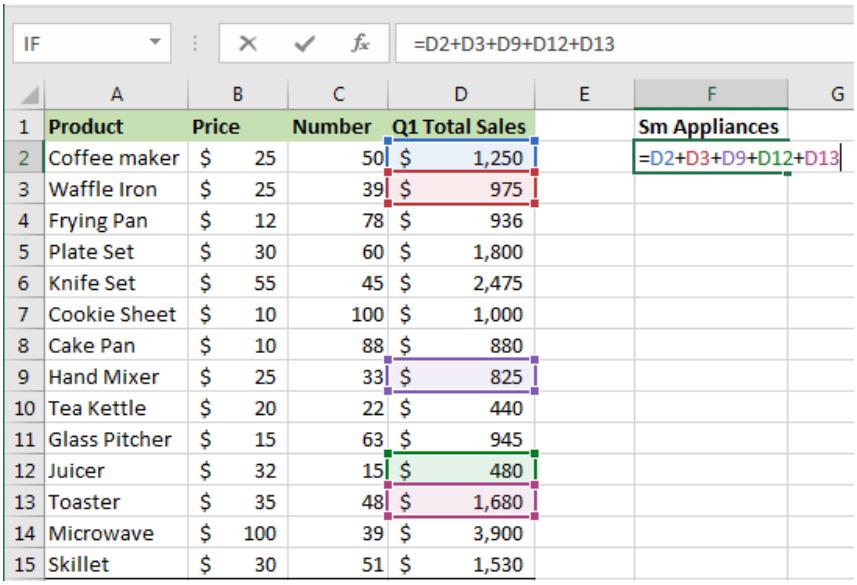
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Addition

- To find total sales for just small appliances, add their sales totals together by using the plus sign.
- Select the cell under total the **Sm Appliances** and type in **= Q1 Total Sales Cell Reference for Product1 + Q1 Total Sales Cell Reference for Product2 + Q1 Total Sales Cell Reference for Product3 + Q1 Total Sales Cell Reference for**

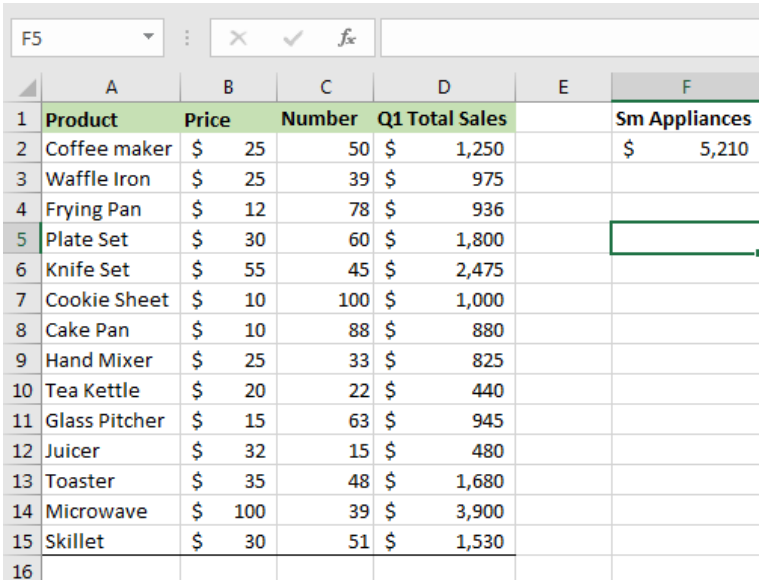
Product4 , etc. (for this example, the Microwave is not a small appliance).

- Press the keyboard **Enter** key.
- Total sales for all small appliance sales is displayed.
- Another way to write this addition formula is by using brackets **=SUM(D2+D3+D9+D12+D13)**.



IF =D2+D3+D9+D12+D13

	A	B	C	D	E	F	G
1	Product	Price	Number	Q1 Total Sales		Sm Appliances	
2	Coffee maker	$ 25	50	$ 1,250		=D2+D3+D9+D12+D13	
3	Waffle Iron	$ 25	39	$ 975			
4	Frying Pan	$ 12	78	$ 936			
5	Plate Set	$ 30	60	$ 1,800			
6	Knife Set	$ 55	45	$ 2,475			
7	Cookie Sheet	$ 10	100	$ 1,000			
8	Cake Pan	$ 10	88	$ 880			
9	Hand Mixer	$ 25	33	$ 825			
10	Tea Kettle	$ 20	22	$ 440			
11	Glass Pitcher	$ 15	63	$ 945			
12	Juicer	$ 32	15	$ 480			
13	Toaster	$ 35	48	$ 1,680			
14	Microwave	$ 100	39	$ 3,900			
15	Skillet	$ 30	51	$ 1,530			

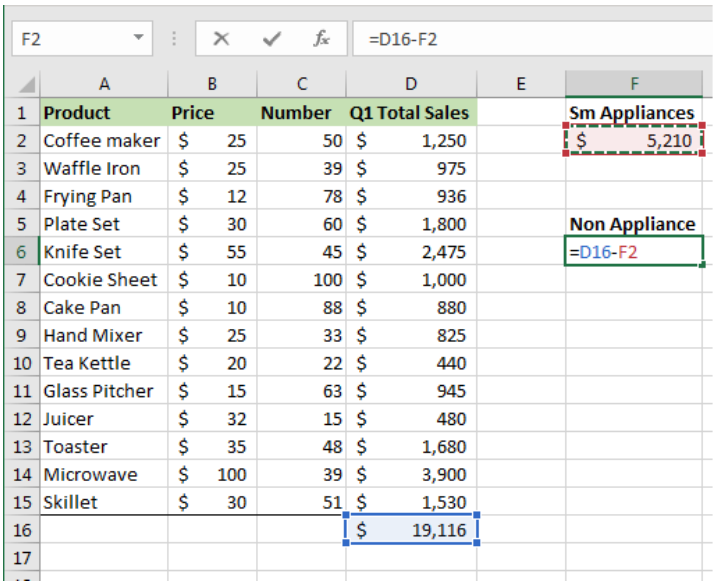


F5

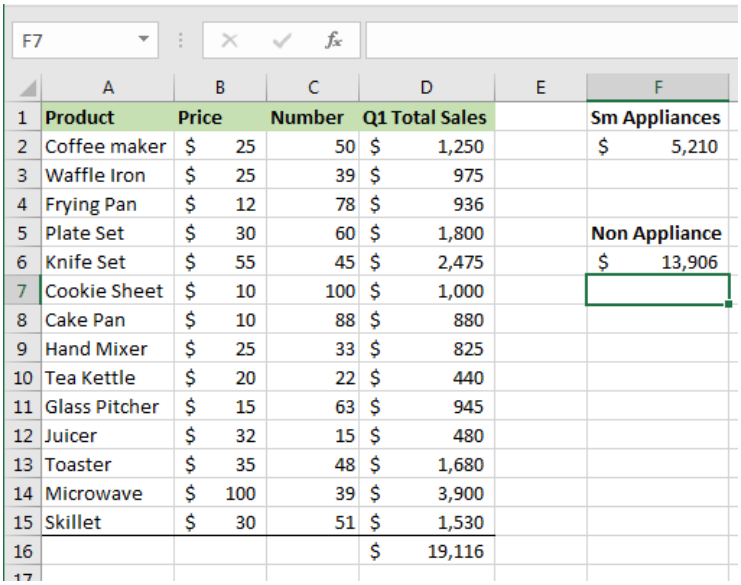
	A	B	C	D	E	F
1	Product	Price	Number	Q1 Total Sales		Sm Appliances
2	Coffee maker	$ 25	50	$ 1,250		$ 5,210
3	Waffle Iron	$ 25	39	$ 975		
4	Frying Pan	$ 12	78	$ 936		
5	Plate Set	$ 30	60	$ 1,800		
6	Knife Set	$ 55	45	$ 2,475		
7	Cookie Sheet	$ 10	100	$ 1,000		
8	Cake Pan	$ 10	88	$ 880		
9	Hand Mixer	$ 25	33	$ 825		
10	Tea Kettle	$ 20	22	$ 440		
11	Glass Pitcher	$ 15	63	$ 945		
12	Juicer	$ 32	15	$ 480		
13	Toaster	$ 35	48	$ 1,680		
14	Microwave	$ 100	39	$ 3,900		
15	Skillet	$ 30	51	$ 1,530		
16						

Subtraction

- For the total sales for all products, except small appliances, subtract the grand total from the small appliance total using the subtraction sign.
- Select the cell under total the **Non-Appliance** and type in **= Grand Totals Sales Cell Reference – Sm Appliance total**.
- Press the keyboard Enter key.
- Total sales for all products minus small appliances are displayed.
- Another way to write this subtraction formula is **=SUM(D16-F2)**.



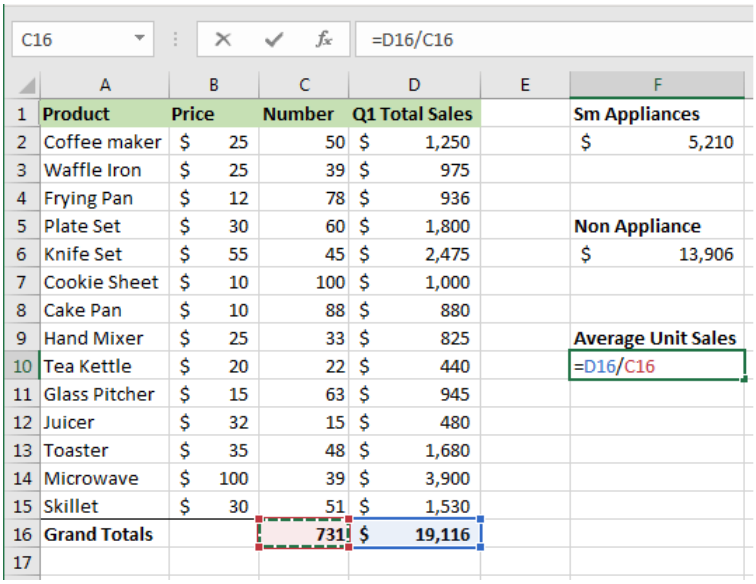
	A	B	C	D	E	F
1	Product	Price	Number	Q1 Total Sales		Sm Appliances
2	Coffee maker	$ 25	50	$ 1,250		$ 5,210
3	Waffle Iron	$ 25	39	$ 975		
4	Frying Pan	$ 12	78	$ 936		
5	Plate Set	$ 30	60	$ 1,800		Non Appliance
6	Knife Set	$ 55	45	$ 2,475		=D16-F2
7	Cookie Sheet	$ 10	100	$ 1,000		
8	Cake Pan	$ 10	88	$ 880		
9	Hand Mixer	$ 25	33	$ 825		
10	Tea Kettle	$ 20	22	$ 440		
11	Glass Pitcher	$ 15	63	$ 945		
12	Juicer	$ 32	15	$ 480		
13	Toaster	$ 35	48	$ 1,680		
14	Microwave	$ 100	39	$ 3,900		
15	Skillet	$ 30	51	$ 1,530		
16				$ 19,116		
17						



	A	B	C	D	E	F
1	Product	Price	Number	Q1 Total Sales		Sm Appliances
2	Coffee maker	$ 25	50	$ 1,250		$ 5,210
3	Waffle Iron	$ 25	39	$ 975		
4	Frying Pan	$ 12	78	$ 936		
5	Plate Set	$ 30	60	$ 1,800		Non Appliance
6	Knife Set	$ 55	45	$ 2,475		$ 13,906
7	Cookie Sheet	$ 10	100	$ 1,000		
8	Cake Pan	$ 10	88	$ 880		
9	Hand Mixer	$ 25	33	$ 825		
10	Tea Kettle	$ 20	22	$ 440		
11	Glass Pitcher	$ 15	63	$ 945		
12	Juicer	$ 32	15	$ 480		
13	Toaster	$ 35	48	$ 1,680		
14	Microwave	$ 100	39	$ 3,900		
15	Skillet	$ 30	51	$ 1,530		
16				$ 19,116		

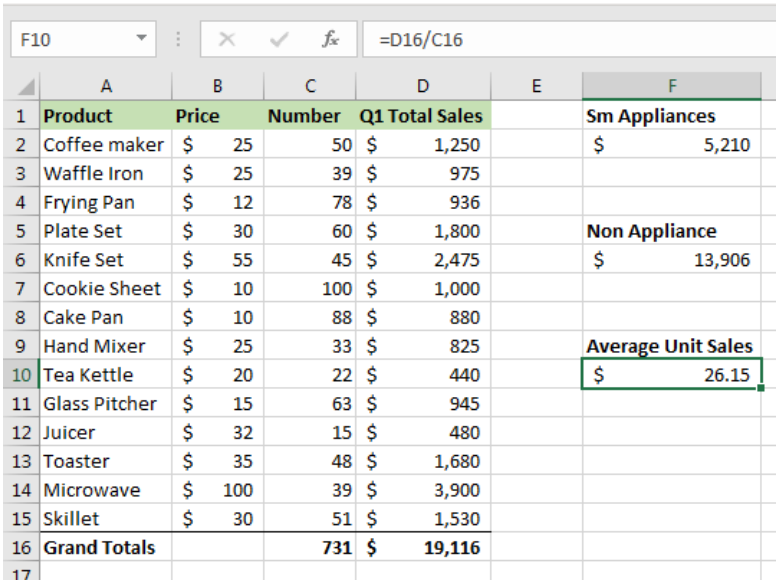
Division

- Maybe you need to know what the average unit sale would be across all products for the first quarter. In that case, divide the grand total sales by the number of units sold using the division sign
- Select the cell under **Average Unit Sales** title and type in **= Grand Totals Sales Cell Reference / Number**.
- Press the keyboard **Enter** key.
- You will now see what the average product sale was for Q1.
- Another way to write this division/average formula is **=SUM(D16/C16)**.



C16 =D16/C16

	A	B	C	D	E	F
1	**Product**	**Price**	**Number**	**Q1 Total Sales**		**Sm Appliances**
2	Coffee maker	$ 25	50	$ 1,250		$ 5,210
3	Waffle Iron	$ 25	39	$ 975		
4	Frying Pan	$ 12	78	$ 936		
5	Plate Set	$ 30	60	$ 1,800		**Non Appliance**
6	Knife Set	$ 55	45	$ 2,475		$ 13,906
7	Cookie Sheet	$ 10	100	$ 1,000		
8	Cake Pan	$ 10	88	$ 880		
9	Hand Mixer	$ 25	33	$ 825		**Average Unit Sales**
10	Tea Kettle	$ 20	22	$ 440		=D16/C16
11	Glass Pitcher	$ 15	63	$ 945		
12	Juicer	$ 32	15	$ 480		
13	Toaster	$ 35	48	$ 1,680		
14	Microwave	$ 100	39	$ 3,900		
15	Skillet	$ 30	51	$ 1,530		
16	**Grand Totals**		**731**	**$ 19,116**		
17						



F10 =D16/C16

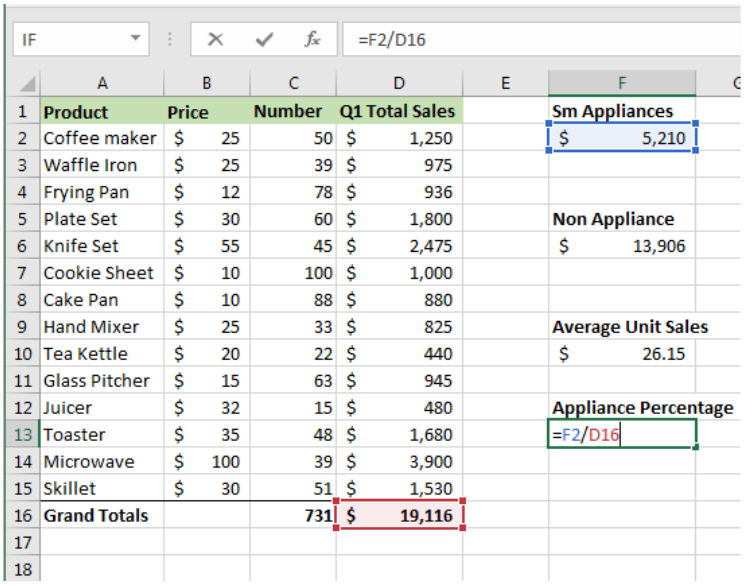
	A	B	C	D	E	F
1	**Product**	**Price**	**Number**	**Q1 Total Sales**		**Sm Appliances**
2	Coffee maker	$ 25	50	$ 1,250		$ 5,210
3	Waffle Iron	$ 25	39	$ 975		
4	Frying Pan	$ 12	78	$ 936		
5	Plate Set	$ 30	60	$ 1,800		**Non Appliance**
6	Knife Set	$ 55	45	$ 2,475		$ 13,906
7	Cookie Sheet	$ 10	100	$ 1,000		
8	Cake Pan	$ 10	88	$ 880		
9	Hand Mixer	$ 25	33	$ 825		**Average Unit Sales**
10	Tea Kettle	$ 20	22	$ 440		$ 26.15
11	Glass Pitcher	$ 15	63	$ 945		
12	Juicer	$ 32	15	$ 480		
13	Toaster	$ 35	48	$ 1,680		
14	Microwave	$ 100	39	$ 3,900		
15	Skillet	$ 30	51	$ 1,530		
16	**Grand Totals**		**731**	**$ 19,116**		
17						

Practice Question

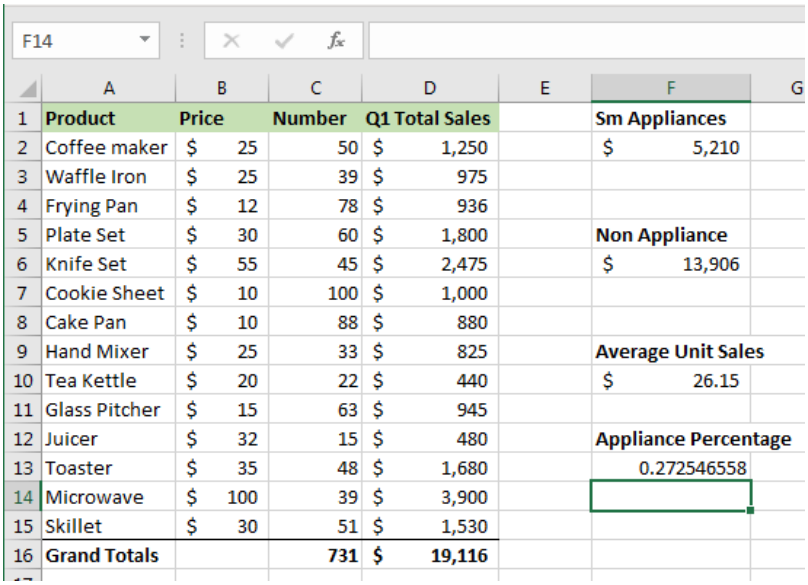
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Percentage

- To find what the percentage of sales for small appliances out of total sales was, divide the total small appliance sales by the grand total sales using the division sign.
- Select the cell under **Appliance Percentage** title and type in **= Sm Appliances / Grand Totals Sales Cell Reference**.
- Press the keyboard **Enter** key.
- The average product sale was for Q1 displays as a decimal point.
- Another way to write this percentage formula is **=SUM(F2/D16).**

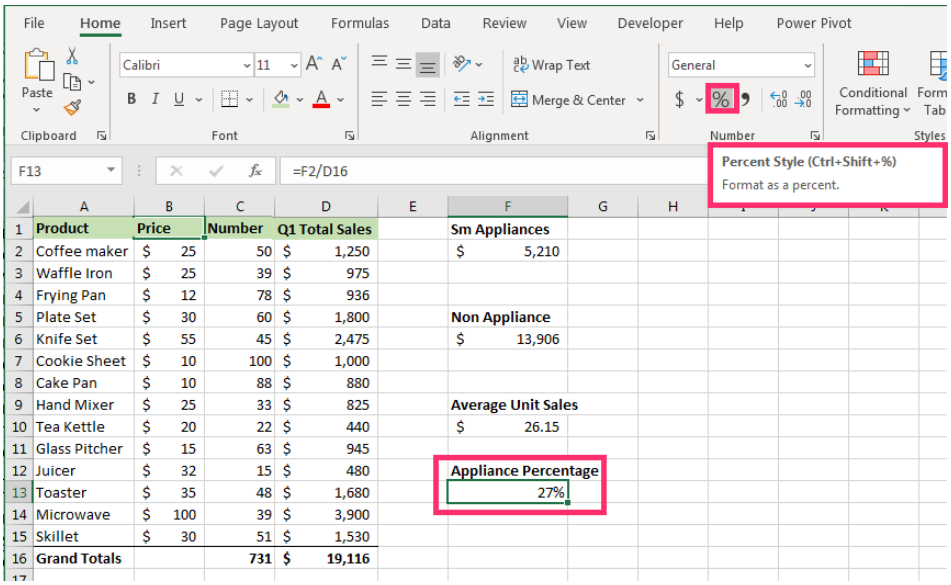


	A	B	C	D	E	F
1	**Product**	**Price**	**Number**	**Q1 Total Sales**		**Sm Appliances**
2	Coffee maker	$ 25	50	$ 1,250		$ 5,210
3	Waffle Iron	$ 25	39	$ 975		
4	Frying Pan	$ 12	78	$ 936		
5	Plate Set	$ 30	60	$ 1,800		**Non Appliance**
6	Knife Set	$ 55	45	$ 2,475		$ 13,906
7	Cookie Sheet	$ 10	100	$ 1,000		
8	Cake Pan	$ 10	88	$ 880		
9	Hand Mixer	$ 25	33	$ 825		**Average Unit Sales**
10	Tea Kettle	$ 20	22	$ 440		$ 26.15
11	Glass Pitcher	$ 15	63	$ 945		
12	Juicer	$ 32	15	$ 480		**Appliance Percentage**
13	Toaster	$ 35	48	$ 1,680		=F2/D16
14	Microwave	$ 100	39	$ 3,900		
15	Skillet	$ 30	51	$ 1,530		
16	**Grand Totals**		**731**	**$ 19,116**		
17						
18						



	A	B	C	D	E	F
1	**Product**	**Price**	**Number**	**Q1 Total Sales**		**Sm Appliances**
2	Coffee maker	$ 25	50	$ 1,250		$ 5,210
3	Waffle Iron	$ 25	39	$ 975		
4	Frying Pan	$ 12	78	$ 936		
5	Plate Set	$ 30	60	$ 1,800		**Non Appliance**
6	Knife Set	$ 55	45	$ 2,475		$ 13,906
7	Cookie Sheet	$ 10	100	$ 1,000		
8	Cake Pan	$ 10	88	$ 880		
9	Hand Mixer	$ 25	33	$ 825		**Average Unit Sales**
10	Tea Kettle	$ 20	22	$ 440		$ 26.15
11	Glass Pitcher	$ 15	63	$ 945		
12	Juicer	$ 32	15	$ 480		**Appliance Percentage**
13	Toaster	$ 35	48	$ 1,680		0.272546558
14	Microwave	$ 100	39	$ 3,900		
15	Skillet	$ 30	51	$ 1,530		
16	**Grand Totals**		**731**	**$ 19,116**		

To have the results display as a percentage, click the % button on the **Home** tab in the **Number** group.



	Product	Price	Number	Q1 Total Sales
2	Coffee maker	$ 25	50	$ 1,250
3	Waffle Iron	$ 25	39	$ 975
4	Frying Pan	$ 12	78	$ 936
5	Plate Set	$ 30	60	$ 1,800
6	Knife Set	$ 55	45	$ 2,475
7	Cookie Sheet	$ 10	100	$ 1,000
8	Cake Pan	$ 10	88	$ 880
9	Hand Mixer	$ 25	33	$ 825
10	Tea Kettle	$ 20	22	$ 440
11	Glass Pitcher	$ 15	63	$ 945
12	Juicer	$ 32	15	$ 480
13	Toaster	$ 35	48	$ 1,680
14	Microwave	$ 100	39	$ 3,900
15	Skillet	$ 30	51	$ 1,530
16	**Grand Totals**		**731**	**$ 19,116**

Note

More than one calculation can be included in a single cell's formula. For example, you want to know the total sales of a few specific items for Q1; coffee maker, tea kettle and microwave.

If the Q1 totals hadn't been calculated yet, you'd need to multiply the number and sales price of each item then add up the total. This can be written in one formula by placing a comma between calculations. It is calculated like this **=SUM(B2*C2,B10*C10,B14*C14).**

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4.22: Working with Charts – Excel Basics Tutorial

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4.23: Introduction to Charts

What you'll learn to do: Create and modify charts

Excel is not just used for organizing and processing data and formulas. It also can be used to visually represent data in the form of charts and graphs.

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4.24: Charts

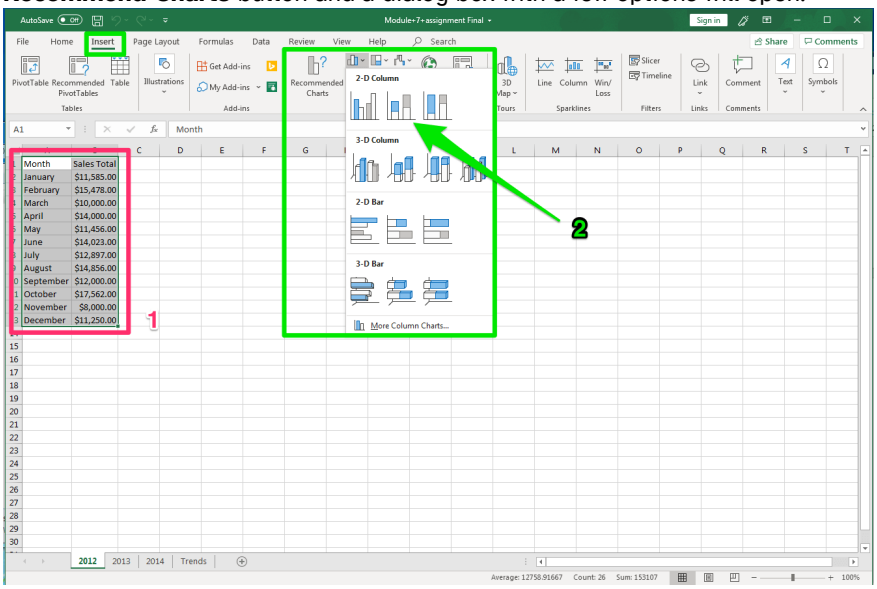
Learning Outcomes

- Add charts

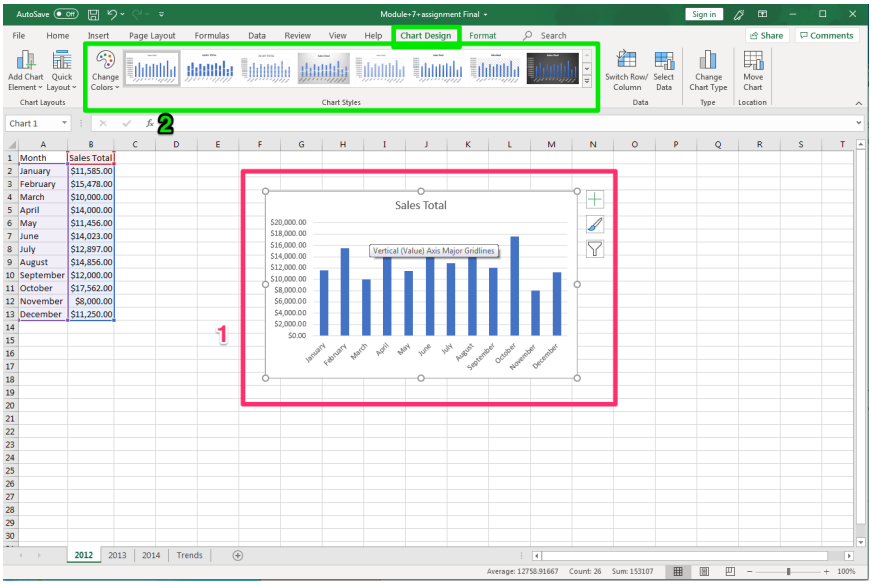
In Excel charts are a primary way to convey the analyzation of numerical data. If you've heard the adage "A picture is worth a thousand words" then you know it also holds true for pictures to interpret numbers. Charts make sales trends, marketing numbers and comparisons of all sorts of numerical data come to life.

Excel contains multiple types of charts to choose to make the data speak. Follow these steps to add a chart to a worksheet.

1. Open a worksheet with the numbers already entered or enter the data to be used in the chart. Make sure to organize the data into the order in which you wish it to be displayed in a chart. Select all the data making sure to include the headers and labels for the data. This should be at least two columns of data.
2. Select the **Insert** tab and find the **Charts** Group on the ribbon. Select the style of chart to use for that data. For this example, it is a Bar chart style, in the 2-D Column, Cluster column chart. If you are uncertain of what type of chart to use, select the **Recommend Charts** button and a dialog box with a few options will open.



3. The chart opens with the data information in it and can be moved, edited and resized like a graphic. Notice that when the chart is selected, the data associated with it is highlighted in different colors
4. There are two main ways to edit a chart:
    1. To the upper right of the chart area are three buttons that can be used to change Chart Elements, modify the style or color, and edit the valued or names.
    2. Modifying the chart style, color and design can also be accomplished by rolling the cursor over the options in the ribbon and selecting the style desired.



Practice Questions

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https://assessments.lumenlearning.co...essments/18655

Learn More

There are many types and styles of charts and graphs from which to choose. The same process of adding a chart as it was done above is used to insert other types of charts. Here are three other examples of types of charts based on the same data as the first chart. See which one seems to represent the data the clearest.

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4.25: Clustered Column Charts

Learning Outcomes

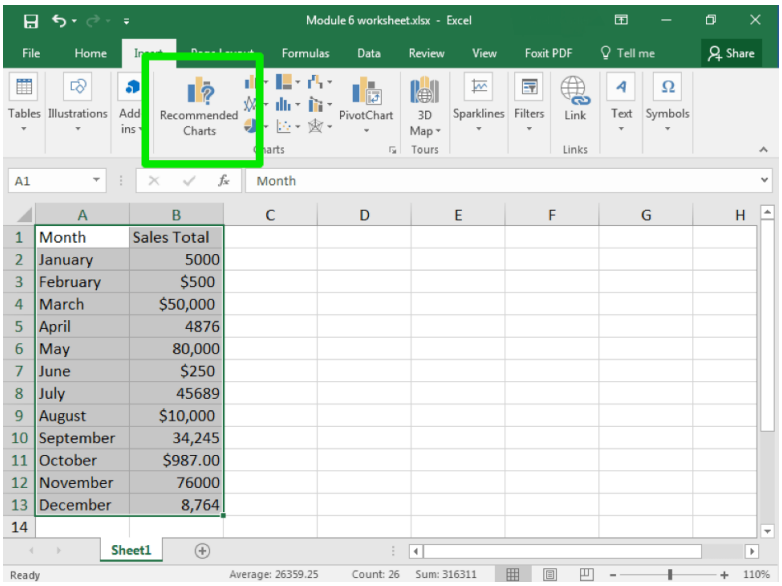
- Create a clustered column chart.

Excel is not just used for organizing and processing data and formulas. It also can be used to visually represent data in the form of charts and graphs. In this page, we will work on creating a basic chart, the clustered column chart, and then modifying a chart style.

A clustered column chart is sometimes called a bar graph, because it shows data organized in solid shapes like pillars. A clustered column chart organizes these pillars up and down, so they are “columns.” On the other hand, a clustered bar graph organizes these pillars left to right, so they are “bars.” Bar graphs are useful charts when looking at changes from month to month or across employees.

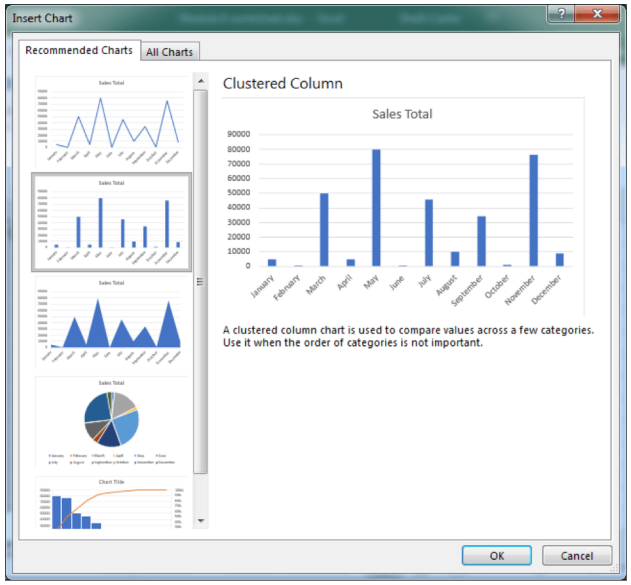
The first step to creating any chart is to organize your data. It is definitely a good idea to include headers in the first cell of each column. By default, a clustered column chart will cluster the data by the columns in your table, so try to keep that in mind when setting up the worksheet.

1. After organizing your data, select the cells you wish to include in the chart. This should be at least two columns.
2. Click on the Insert tab and find the Charts group of the ribbon.

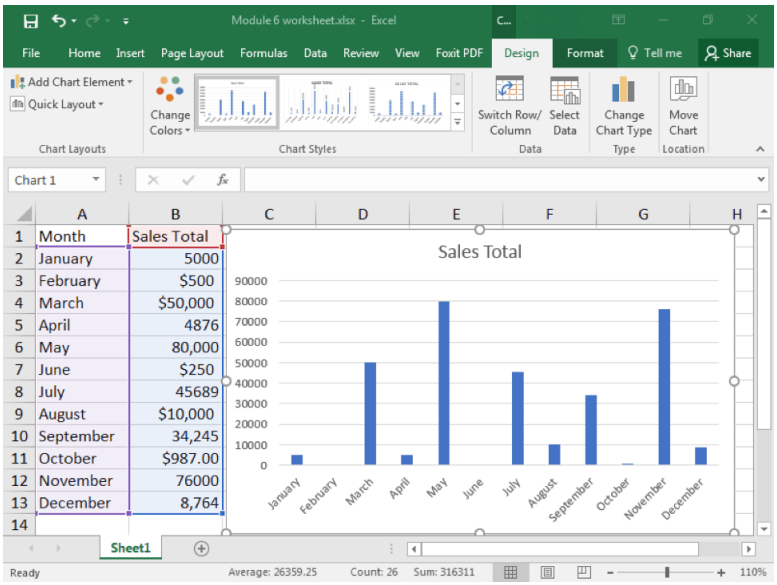


	A	B
1	Month	Sales Total
2	January	5000
3	February	$500
4	March	$50,000
5	April	4876
6	May	80,000
7	June	$250
8	July	45689
9	August	$10,000
10	September	34,245
11	October	$987.00
12	November	76000
13	December	8,764
14		

3. “Clustered column chart” is actually a recommended chart. Click on that chart.



4. When you select the chart, you will see colored boxes surrounding the data that connect to the different categories of the chart.



	A	B
1	Month	Sales Total
2	January	5000
3	February	$500
4	March	$50,000
5	April	4876
6	May	80,000
7	June	$250
8	July	45689
9	August	$10,000
10	September	34,245
11	October	$987.00
12	November	76000
13	December	8,764
14		

Practice Question

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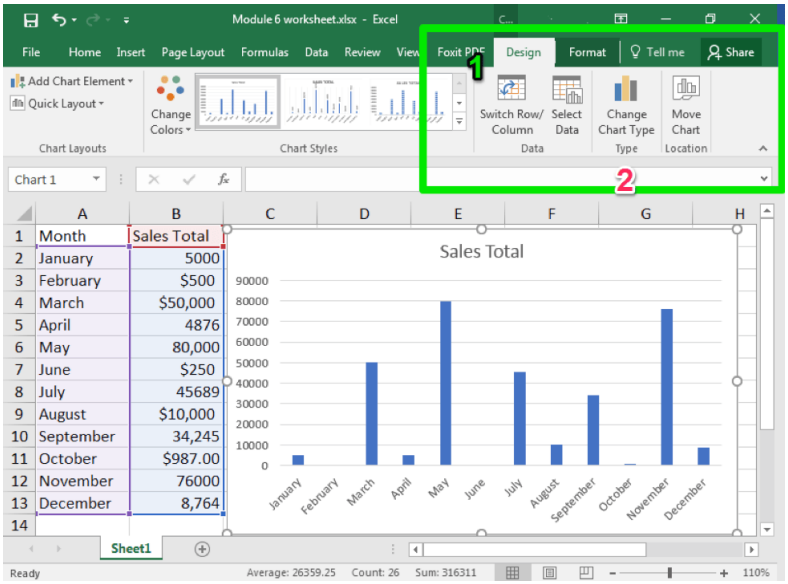
4.26: Chart Styles

Learning Outcomes

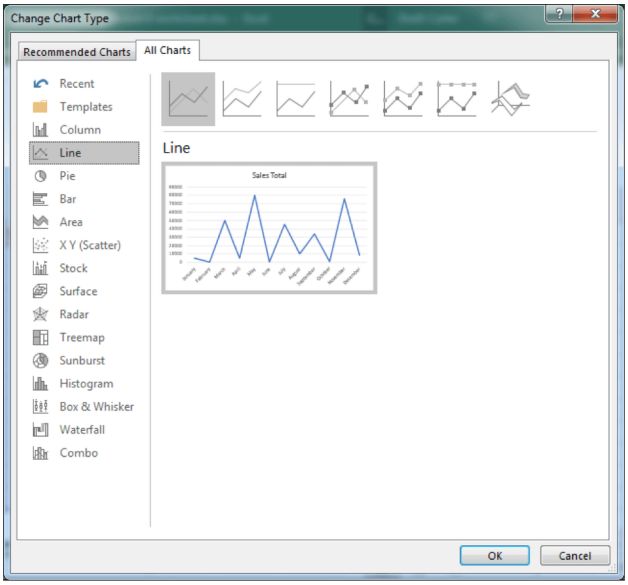
- Modify chart style.

Once you have created a chart, or if you are given a worksheet that contains a chart, it is very easy to change the chart style.

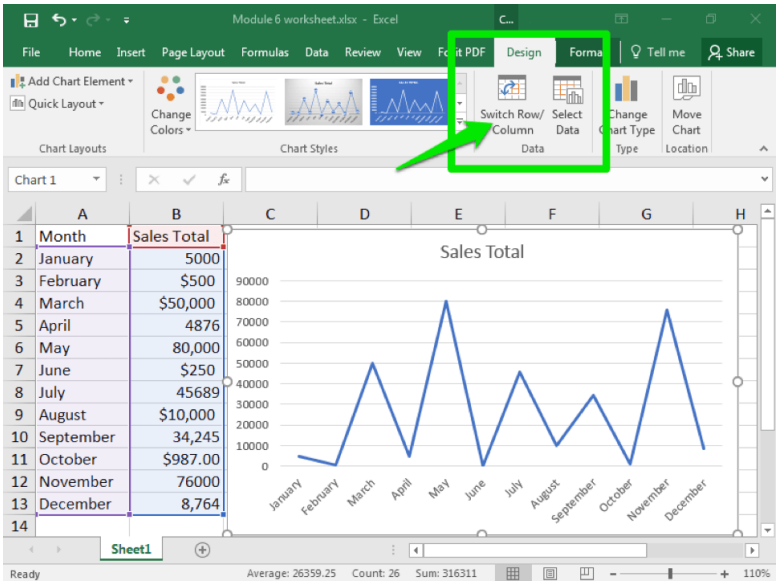
1. Click on the chart you wish to change. The Design tab should appear in the ribbon area.
2. Click on Change Chart Type button



3. Click on the type of chart you would like.



From this same window, you can also switch the data that is being charted. For example, you can switch which data from a row to a column or change which data is arranged on the x- or y-axis.



	A	B
1	Month	Sales Total
2	January	5000
3	February	$500
4	March	$50,000
5	April	4876
6	May	80,000
7	June	$250
8	July	45689
9	August	$10,000
10	September	34,245
11	October	$987.00
12	November	76000
13	December	8,764
14		

Practice Question

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5.1: Microsoft Support - Learn the structure of an Access database

5.2: Access – Basics

5.2.1: Introduction to Databases

5.2.2: Introduction to Objects

5.2.3: Getting Started in Access

5.2.4: Managing Databases and Objects

5.2.5: Working with Tables

5.2.6: Working with Forms

5.2.7: Designing a Simple Query

5.2.8: Creating Reports

5.3: Why It Matters - Microsoft Access Basic Skills

5.4: Introduction to Creating Database Tables

5.5: Creating a Database

5.6: Naming Databases

5.7: Introduction to Fields in Access

5.8: Field Properties

5.9: Field Names and Data Types

5.10: Primary Key

5.11: Set a Primary Key

5.12: Access Chapter 1 - Database Basics

5.12.1: What is a Database?

5.12.2: The Four Main Objects in a Database

5.12.3: Database Design

5.12.4: Creating a Table

5.12.5: Primary and Foreign Keys

5.12.6: Table Relationships

5.12.7: Entering and Editing Records

5.12.8: Creating Forms

5.12.9: Query Basics

5.12.10: Access Reports

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5.2: ACCESS – BASICS

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5.2.2: Introduction to Objects

5.2.3: Getting Started in Access

5.2.4: Managing Databases and Objects

5.2.5: Working with Tables

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5.3: Why It Matters - Microsoft Access Basic Skills

Why learn to perform basic tasks in Microsoft Access?

In the prior two modules, we learned about the benefits of using Excel to manage spreadsheets. When it comes to quick data entry by users, manipulating numerical data for fast analysis, having rich formatting features and mathematical functions, spreadsheets are hard to beat. As the volume of data increases, databases become a viable option. Databases are geared for long-term data storage of large data sets, maintaining multiple relationships between data values, and the ability to update forms, queries, and reports automatically when values are updated.

Think of spreadsheets as ledgers: you have a list of customers and may wish to know who are your top five most important based on annual revenue. Think of databases as intelligent file cabinets: you may wish to know who are your top five most important customers, what was the date of their last purchase, and what products did they purchase. It is this ability to handle the relationships within the data, in addition to the amount of data, that makes databases a powerful business tool.

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5.4: Introduction to Creating Database Tables

What you'll learn to do: create database tables

The building blocks of relational databases are the tables that organize and store information within the database. In this section, you will learn how to create a blank database, assign a name to it, and specify a location. Next, we will explore the different types of tables based on the purpose they serve. Finally, we will create a database table using the appropriate commands in Access.

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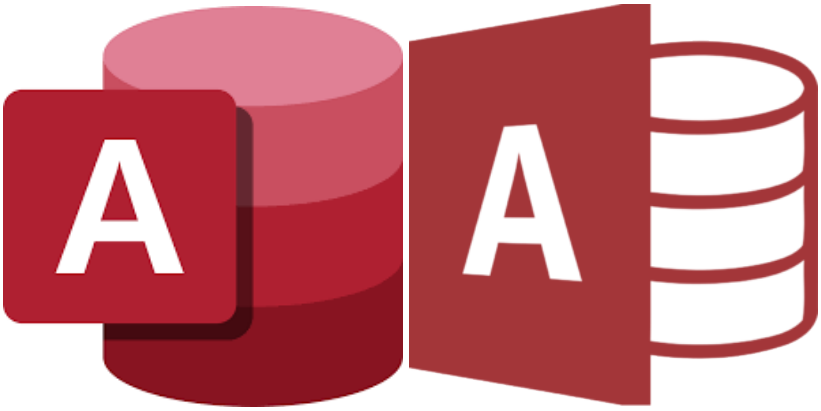
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5.5: Creating a Database

Learning Objectives

- Create a blank database

You can open Access from the Start menu (or the Applications folder on a Mac) by clicking on the Access icon. The Access icon comes in a variety of forms depending on your OS and version of Access, but it always features the color red or maroon and the letter A.



New Database

There are two easy ways to create a blank database in Access. One way is to click the **Blank Database** option in the welcome screen (Figure 1).

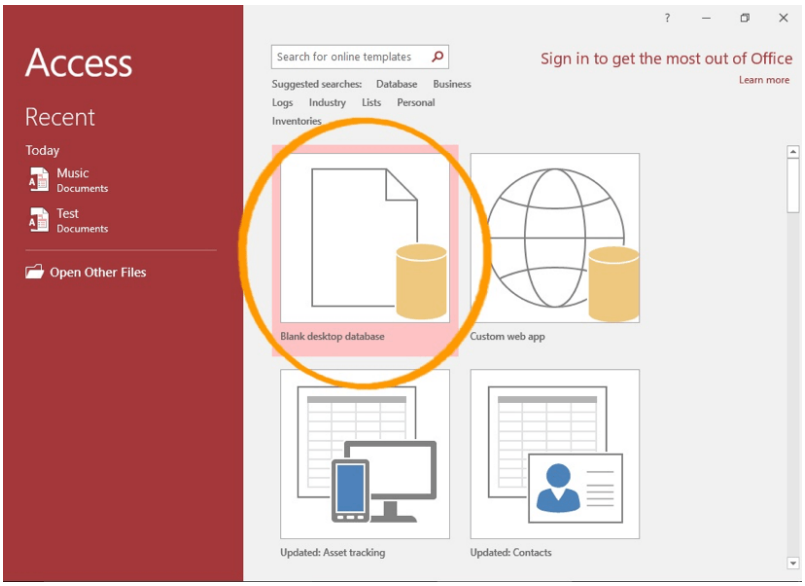
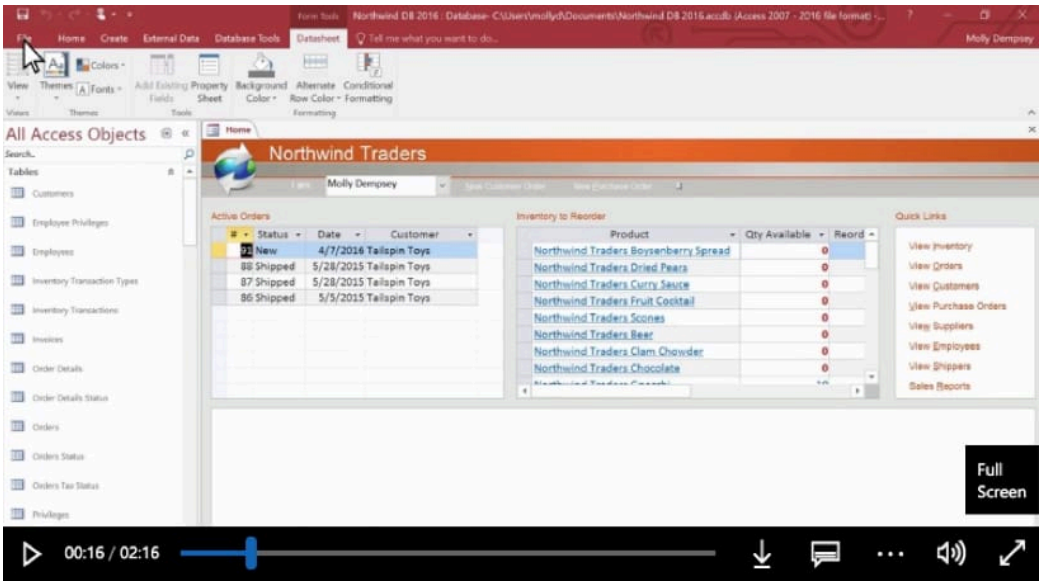
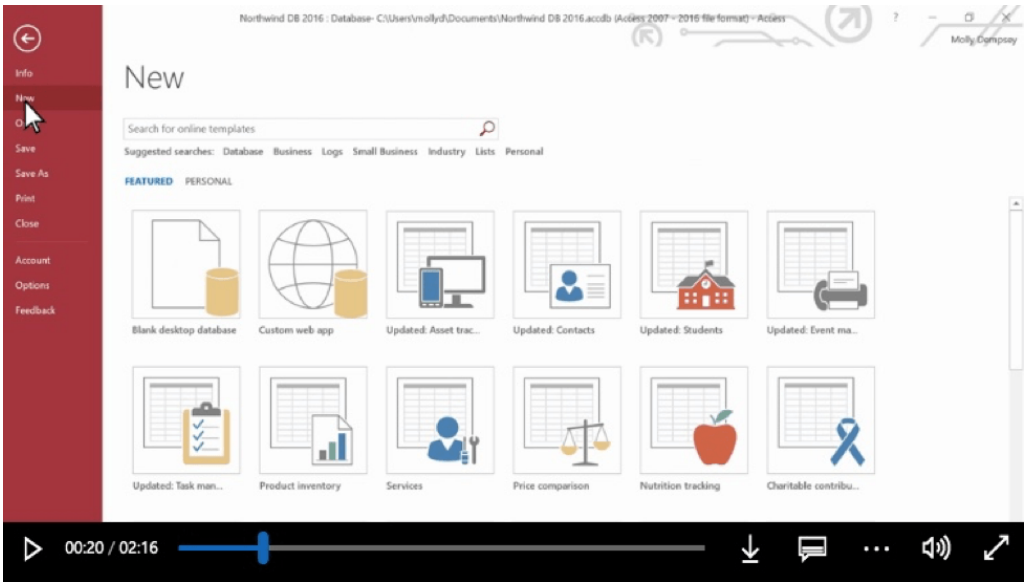


Figure 1.

The second way to create a new database is to use the **File New** option from the menu bar (Figure 2).





1. On the **File** tab, click **New**, and then click **Blank Database**.
2. Type a file name in the **File Name**box. To change the location of the file from the default, click **Browse for a location to put your database** (next to the **File Name** box), browse to the new location, and then click **OK**.
3. Click **Create**.

Access creates the database with an empty table named Table1, and then opens Table1 in Datasheet view. The cursor is placed in the first empty cell in the **Click to Add** column.

4. Begin typing to add data, or you can paste data from another source, as described in the section.

Entering data in Datasheet view is designed to be very similar to working in an Excel worksheet. The table structure is created while you enter data. When you add a new column to the datasheet, a new field is defined in the table. Access automatically sets each field's data type, based on the data that you enter.

PRactice Question

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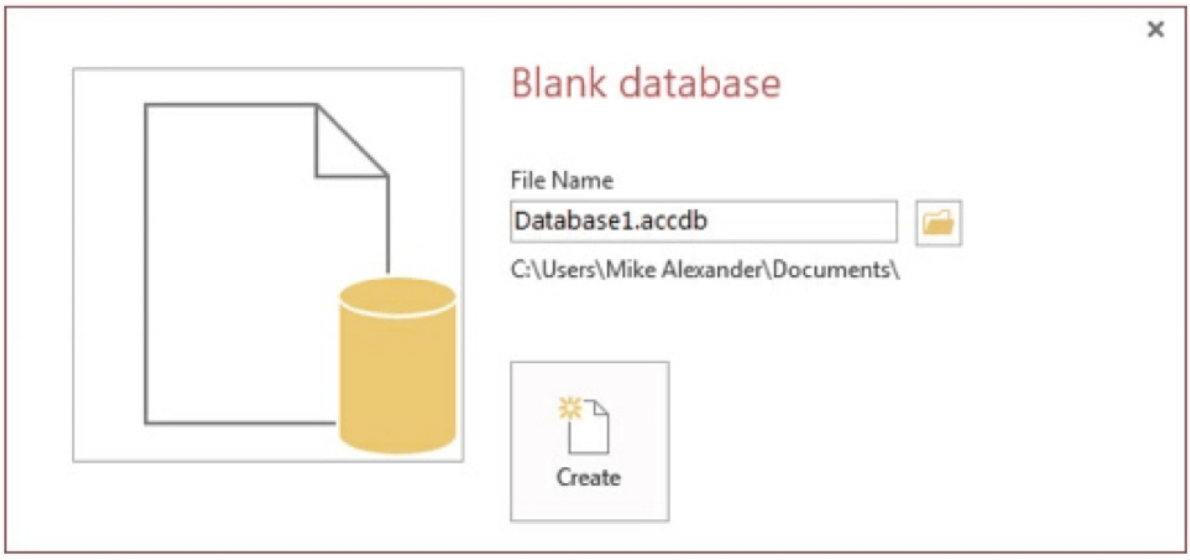
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5.6: Naming Databases

Learning Objectives

- Name the database and location
- Discuss the role of tables in access
- Differentiate among types of tables



Enter the name of your database in the “File Name” field. The database location can be changed by selecting the box to the right of the “File Name” field and browsing to the location of your choice.

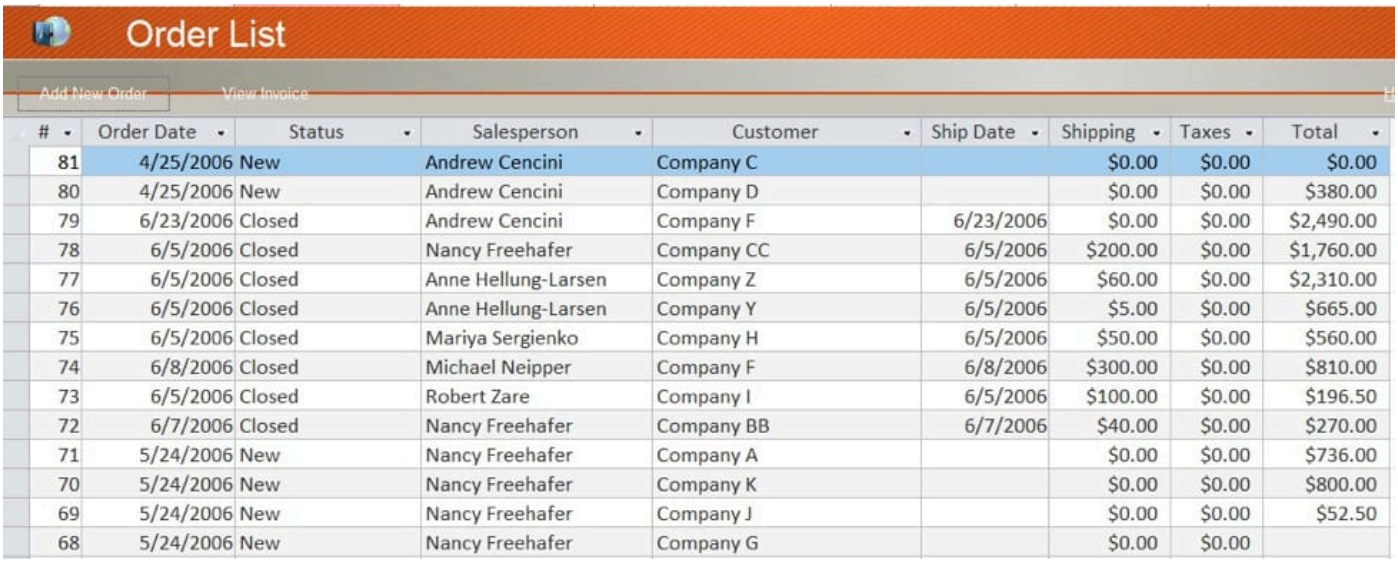
PRactice Question

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Understanding Tables

Tables are one of the key objects in Access. Access uses tables to store data. To store data, you create one table for each type of information that you track. Types of information might include customer information, products, or order details.

The example below is taken from the Microsoft Access “Northwind Traders” sample database. It is a table containing a list of orders for the fictitious company with reference to Order Number, Order Date, Order Status, etc.



Order List

Add New Order View Invoice

#	Order Date	Status	Salesperson	Customer	Ship Date	Shipping	Taxes	Total
81	4/25/2006	New	Andrew Cencini	Company C		$0.00	$0.00	$0.00
80	4/25/2006	New	Andrew Cencini	Company D		$0.00	$0.00	$380.00
79	6/23/2006	Closed	Andrew Cencini	Company F	6/23/2006	$0.00	$0.00	$2,490.00
78	6/5/2006	Closed	Nancy Freehafer	Company CC	6/5/2006	$200.00	$0.00	$1,760.00
77	6/5/2006	Closed	Anne Hellung-Larsen	Company Z	6/5/2006	$60.00	$0.00	$2,310.00
76	6/5/2006	Closed	Anne Hellung-Larsen	Company Y	6/5/2006	$5.00	$0.00	$665.00
75	6/5/2006	Closed	Mariya Sergienko	Company H	6/5/2006	$50.00	$0.00	$560.00
74	6/8/2006	Closed	Michael Neipper	Company F	6/8/2006	$300.00	$0.00	$810.00
73	6/5/2006	Closed	Robert Zare	Company I	6/5/2006	$100.00	$0.00	$196.50
72	6/7/2006	Closed	Nancy Freehafer	Company BB	6/7/2006	$40.00	$0.00	$270.00
71	5/24/2006	New	Nancy Freehafer	Company A		$0.00	$0.00	$736.00
70	5/24/2006	New	Nancy Freehafer	Company K		$0.00	$0.00	$800.00
69	5/24/2006	New	Nancy Freehafer	Company J		$0.00	$0.00	$52.50
68	5/24/2006	New	Nancy Freehafer	Company G		$0.00	$0.00	

Types of Tables

There are three types of tables in Access: an object table, a transaction table, and a join table. Object tables contain data relating to a real-world object, like a company or a customer or a product. Transaction tables store information pertaining to events, like when an order is placed for a product or an invoice is sent to a customer. Finally, join tables are used to establish a relationship between two tables, like a product table and a customer table.

We will focus on object tables in this section.

Practice Questions

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5.7: Introduction to Fields in Access

What you'll learn to do: Work with fields

If tables are the building blocks of databases, fields are the key component of tables. We will explore field properties which tells Access what type of data will be entered into a specific field. Then we will discuss the importance of assigning names to each field and the rules for ensuring a valid field name. Finally we will get into more detail regarding data types and field properties.

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5.8: Field Properties

Learning Outcomes

- Differentiate among field properties

Regardless of how you created your table, it is a good idea to examine and set field properties. While some properties are available in Datasheet view, some properties can only be set in **Design view**. To switch to Design view, right-click the table in the Navigation Pane and then click Design View. To see a field's properties, click the field in the design grid. The properties are displayed below the design grid, under **Field Properties**.

To see a description of each field property, click the property and read the description in the box next to the property list under **Field Properties**. You can get more detailed information by clicking the Help button.

Field Properties sets boundaries on what/how data is entered into table fields. There are five types of field properties:

- **Field Size:** sets the maximum number of characters that can be entered into a text field.
- **Format:** sets how the data is to be displayed in the table field.
- **Input Mask:** sets the rules as to how data can be entered so that data is entered correctly.
- **Default Value:** sets the default value that will appear in the table field each time a new record is entered.
- **Required:** sets whether a value is required to be entered into this table field.

Learn More

For more detailed information, Microsoft Access Help is an excellent resource and can be found by following this link: Field Properties Access Help

Practice Questions

https://assessments.lumenlearning.co...essments/18751

https://assessments.lumenlearning.co...essments/18752

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5.9: Field Names and Data Types

Learning Objectives

- Discuss field name requirements
- Discuss types of data used in Microsoft Access

Field Names

A field name should be descriptive enough to identify the purpose of the field, without being overly long to prevent excessive typing. Enter the field name by placing the pointer in the first row of the Table Design window under the Field Name column. In order to ensure a valid field name, a field name:

- Cannot exceed 64 characters,
- Cannot include periods (.), exclamation points (!), accent grave (`), or brackets ([]),
- Cannot include spaces,
- Cannot include low-order ASCII characters,
- Cannot start with a blank space.

Practice Question

https://assessments.lumenlearning.co...essments/18753

Data Types

The data type must be consistent with the data to be stored in the field. The “text” type is the most commonly used data type, including numbers that will not be added like social security or street address numbers. Here is a partial list of Access data types:

Data Type	Description
Short text	Alphanumeric characters
Long text	Alphanumeric characters
Number	Numeric values
Large Number	Numeric values
Date/Time	Date and time data
Currency	Monetary data
AutoNumber	Automatic number increments
Yes/No	Logical values: Yes/No, True/False, etc.
OLE Objects	Pictures, graphs, sound, video
Hyperlink	Line to an Internet resource
Attachment	External files
Calculated	Stores calculations based on other fields
Lookup Wizard	Displays data from another table

Practice Question

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5.10: Primary Key

Learning Objectives

- Discuss the importance of primary key uniqueness
- Choose a primary key

Every table must have a primary key—a field with a unique value for each record. Otherwise there would be no way to distinguish between records. A primary key consists of one or more fields that uniquely identify each record that you store in the table. Often, there is a unique identification number, such as an ID number, a serial number, or a code, that serves as a primary key.

For example, you might have a Customers table where each customer has a unique customer ID number. The customer ID field is the primary key of the Customers table. When a primary key contains more than one field, it is usually composed of pre-existing fields that, taken together, provide unique values. For example, you might use a combination of last name, first name, and birth date as the primary key for a table about people.

Choosing a Primary Key

Without the ProductID field, another field would be needed to uniquely identify each product in the database. Without a strong primary key, the database engine would be at a loss to perform basic operations on the table properly.

Good primary keys must:

- Uniquely identify each record,
- Not be null,
- Exist when the record is created,
- Must remain stable,
- Be simple and contain as few attributes as possible.

Practice Questions

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5.11: Set a Primary Key

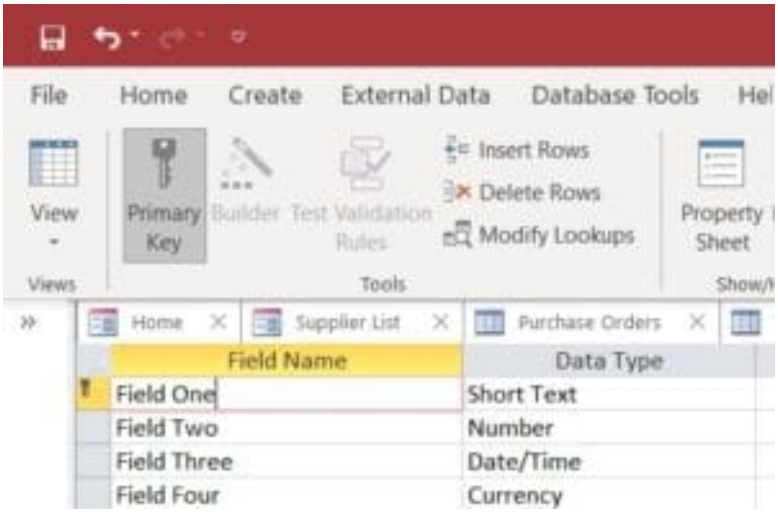
Learning Outcomes

- Set the primary key

A primary key can be set for a table in one of three ways. Open a table in Design view and:

- With the field to be used as the primary key selected, click the Primary Key button key in the Tools group.
- Right-click the appropriate field and choose Primary Key from the shortcut menu.
- Allow Access to automatically create the primary key by simply saving the table.

In this example, Field One was highlighted and **Primary Key** was selected in the Menu bar to designate it as the Primary Key.



Practice Question

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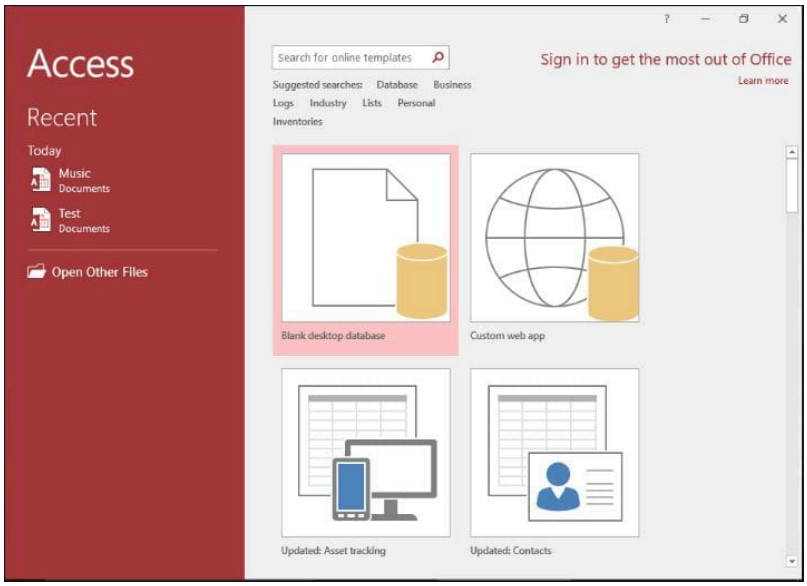
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5.12: ACCESS CHAPTER 1 - DATABASE BASICS

Learning Objectives

- What is a Database?
- The Four Main Objects in a Database
- Database Design
- Creating a Table
- Primary and Foreign Keys
- Table Relationships
- Entering and Editing Records
- Creating Forms



5.12.1: What is a Database?

5.12.2: The Four Main Objects in a Database

5.12.3: Database Design

5.12.4: Creating a Table

5.12.5: Primary and Foreign Keys

5.12.6: Table Relationships

5.12.7: Entering and Editing Records

5.12.8: Creating Forms

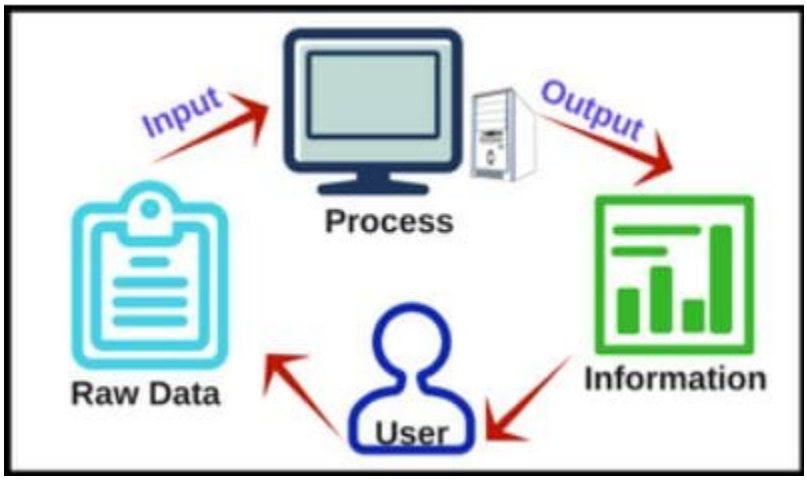
5.12.9: Query Basics

5.12.10: Access Reports

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5.12.1: What is a Database?

A **database** is a collection of related data that is organized so that it can be easily access, managed and updated. Databases can store details about people, products, orders, or anything else. **Data** can be defined as facts and statistics about people, objects, events and ideas. Organizations interpret, process and analyze data to turn the data into useful **information**. This information is used to make better decision-making.



Data process

In the past, many databases were paper-based. Paper records were stored in files within file cabinets. File cabinets still exist today, in large part due to the fears associated with the insecurity of electronic records being compromised. The individual documents (records) are categorized into different folders (tables) to streamline user access. However, this process is labor-intensive, susceptible to errors, and an office eyesore!

Databases are used for two major purposes: for processing transactions and analytical research. Transactional databases track daily operations. This data can be extracted into other software programs for further manipulation, summation and classification. This allows users to perform analytical research and prepare reports to help create strategic information.

Computerized databases organize data into rows, columns and tables, and is indexed to make it easier to find things quickly. Data gets updated, expanded and deleted as new data is added. Automated processes quickly manipulate the data, and data accuracy is enhanced through automated rules. The advancements in database software technologies have contributed to the Information Age that currently exists. The growth of the filing cabinet market cannot compare to the growth of electronic data contained in private and public networks, and web sites throughout the Internet!

While a spreadsheet can function as a database, with it's utilization of columns and rows, the flat-file structure creates redundancies and inconsistencies which limit the ability to find and understand the data. In contrast, a relational database uses a tabular structure so that data can be easily reorganized and accessed in a number of different ways. Relational databases are made up of a set of tables with data that fits into predefined categories (fields). Each table has at least one data category (field) in a column, and each row has a certain data instance for the categories (fields) which are defined in the columns.

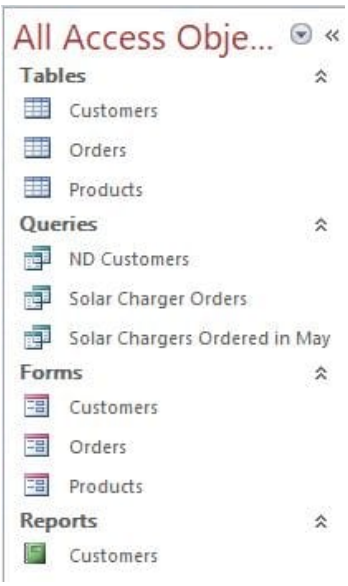
Microsoft's relational database software program available in Office 365 is called Access. Access only functions with Windows operating systems (not available on a Mac O/S), and is not available in all Office versions. Access is a tool to organize, store, and manipulate data, in order to report on the data stored in tables. The power of a database comes from the ability to link tables together to provide data processing efficiencies for large sets of data. Access' integration with the other Microsoft Office programs makes it a very popular and economical relational database solution.

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5.12.2: The Four Main Objects in a Database

While Microsoft Access is made up of seven components, this text will focus on the main objects: tables, forms, queries and reports. Together, these objects allow users to enter, store, analyze and compile data in various ways.



Navigation Pane

When an Access database is opened, the objects are illustrated in the **Navigation Pane** on the left side of the window. The standard view in the Navigation Pane displays all objects in the database organized by object type. The Navigation Pane is used to run, open, and manage the objects of a database. Double-clicking an object will open the object in a document window.

A **table** is the database object that stores data organized in an arrangement of columns and rows. Each row is a **record** and each column is a **field** within each record. A record is all of the data pertaining to a person, place, thing or event. Each record will have one or more fields and every database must have at least one table. A relational database must have more than one table.

The other three objects are typically based off of the tables, so take the time to set up the tables correctly, the first time! A **form** object is typically used for entering new records into a table, or edit/deleting/display existing records in a table. Forms are the primary interface that most users of a database enter and display data. A **query** object retrieves specific data from other database objects and then displays only the data that the user specifies. Queries are the equivalent of asking questions about the data. The **report** object summarizes the records from a table or query into an easy-to-read format suitable for printing or exporting to other software programs.

Access objects have several views. Each **view** gives users different perspectives and offer different functionality. The two most important views are Datasheet view and Design view. **Datasheet view** displays a table in a datasheet where fields are in columns and records are in rows.

Customers

CustomerID	First Name	Last Name	Phone	Street Address	City	State/Provir	Zip/Postal C	Click to Add
1	Devinder	Patel	218-555-5641	212 Ash Street	Aurora	MN	59990	
2	Maria	Escobar	218-555-5146	212 Birch Street	Lake Cosmos	MN	59991	
3	Ahmed	Rashad	218-555-1658	212 Cedar Street	Park Falls	MN	59992	
4	Arnold	Hammer	218-555-8811	212 Elm Street	Aurora	MN	59990	
5	Susan	Wong	(218) 555-0182	212 Fir Street	Aurora	MN	59990	
(New)								

Datasheet view of a Customer table

This view is useful for comparing records and is often used when sorting or filtering data. This view is also practical for printing

data since many of the records can fit on a single sheet of paper. Records can be added in datasheet view, but forms are a more typical object for data entry. Nonetheless, the asterisk (*) that appears to the left of the row below the last record indicates where a new record will appear. The grey box to the left of each record is a record selector. Clicking a record selector will make the record active. Right-clicking the record selector will allow users to delete the selector record or add a new record to the table. **Design view** allows users to setup and edit the fields in an object.

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5.12.3: Database Design

A properly designed database will divide data into tables to eliminate duplicate information (also known as *data redundancy)*. **Redundancy** occurs when data is repeated several times in a database. Redundant data is bad, because it wastes space and increases the likelihood of errors and inconsistencies. A good database prevents redundant data when, for example, customer data (ID, Name, Address, etc) is stored in one table and then other tables store just the customer ID to refer to the customers. Another important design consideration to maintain is data accuracy. A common motto when performing data entry is “garbage in, garbage out”. The correctness and completeness of information is important if the user wants to rely on their data. If your database contains incorrect information, any reports that pull information from the database will also contain incorrect information. As a result, any decisions you make that are based on those reports will then be misinformed.

Creating a new database involves determining the database schema, which is a description of the data and the organization of the data into tables. Designing a schema consists of the following steps:

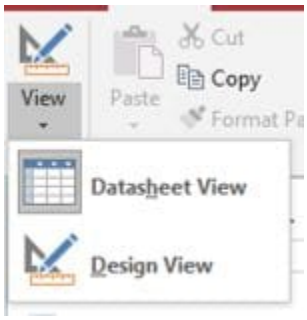
1. Determine the purpose of the database and which data to include in the database. It is a good idea to write down the purpose of the database on paper — its purpose, how you expect to use it, and who will use it.
2. Divide information into related groups to create tables and then give each table a descriptive name. Data should be grouped to ensure there is little to no redundancy. Each table must have data related to at least one other table through a table relationship.
3. Describe the fields and determine the primary key for each table.

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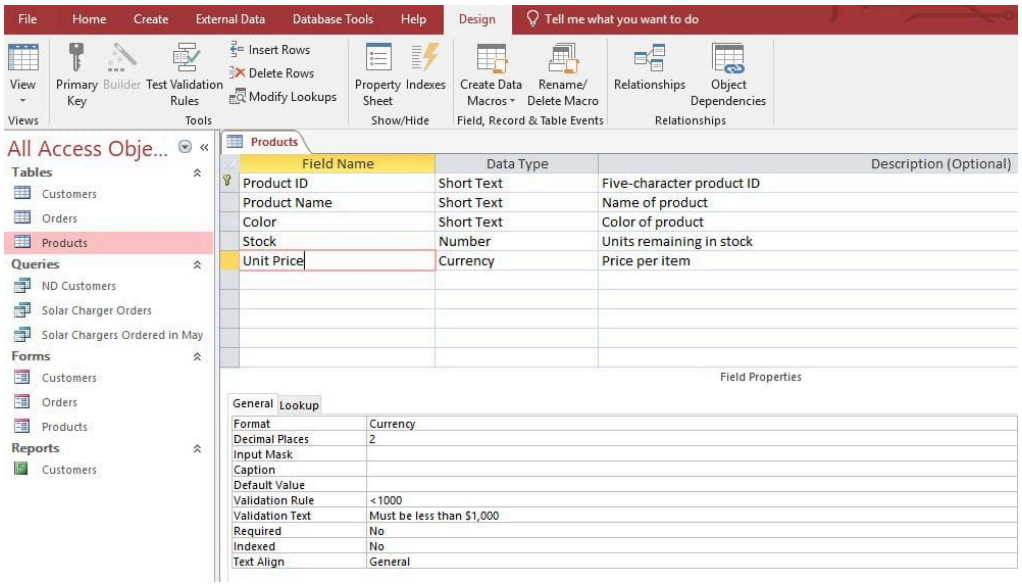
5.12.4: Creating a Table

As previously stated, a database cannot exist without at least one table. Therefore, when a new database is created in Access, the first object that opens is a table in datasheet view.



Access View tab

Switching the view to Design View allows the user to make many design decisions in a much more intuitive view. Many users like to use Datasheet View to paste data copied from Excel. However, setting up the fields in Design View makes it easier to define each field's properties and data type.



Design View

Design View doesn't display any data. Therefore, there's more space available to display other settings. In Design View, you can see the data type listed next to each field. When a user clicks on a field (in the top frame), the bottom frame displays the properties for that field. The user can then change these properties as desired.

Creating a table in Design View allows the user to define advanced settings, like data types and properties, for each field in the table. However, the first step is defining the field names. Here are a few guidelines when creating field names:

- Names can include numbers, UPPER and lowercase letters, and any combination. Avoid special characters (exclamation points, periods, brackets, quotes, etc.)
- No leading spaces. Spaces between words is acceptable, but not common practice, because:
- Make the names as short as possible without excessive abbreviation. Formatting column widths for displaying in printouts can be challenging with excessively long field names. For example, Order # or Order Number are better than Customer Order Number.
- Ensure the names are unique per table. If a table has fields for Customer ID and Product ID, neither field should be named

simply ID. Likewise with the word Name. It is too generic and needs an prefix identifier.
- Break data into multiple fields. For example, instead of one field for Customer Name, create fields for First Name and Last Name. This will allow sorting and filtering on single fields. Another example would be separating an address into multiple fields for Street Address, City, State/Province and Zip/Postal Code.

Every field has a data type. A field's **data type** indicates the kind of data that the field stores, such as large amounts of text or attached files. A field's data type determines what other properties the field has including its size and formatting options. Field data types are defined in the table design grid, where as field properties are defined in the Field Properties pane in the bottom of the Table Design View window. Data types include:

Data type	Description	Size
Short Text	Use for text or combinations of text and numbers (i.e. Phone Numbers).	Up to 255 characters
Long Text	Use for larger amounts of alphanumeric data, including sentences and paragraphs. **Note:** You cannot sort a memo field. However, they are searchable.	Up to 1 GB
Number	Numeric values.	4 bytes
Large Number	Numeric values. Stores a non-monetary, numeric value and is compatible with the SQL_BIGINT data type in ODBC. Use this data type to efficiently calculate large numbers.	8 bytes
Currency	Use for monetary data. Holds up to 15 digits of whole dollars, plus 4 decimal places. **Tip:** You can choose which country's currency to use.	8 bytes
AutoNumber	Unique value generated by Access for each new record, usually starting at 1.	4 bytes
Date/Time	Use for dates and times.	8 bytes
Yes/No	A logical field can be displayed as Yes/No, True/False, or On/Off. In code, use the constants True and False (equivalent to -1 and 0). **Note:** Null values are not allowed in Yes/No fields.	1 byte
Ole Object	Can store pictures, audio, video, or other BLOBs (Binary Large OBjects).	Up to 2 GB
Hyperlink	Contain links to documents or other files, e-mail addresses, or web pages.	Up to 8 bytes
Attachment	Attach pictures, documents, etc. Can contain an unlimited number of characters per record. Access will compress the file.	Up to 2 GB
Calculated	Use to create an expression that uses data from one or more fields. You can designate different result data types from the expression.	Dependent on the data type of the result type property
Lookup Wizard	When selecting this entry, a wizard starts to help define either a simple or complex lookup field. A simple lookup field uses the contents of another table or a value list to validate the contents of a single value per row. A complex lookup field allows you to store multiple values of the same data type in each row.	Dependent on the data type of the lookup field

After creating a field and setting its data type, users can set additional field properties. The field's data type determines which other properties that can be set. The **field size** is the number of characters or the type of number it can store. For Number and Currency fields, the Field Size property is especially important, because it determines the range of field values. For example, a one-bit Number field can store only integers ranging from 0 to 255. In the **Field Properties** pane, on the General tab, enter the new field size in the Field Size property. Users can choose from the following values:

- **Byte** — For integers that range from 0 to 255. Storage requirement is a single byte.
- **Integer** — For integers that range from -32,768 to +32,767. Storage requirement is two bytes.
- **Long Integer** — For integers that range from -2,147,483,648 to +2,147,483,647. Storage requirement is four bytes.
- **Single** — For numeric floating point values that range from -3.4 x 1038 to +3.4 x 1038 and up to seven significant digits. Storage requirement is four bytes.

- **Double** — For numeric floating point values that range from -1.797 x 10308 to +1.797 x 10308 and up to 15 significant digits. Storage requirement is eight bytes.
- **Replication ID** — For storing a GUID that is required for replication. Storage requirement is 16 bytes.
- **Decimal** — For numeric values that range from -9.999... x 1027 to +9.999... x 1027. Storage requirement is 12 bytes.

Numeric and date/time fields can have a specified format to define how the data is displayed. Short text, long text, and hyperlink fields usually have no format. Predefined numeric field formats include:

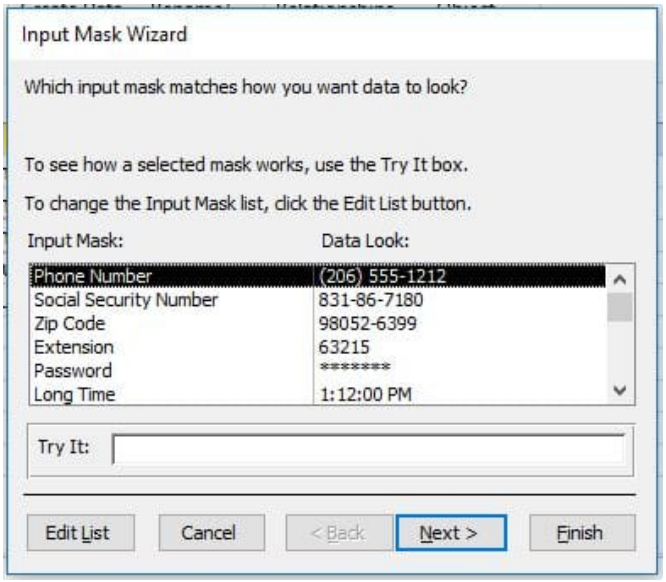
- **General Number** – (Default) Display the number as entered.
- **Currency** – Use the thousand separator; follow the settings specified in the regional settings of Windows for negative amounts, decimal and currency symbols, and decimal places.
- **Euro** – Use the euro symbol (€), regardless of the currency symbol specified in the regional settings of Windows.
- **Fixed** – Display at least one digit; follow the settings specified in the regional settings of Windows for negative amounts, decimal and currency symbols, and decimal places.
- **Standard** – Use the thousand separator; follow the settings specified in the regional settings of Windows for negative amounts, decimal symbols, and decimal places.
- **Percent** – Multiply the value by 100 and append a percent sign (%); follow the settings specified in the regional settings of Windows for negative amounts, decimal symbols, and decimal places.
- **Scientific** – Use standard scientific notation.

When it comes to date/time fields, Access automatically displays the date and time in the **General Date** and **Long Time** formats. The dates appear as, mm/dd/yyyy in the U.S. and as, dd/mm/yyyy outside the U.S. where mm is the month, dd is the day, and yyyy is the year. The time is displayed as, hh:mm:ss AM/PM, where hh is the hour, mm is minutes, and ss is seconds. Here are some other predefined formats for date/time fields:

- **Long Date** – Displays only date values, as specified by the Long Date format in your Windows regional settings. i.e. Monday, May 13, 2018.
- **Medium Date** – Displays the date as dd/mmm/yy, but uses the date separator specified in your Windows regional settings. i.e. 13-May-2018.
- **Short Date** – Displays date values, as specified by the Short Date format in your Windows regional settings. i.e. 5/13/2018.
- **Medium Time** – Displays hours and minutes followed by AM or PM. Access uses the separator specified in the Time setting in your Windows regional settings. i.e. 9:23 AM.
- **Short Time** – Displays only hours and minutes. Access uses the separator specified in the Time setting in your Windows regional settings. i.e. 9:23.

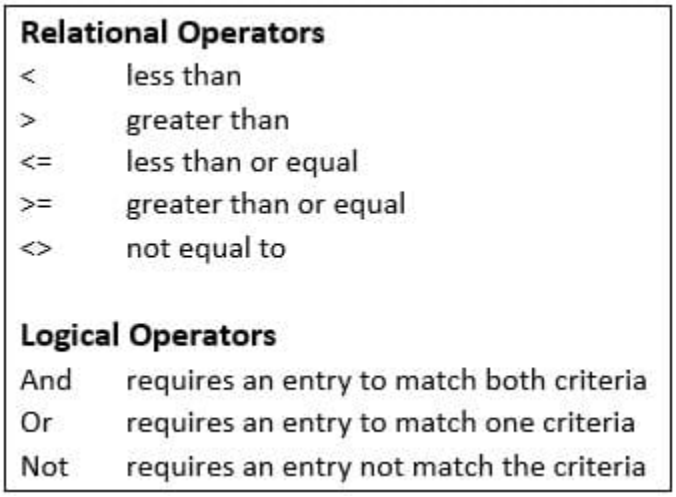
Other popular (not all inclusive) field properties that appear based on certain data types include:

- **Decimal Places** – Specifies the number of decimal places to use when displaying numbers.
- **Input Mask** – Controls how data is entered and is useful when text or date entries should follow a certain format. Access has several predefined masks. To open the Input Mask Wizard, click the ellipses (...) at the end of the Input Mask field. Popular existing input masks include the Phone Number and Zip Code masks. Typically, clicking Next to accept the default options throughout the wizard will create the most common input masks. Custom masks can be created by clicking the Edit List button. Mask characters include the digits 0 and 9. A 0 placeholder means that a digit is required, whereas a 9 means that a digit is optional. For example, the last four characters of a Zip Code are often optional, so the mask would display as 00000-9999.



Input Mask Wizard

- **Caption** – The label text that is displayed for this field by default in forms, reports, and queries. If this property is empty, the name of the field is used. Any text string is allowed.
- **Default Value** – Automatically assigns the specified value to this field when a new record is added. Popular with State or Country fields for data entry in regional uses.
- **Validation Rule** – Helps ensure accurate data through creation of an expression criterion that must be true whenever the value is added or changed in the field. Validation rules are popular for numeric and date entries, and are formed with one or more relational operators and/or logical operators. A typical rule in an Order Entry table/form might require the Quantity be at least one. The rule in the Quantity field could be >=1.



Operators

- **Validation Text** – If an entry breaks the rule, it is cleared from the entry box and the Validation Text is displayed in a dialog box. Highly recommended to be used in conjunction with the Validation Rule so the data entry person knows why their entry is not acceptable.
- **Required** – Specifies if data must be entered or not. Choice is Yes or No. Default is No.
- **Indexed** – Specifies whether the field has an index. There are three available values: Yes (No duplicates) – Creates a unique index; Yes (Duplicates OK) – Creates a non-unique index; No – Removes any index on the field. If users often search a table in Access or sort its records by a particular field, users can speed up these operations by creating an index for the field. Access uses indexes in a table as people use an index in a book: to find data, Access looks up the location of the data in the index. In some instances, such as for a primary key, Access automatically creates an index. At other times, it may be necessary to create an index manually.

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5.12.5: Primary and Foreign Keys

Fields that are part of a table relationship are called keys. A key usually consists of one field, but may consist of more than one field. There are two kinds of keys:

- **Primary key** – To ensure that no two records in a table are identical, one field in each table is designated the primary key. A primary key consists of one or more fields that uniquely identify each record that you store in the table. Often, there is a unique identifier, such as an ID number (Employee ID, Customer ID, etc), a serial number, or a social security number that serves as the primary key. Always choose a primary key whose value will not change. A key icon appears next to the name of the primary key field. AutoNumber data type fields make good primary keys.
- **Foreign key** – A table can also have one or more foreign keys. A foreign key contains values that correspond to values in the primary key of another table. For example, you might have an Orders table in which each order has a customer ID number that corresponds to a record in a Customers table. The customer ID field is a foreign key of the Orders table.

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5.12.6: Table Relationships

Access is a relational database management system. In a relational database, users divide information into separate, subject-based tables. Keeping data separated in related tables produces the following benefits:

- **Consistency** – Because each item of data is recorded only once, in one table, there is less opportunity for ambiguity or inconsistency. For example, storing a customer's name only once in a table about customers versus storing it repeatedly (and potentially inconsistently) in a table that contains order data.
- **Efficiency** – Recording data in only one place results in less disk space used. Additionally, smaller tables tend to provide data more quickly than larger tables. Finally, not using separate tables for separate subjects will introduce null values (the absence of data) and redundancy into the tables, both of which can waste space and impede performance
- **Comprehensibility** – The design of a database is easier to understand if the subjects are properly separated into tables.

In relational database terms, a ***relationship*** is a situation where multiple tables can contain related data that is linked by a common field. A relationship consists of a parent table and a child table. The child table references the parent table by having a field that matches a field in the parent table. The child's field is the foreign key, whereas the parent's field is the primary key. In a relationship, any data entered into the child's foreign key field must match a value from the parent's primary key field. By ensuring that the foreign key's data matches data in the primary key, Access ensures that all records in the child table will have an associated record in the parent table. There are three types of relationships:

- **One-to-One** – A row in table A can have only one matching row in table B, and vice versa. i.e. A baseball player can have only one Jersey Number.
- **One-to-Many** – A row in table A can have many matching rows in table B, but a row in table B can have only one matching row in table A. i.e. A baseball player can have many games played.
- **Many-to-Many** – A row in table A can have many matching rows in table B, and vice versa. This is achieved through the use of a third table (commonly called a *junction table*) that contains lookup data for both tables. Multiple players can play multiple games.

Determining the relationships between tables helps ensure that the right tables and columns exist. When a one-to-one or one-to-many relationship exists, the tables involved need to share a common column or columns. When a many-to-many relationship exists, a third table is needed to represent the relationship.

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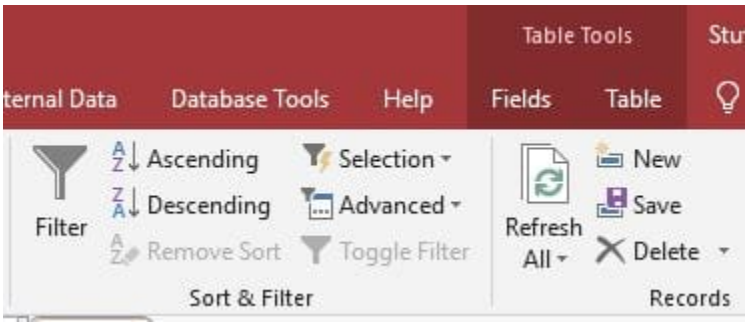
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5.12.7: Entering and Editing Records

Entering records directly into Datasheet View is probably the most intuitive way to enter data into a database. In Access, this is common because many Access databases are considered single-user databases. With multi-users databases, data integrity policies would discourage most users from having editing rights directly to the tables. Therefore, in these databases, the more common method for entering and editing records in a database would be via a form. Nonetheless, entering records directly into Datasheet View has some advantages, including:

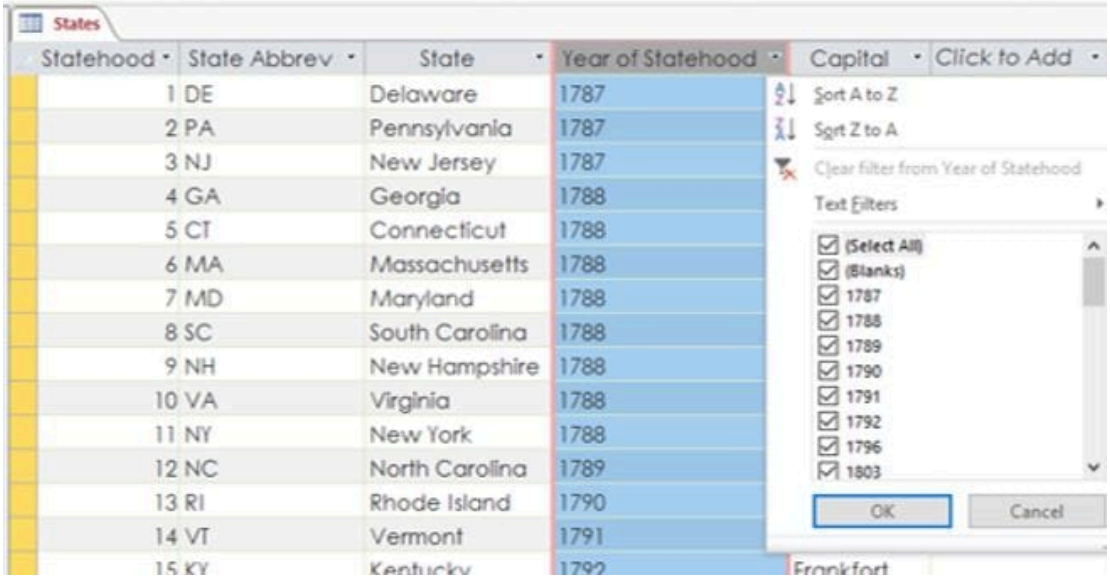
- Users can look at their data in columns and rows in a datasheet without using any special formatting.
- When a user opens a table in Datasheet View it resembles an Microsoft Excel worksheet, and the user can paste or add data in one or multiple fields. Data can be copy and pasted from a Word table or Excel worksheet into Access.
- Printing a table's datasheet in Portrait or Landscape orientation. Use Print Preview to change the orientation and margins before printing. Output can also be sent to a PDF file.
- Users don't need to explicitly save their data. Access commits user's changes in the table when they move their cursor in the same row towards a new field, or if they move their cursor towards another row.
- Sorting and filtering data is very similar to Microsoft Excel.

Access allows users to **sort** data in Datasheet View one iteration at a time in either **Ascending** or **Descending** order. Ascending order is also referred to as *alphabetical* order when the sort is based on a text field, *chronological* order when the field is a date/time data type or *numerical* order when the data type of the field is Number. Sorting a datasheet does not affect the order that the records are displayed in a form.



Sort & Filter

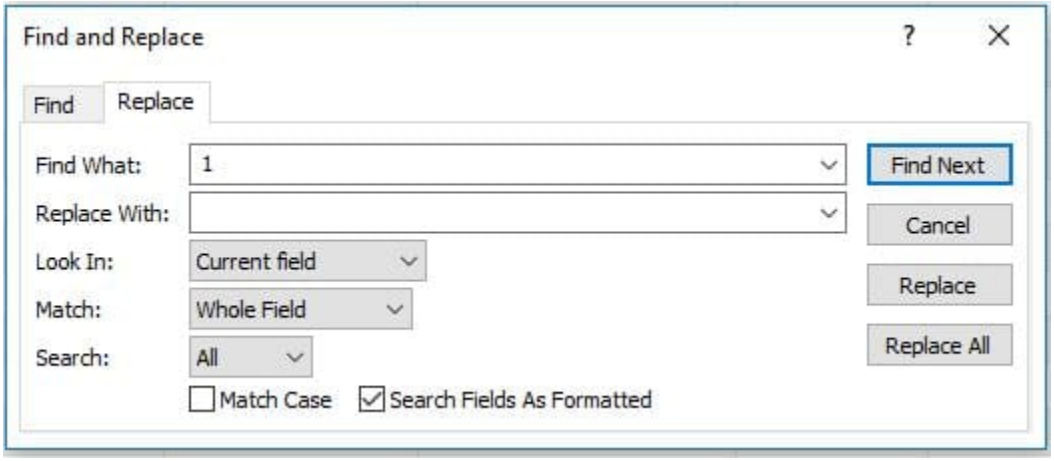
Displaying records based on specified criteria is called **filtering**. When a filter is applied, records that do not meet the specified criteria are hidden from view until the filter is removed. To filter records based on the data in a field, click in the field to base the filter on and then click on the Filter button on the ribbon or click the drop-down triangle to display a menu similar to the graphic below.



Filtered table

To remove a filter, clear the check boxes, and click OK or click the Filter button again or click the Advanced button on the ribbon and choose Clear All Filters.

Most databases contains hundreds, if not thousands, of records. Therefore, when a table becomes so large that the records and data do not fit in the datasheet window without scrolling, the Find feature becomes very practical.



Find and Replace

In Datasheet view, use the Find command, from the Home tab, to quickly locate specific records using all or part of a field value entered in the Find What: field. If in the States table above, if the user entered the value North in the Find What field, Access would find two records for North Carolina and North Dakota, but only if the Match: value was changed from Whole Field to Any Part of Field or Start of Field. Using **wildcard characters** can be extremely helpful if the user does not know the exact spelling of the value they are looking for.

Wildcard Character	Usage
?	Used to match any single character; to search for a three-letter word that starts with “d” and ends with “g”, use d?g.
*	Used to match any number of characters; to search for a word that ends in “son”, use *son.
#	Used to match any single numeric character; to search for a three-digit number that starts with “3”, use 3##.

Wildcards

A wildcard character can replace a single character or multiple characters, which can be both text and numbers. Clicking the Replace tab will allow the user to replace the data in the Find What: field with the data entered in the Replace With: field. This could be very useful when updating name changes, such as when Kentucky Fried Chicken changed their name to KFC in 1991.

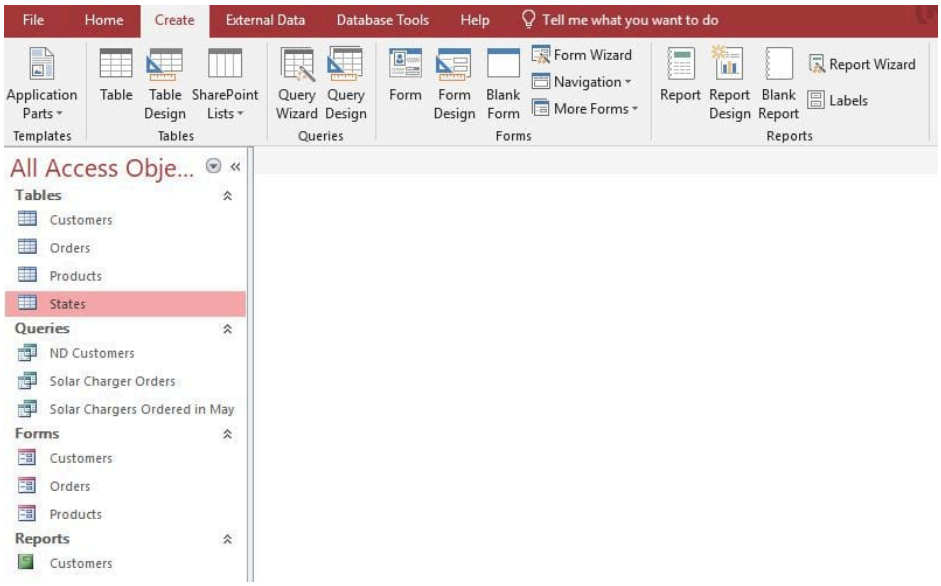
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5.12.8: Creating Forms

A form is a database object that offers an alternative interface to a table beyond the Datasheet view of the table. Forms can improve data entry proficiency by rearranging the order and tab sequence of fields within a table. Forms can also be designed to hide certain fields from appearing. For example, a credit limit or credit card number field might only be accessible from the table Datasheet view to limit the access to sensitive data from users who do not have rights to view or edit tables. In Access, users have the option of creating a blank form from scratch, using the Form Wizard, or having Access automatically create a form from a table or query.

A basic form can be easily created by using the Form tool. Simply select the table (or query) in the Navigation Pane that the form should be based off of, and then click Create > Form (from the Forms group). all the fields from the underlying data source are placed on the form. If Access finds a single table that has a one-to-many relationship with the table or query that you used to create the form, Access adds a datasheet to the form that is based on the related table or query.

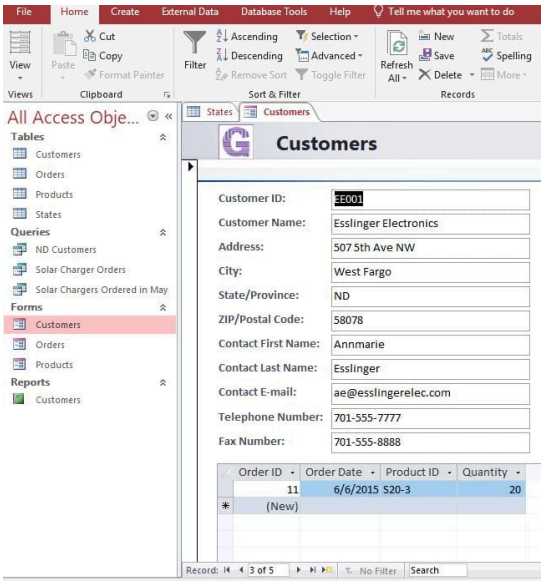


Access Create tab

A split form can be created by clicking More Forms from Create tab, and then choosing Split Form. A split form displays two views of the data simultaneously — a Form view and a Datasheet view. Working with split forms provides the benefits of both kinds of forms in a single form. For example, a user can use the datasheet portion of the form to quickly locate a record, and then use the form portion to view or edit the record.

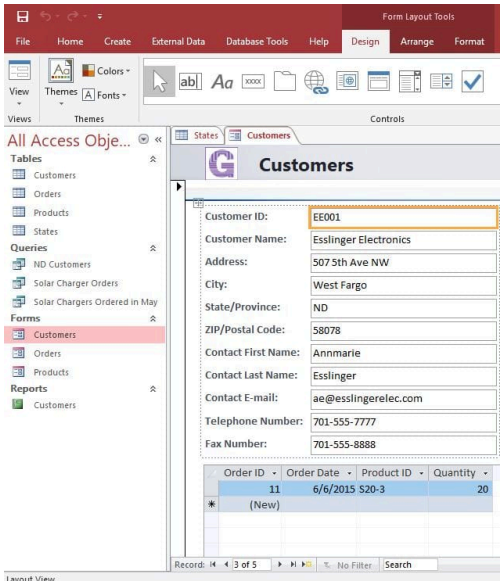
To be more selective about what fields appear on your form, use the Form Wizard. This multi-step process allows the user to define how the data is grouped and sorted, and in some instances, fields from multiple tables/queries can be added to the same form. Once a form is created, use the different views to modify the forms design or populate the forms with data. Forms have three views:

- **Form view** – shows the data in the form. This is the view to use to enter or change data. Record controls at the bottom of the form are used to display specific records and add a new record (the right arrow with the yellow star). The form's design properties cannot be changed in this view.



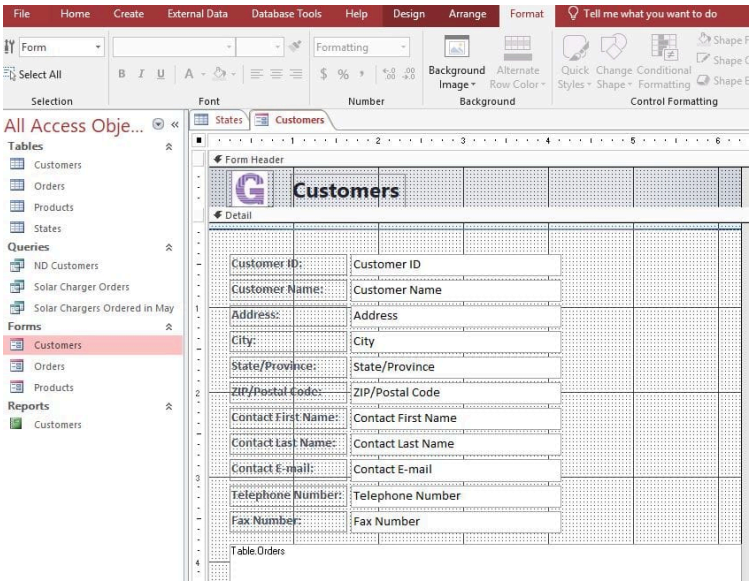
Form view

- **Layout view** – shows the form and the data in a visual layout. This is the view that opens when a form is initially created. Some of the form design properties, such as field fonts and column widths, can be changed in this view. However, the data cannot be changed in this view. Notice the Form Layout Tools contextual tabs!



Form Layout view

- **Design view** – shows the form design, but not the data. Any aspect of the form's design can be changed in this view, but the data cannot be changed. The Design, Arrange and Format contextual tabs appear for this view too. The *Design* tab allows the user to modify the color, fonts or theme of the form. A logo, title and/or date/time field can also be added to the form. Form controls (buttons, text boxes, combo boxes, etc) can also be added. The *Arrange* tab is used for modifying the order and position of the fields on the form. The Format tab allows the user to modify the style of the form including the fonts and a background image can be added.



Form design view

A user can switch between views as often as desired while customizing the form. Switching views can be done by using the View button on the Ribbon, or the three icons at the bottom right of the Access window.

Note

If a field in a table has been modified after the form is created, the existing form does not automatically update. The form can be modified, but sometimes it is easier to delete the existing form and recreate it based off of the new table settings.

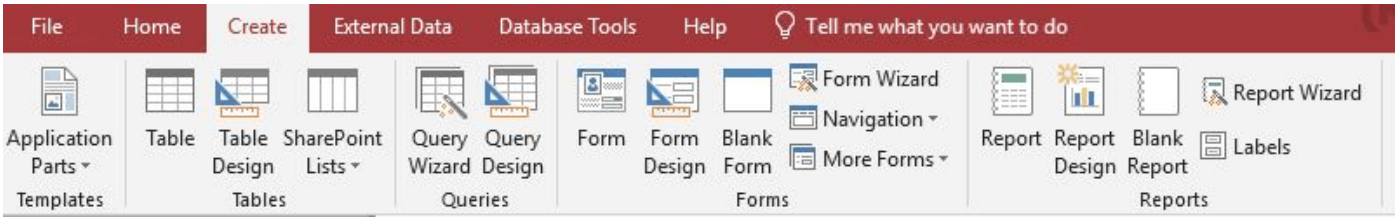
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5.12.9: Query Basics

Queries are far more powerful than the simple searches or filters that might be used to find data within a table. This is because queries can draw their information from multiple tables. The real power of a relational database, like Access, lies in its ability to quickly and easily retrieve and analyze data by running a **query**. Access queries allow users to pull information from one or more tables based on a set of search conditions the user defines. A common synonym for the word query is: question or inquiry. Queries essentially ask questions of databases. Queries do not store data. Therefore, a major benefit of queries is the ability to save a query to be re-ran at a later time after table data has been updated. This eliminates the need spend time recreating all of the fields and criteria desired to answer a popular question, such as a customer calling frequently to check on their latest account balance.

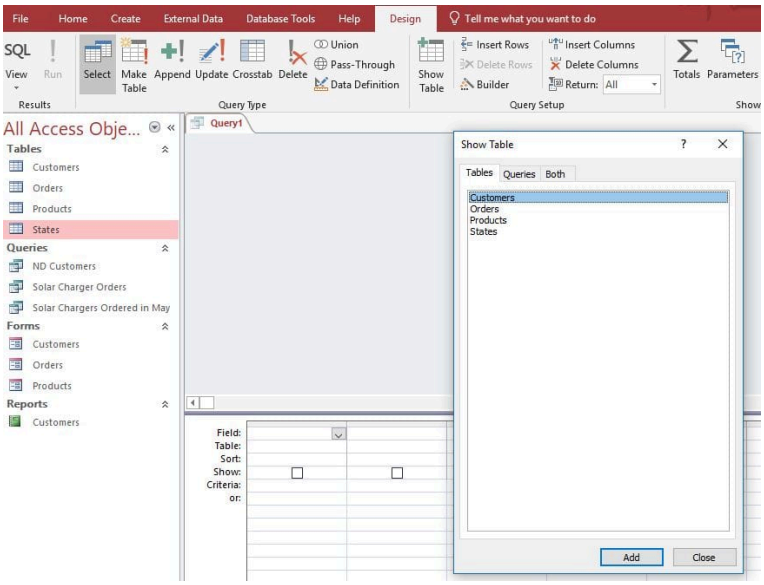
Queries can be something simple, like list all names in a table, or something a little more complex, like list all products that are priced over certain amount. A query can be very simple or very complex, depending on the user's requirements. As tables grow in size they can have hundreds of thousands of records, which makes it impossible for the user to pick out specific records from that table without a query. The tricky part about queries is that one must understand how to construct one before one can actually use them.



Access Create tab basic

When a query is ran, the results are presented in a table, but when a query is designed a different view is used. This is called **Query Design View**, and it lets users see how the query is put together. While the Simply Query Design Wizard can be used to display fields from one or more tables or queries with the option to choose a detailed or summary report, the wizard is limited by its inability to select data criteria. This is why most Access queries are created in Query Design View, as this allows for far more complexity to be added to create complex simple to complex queries.

After clicking the Query Design button on the Create tab, the Query Design View opens and by default the Show Table dialog window appears with a list of available tables and queries that can be added to build the query. Select one or more tables that contain the data desired to produce the answers to the potential questions. However, only add tables that contain fields that you intend to add to the query design. Tables added to the query design that do not have fields in the query grid can skew the query results. The exception to this rule is if the table is needed to join two or more other tables that are part of the query design. After the Show Table window is closed, it can be re-opened by clicking the Show Table button in the Design contextual tab.



Query Design

The next step to creating a query is to add the fields from the tables/queries into the query design grid (at the bottom of the window). Fields can be added by double-clicking the fields from the tables in the Object Relationship pane. A user can also drag a field from the table to the grid. A field can also be selected from the Field drop-down list in each column of the query design grid. If the fields are added in the wrong order, the column can be deleted or moved by clicking the top of the column and dragging the field to the appropriate location.

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5.12.10: Access Reports

Utilizing Access to analyze data results in lots of information. This Information needs to be shared – often will people who do not, or should not, have rights to utilize the Access database. Access **reports** organize and present data in a reader-friendly, visually appealing format by using data from any queries or tables in the database. The tables or queries that provide the underlying data are also known as the report's **record source**. A report is a database object that comes in handy when you want to present the information in your database for any of the following uses:

- Display or distribute a summary of data.
- Archive historical information.
- Provide details about individual records.
- Create labels.

There are four different report views in Access. Two are essentially print views and the other two are report building views. As with all other Access objects, you can toggle the view using the buttons at the bottom right of the screen, or by using the View button on the Ribbon. The four views include:

- **Report view** – shows how a report would appear with dummy data using a continuous page layout.
- **Print Preview** – allows users to see what the report will look like when printed. This view can be used to change the page layout, including the report orientation.
- **Layout view** – allows users to edit the report design while it contains live data. Considered the most intuitive view to use for report modification, this view can be used for nearly all potential changes to a report in Access.
- **Design view** – allows users to view and change any aspect of the report structure, but not the data. This view displays any expressions that are used to generate content, and displays the header and footer bands for the report, page, and groups.. This is the preferred view for adding controls to the report, such as labels, images, lines and rectangles.

The design of a report is divided into sections that can be modified in the Design view. Reports created by using the Report button are plain and simple, and have several sections, as detailed in the table to the right. More complex reports created using the Report Wizard can also have multiple **group header and group footer** sections to print grouping details and summary information.

Report Section	Purpose
Report Header	Appears at the top of the first page and displays the report title. Displays only once in a report.
Page Header	Appears at the top of every page and displays the headings (field labels) for each column.
Detail Section	Appears between the page header and page footer and displays the records from the table or query. Can run across many pages dependent on the amount of data.
Page Footer	Appears at the bottom of every page and displays the page number and total number of pages.
Report Footer	This section is optional. Appears on the last page of the report and displays summary information such as grand totals. Displays only once in a report.

Report Sections

Reports can be designed and formatted in a similar way to forms. When you create a report, four new tabs appear in the Report Layout Tools section of the Ribbon specifically for working with reports.

- **Design**: Group and sort elements in the report, add text and links, insert page numbers, and modify the sheet's properties.

- **Arrange**: Adjust the table to be stacked, tabular, etc.; move rows and columns up an down or left and right; merge and split columns and rows; control the margins and bring elements to the “front” or “back” in a layering format.
- **Format**: Includes regular word processor formatting tools like bold, italic, underline, text and background color, number and date formatting, conditional formatting, etc.
- **Page Setup:** Allows adjusting of the page’s overall size and toggling between landscape and portrait.

Another popular approach to creating reports is to use the Access Report Wizard. The **Report Wizard** provides more flexibility than by simply using the Report button. The Report Wizard guides users through a series of questions and then generates a report based on these answers. Users can choose the tables and fields, group the data, sort the data, summarize the data, choose a layout and orientation, apply a style, and title the report. Grouping data puts all of the values in a field into a group based on the field’s value. By using the Report Wizard, users can create up to four sort levels. If the data has been grouped, the option exists to summarize the data by displaying the sum, average, and minimum or maximum value for each numeric field. Choose to have the report display just the summary data or each detail line and the summary data. Note: Users can also add grouping, sorting, or totals by using the Group, Sort, and Total pane while the report is open in Layout view or Design view.

To print a report, right-click the report in the Navigation Pane and choose Print Preview from the shortcut menu. Print Preview command options include:

- Print the report
- Adjust page size, margins or orientation
- Zoom in or out, or view multiple pages at a time
- Refresh the data on the report
- Export the report to another file format.

To save paper, or to send a print job to a professional printer, or send the report via e-mail, you can create a .pdf or xps format of your report: On the **Print Preview** tab, in the **Data** group, click **PDF or XPS**. Reports can be saved as an object in the Navigation Pane, and at later date, updated and re-printed. Unlike Access queries, the page settings are maintained in Access reports when saved.

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GLOSSARY

A

Amdahls law | a law or argument used to find the maximum expected improvement to an overall system when only part of the system is improved.

Analog data | Data that is represented in a physical way.

Assembler | Computer program which translates assembly language to an object file or machine language format.

Assembly Language | Low-level programming language for a computer, or other programmable device, in which there is a very strong (generally one-to-one) correspondence between the language and the architecture's machine code instructions.

C

Cache memory | Random access memory (RAM) that a computer microprocessor can access more quickly than it can access regular RAM. This memory is typically integrated directly with the CPU chip or placed on a separate chip that has a separate bus interconnect with the CPU

Compiler | Computer program (or a set of programs) that transforms source code written in a programming language (the source language) into another computer language (the target language), with the latter often having a binary form known as object code.

Computer performance | Characterized by the amount of useful work accomplished by a computer system or computer network compared to the time and resources used.

D

Digital data | Discrete, discontinuous representations of information or works, as contrasted with continuous, or analog signals which behave in a continuous manner, or represent information using a continuous function.

Direct memory access | A method that allows an input/output (I/O) device to send or receive data directly to or from the main memory, bypassing the CPU to speed up memory operations. The process is managed by a chip known as a DMA controller (DMAC).

I

Input / Output | the process of input or output, encompassing the devices, techniques, media, and data used

Interrupt | A hardware signal that breaks the flow of program execution and transfers control to a predetermined storage location so that another procedure can be followed or a new operation carried out.

M

Machine Language | Set of instructions executed directly by a computer's central processing unit (CPU).

Micro architecture | A description of the electrical circuitry of a computer, central processing unit, or digital signal processor that is sufficient for completely describing the operation of the hardware.

Multicore | A type of architecture where a single physical processor contains the core logic of two or more processors or packaged into a single integrated circuit

Multiprocessor | Refers to the ability of a system to support more than one processor and/or the ability to allocate tasks between them.

P

Peripheral devices | Any auxiliary device such as a computer mouse or keyboard that connects to and works with the computer in some way. Other examples of peripherals are image scanners, tape drives, microphones, loudspeakers, webcams, and digital cameras.

Polling | refers to actively sampling the status of an external device by a client program as a synchronous activity. Polling is most often used in terms of input/output (I/O), and is also referred to as polled I/O or software-driven I/O.

Q

Quantization | The process of mapping a large set of input values to a (countable) smaller set.

S

Sampling | The reduction of a continuous signal to a discrete signal. A common example is the conversion of a sound wave (a continuous signal) to a sequence of samples (a discrete-time signal).

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