Excel 2019 Level 2

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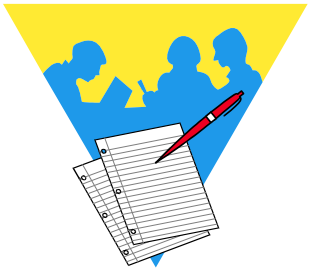

Lesson Notes

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Using this Manual

Welcome to the *Excel 2019 Level 2* course. This manual and the data files are designed to be used for learning, review and reference after the class. The data files can be downloaded any time from *The Computer Workshop* website:

http:\\www.tcworkshop.com

There is no login or password required to access these files. You will also find handouts and supplementary materials on the website in the Download section.

To Download Data Files

Once on *The Computer Workshop* website, locate and click the *Student Resources* link in the top navigation bar. When on the *Student Resources* page, click the **Data Files** button.

1. ***Data Files*** page displays a list of general application types.
2. Click once on the ***Microsoft Office Courses*** link.
3. Click once on the software related to the course.
4. Click once on the version related to the course.
5. If there are multiple folders, click on the ***TCW*** folder.
6. Click on the course name to download the data files.

You can choose to open or save the zipped folders content to your computer.

While on the *Student Resources* page, you can also access handouts by clicking the **Handouts** button. Handouts are in PDF format and also available to you without login or password. Simply open the PDF and either print or save to your computer.

Conventions

Conventions Used in this Manual

The hands-on exercises (Actions) are written in a two-column format. The left column ("Instructions") gives numbered instructions, such as what to type, keys to press, commands to choose from menus, etc. The right column ("Results/ Comments"), contains comments describing results of, reasons for, quick keys, etc. for the instructions listed on the left.

- Key names and Functions are bold and enclosed in square brackets:

  [Enter], [Tab], [F5], [F10]

- Keys you press simultaneously are separated by a plus (+) sign, typed in bold and enclosed in square brackets. You do not press the plus.

  [Shift + F5]

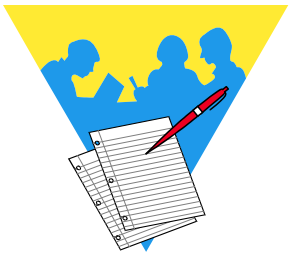
- Keys you press in sequence are separated by a space, bold and enclosed in square brackets.

  [Home] [Down Arrow]

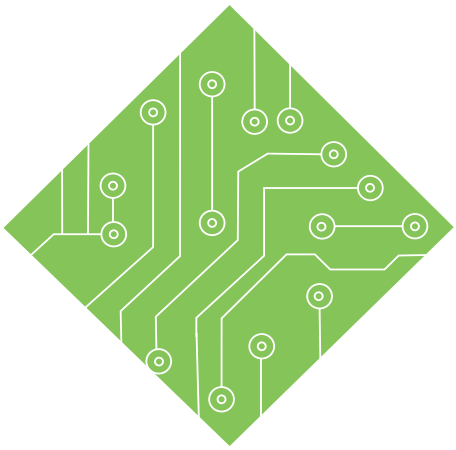
- Ribbon tab names are in bold and italic: Example: ***Home***
- Group names are in bold: Example: **Font**
- Dialog box names are in italic: Example: *Save As*
- Button names are bold and enclosed in square brackets: Example: **[Sort]**
- Information you are to type will be in bold. Example:

  This is the first day of the rest of your life.

- Information that you need to supply will be indicated with pointed brackets. Example: Type: <**your name**>.



Tips and Notes

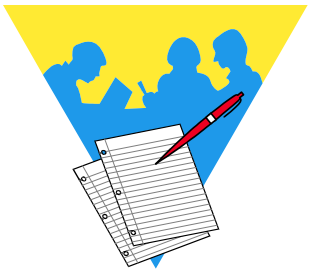


Lesson 1: Working with Multiple Worksheets and Workbooks

Lesson Overview

You will cover the following concepts in this chapter:

- About Workbooks and Worksheets
- Inserting and Deleting Worksheets
- Selecting Worksheets
- Editing Across Multiple Worksheets
- Renaming Worksheets
- Tab Color
- Hiding and Unhiding Worksheets
- Viewing multiple Worksheets
- Opening Multiple Workbooks
- Viewing Workbooks and Worksheets
- Moving & Copying Worksheets
- Hiding Workbooks
- Viewing Data in Workbooks and Worksheets
- Closing Multiple Workbooks



Lesson Notes

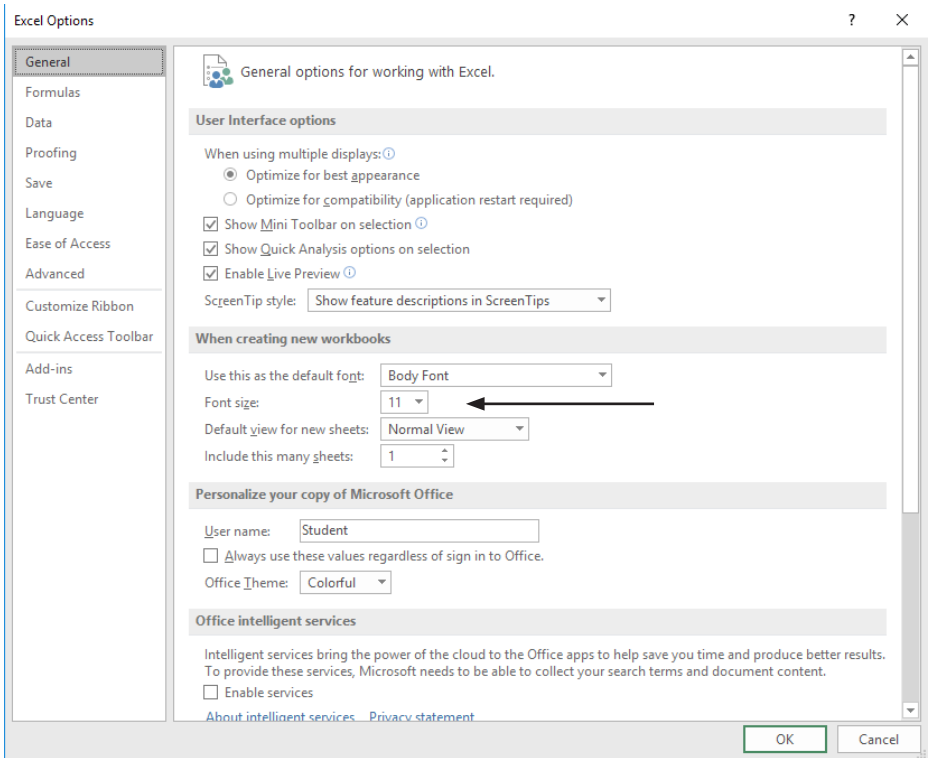
About Workbooks and Worksheets

A workbook is a collection of worksheets. Multiple worksheets in a workbook provide several advantages, including the ability to:

- Group related data into one workbook, such as a collection of monthly sales reports.
- Enter and edit data on several worksheets simultaneously.
- Perform calculations based on data from more than one worksheet.

When creating a new workbook in ***Excel***, the workbook opens with one worksheet. You are able to create numerous additional worksheets and are only limited by the amount of available memory.

The default number of worksheets in a workbook can be modified by going into the ***Options***, on the ***File Tab***, and modifying the **Include this many sheets** in the ***General*** category.



Action 1.1 - Setting the Default Number of Worksheets

Instructions:	Results/ Comments:
1. Open ***Excel***.	
2. Open a new workbook.	You may need to click **[Blank Workbook]** in the Start Screen if needed, or tap the **[Esc]** key to exit the start screen.
3. Notice that there is only one worksheet in the workbook.	Look to the lower left of the worksheet.
4. Click the ***File Tab*** and then choose ***Options*** from the list of categories on the left.	The ***Options*** window opens. You can also use the keyboard sequence shortcut **[Alt] [F] [T]** to open the ***Options*** window.
5. In the general category find the **Include this many sheets** field and change the number from **one** to **five**. Click **[OK]**.	This will now be the default number of sheets that new workbooks will have.
6. Click the ***File Tab*** and then choose ***New*** from the list of categories on the left. Create a new workbook.	**[Ctrl + N]** The new workbook opens with the desired number of blank worksheets.
7. Click the ***File Tab*** and then choose ***Options*** from the list of categories on the left.	The ***Options*** window opens. We are going to reset the number of worksheets.
8. In the general category find the **Include this many sheets** field and change the number back to **one**. Click **[OK]**.	
9. Create another new workbook.	**[Ctrl + N]**.
10. Close all open workbooks without saving.	**[Ctrl + W]** will close the open workbooks without closing the program, use this keyboard shortcut to close each open file.

Inserting and Deleting Worksheets

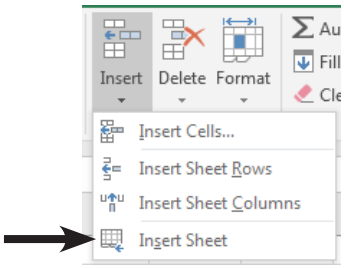
In a workbook, you can delete worksheets and insert additional worksheets. The default for the number of worksheets in an *Excel* workbook is set to one. As mentioned before, you may insert many more and are only limited by the amount of available memory.

Inserting a Worksheet

- Click on the **[New Sheet]** button found at the end of the worksheet tabs. Using this button will always add one worksheet after the selected worksheet.

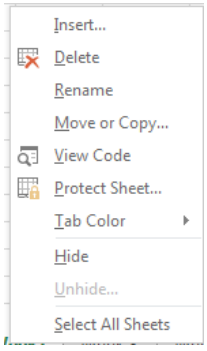
- OR -

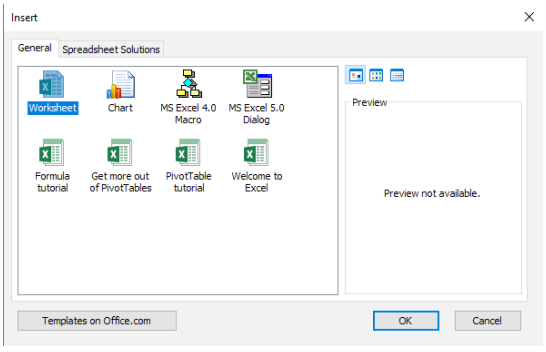
- Click on the down arrow on the **[Insert]** button in the **Cells Group o**n the ***Home Tab***, then select ***Insert Sheet*** from the menu.



- OR -

- Right-click the mouse on a worksheet tab and select ***Insert***. The worksheet icon should be selected. Click **[OK]**.





- If you want to insert more than one worksheet: select the same number of sheet tabs as the number of worksheets you want to add. Click on the down arrow on the **[Insert]** button on the ***Home Tab*** and select ***Insert Sheet*** from the menu.

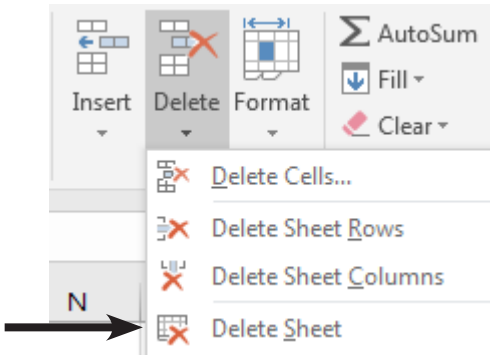
Note

The new sheet will be added to the left of the active sheet when using the ribbon or right-click methods of inserting worksheets.

Inserting and Deleting Worksheets, continued

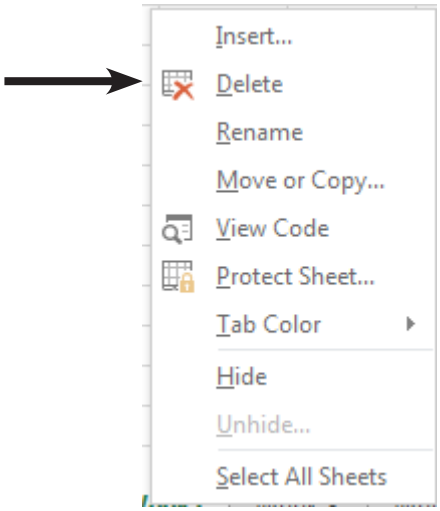
Deleting a Worksheet

- Select the sheet tab of the worksheet, you would like to delete. You can also select multiple sheet tabs.
- Click on the down arrow on the **[Delete]** button in the **Cells group** on the ***Home Tab***, then select ***Delete Sheet*** from the list.

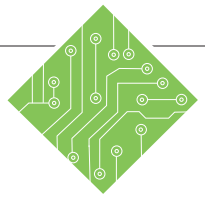


- OR -

- Right-click the mouse on the sheet tab you would like to delete. Select ***Delete*** from the menu.



Action 1.2 - Inserting and Deleting Worksheets



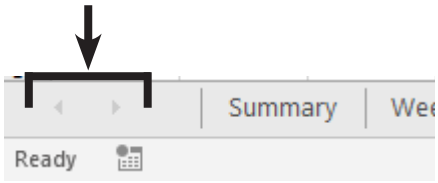
Instructions:	**Results/ Comments:**
1. Create a new blank workbook.	**[Ctrl + N]** or click the ***File Tab*** and click the *New* category on the left, then choose *Blank Workbook* from the list of available templates.
2. Click the **[New Worksheet]** button.	A new worksheet is added to the workbook, it is named ***Sheet2***.
3. Right-click the ***Sheet2*** Tab and choose *Insert* from the menu.	The *Insert* dialog opens.
4. Click the **[Worksheet]** button and click **[OK]**.	Worksheet should by selected by default. When you click the **[OK]** button a new worksheet named ***Sheet3*** is added. New worksheets added in this manner will be placed to the left of the active worksheet.
5. Go to the ***Home Tab,*** in the **Cells Group** click the **[Insert]** button drop-down and click the *Insert Sheet* option.	A new sheet named ***Sheet4*** is added to the workbook. New worksheets added in this manner will be placed to the left of the active worksheet.
6. Add two more sheets.	Use the method you prefer to add the sheets.
7. Right-click the ***Sheet6*** tab and choose *Delete* from the menu.	***Sheet6*** is removed from the workbook.
8. Save the file as **Month.xlsx** in the lessons folder.	**[F12]** or use the ***File Tab*** and choose the *Save As* category.

Selecting Worksheets

In order to work on a worksheet in a workbook, you must first make that worksheet active. To make a worksheet active, simply click on the appropriate sheet from the set of sheet tabs at the bottom of the worksheet. You can select from one sheet to all sheets in the workbook. If you select multiple worksheets, all of the selected worksheets will be changed when you enter or change data.

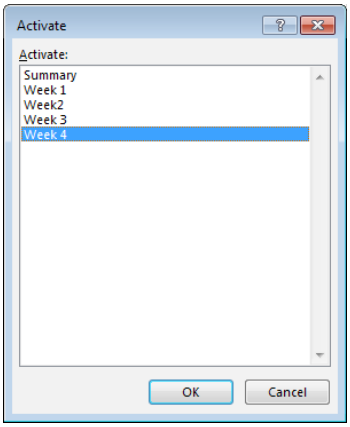
Selecting a Single Sheet

- Click the sheet tab you want.
- If you don't see the sheet tab, use the tab scrolling buttons to the left of the sheet tabs.



- OR -

- Right-click the mouse on the tab scrolling buttons to display the *Activate* dialog that shows a list of all the sheet tabs to choose from.



- OR -

- Press **[Ctrl + Page Up]** to move to the next worksheet to the left. Press **[Ctrl + Page Down]** to move the next worksheet to the right.

Selecting Worksheets, continued

Selecting two or more adjacent sheets

- Click the tab for the first sheet.
- Hold down on the **[Shift]** key.
- Click the tab for the last sheet to be selected.

When using the **[Shift]** key during the selection, all the sheets between the first and last selected sheets are selected.

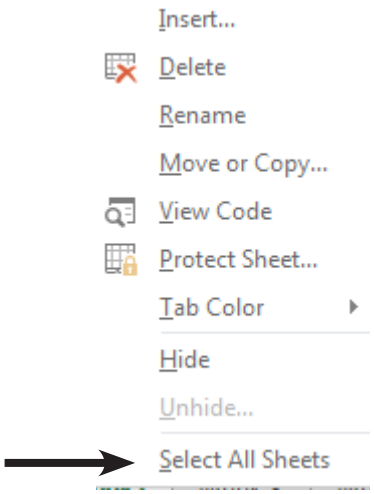
Selecting two or more nonadjacent sheets

- Click the tab for the first sheet.
- Hold down on the **[Ctrl]** key.
- Click the tabs for the other sheets to be selected.

When using the **[Ctrl]** key during the selection of the sheets, only the sheets clicked are included in the selection.

Selecting all the sheets in a workbook

- Right-click on a sheet tab.
- Click on ***Select All Sheets*** from the menu.

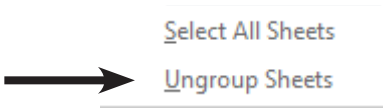


To select only a single sheet when all are active;

- Click the desired sheet.

-OR-

- Right-click any of the sheet tabs and choose *Ungroup* from the menu.



Action 1.3 - Selecting Worksheets

Instructions:	**Results/ Comments:**
1. Click on the ***Sheet2*** tab.	To select the worksheet. Notice the active worksheet is white with a green bottom border (as opposed to gray), the name is bold, and green.
2. Click any other sheet tab to select that worksheet.	The sheet tab is white with a green bottom border, the name is bold, and green.
3. Select ***Sheet1***, hold the **[Shift]** key and click on the ***Sheet5*** tab.	Using the **[Shift]** enables continuous selection, sheets 1 through 5 are all selected. They all share a white tab color and green bottom border, the names are all bold but only the active (visible) worksheets' name is green.
4. Click the ***Sheet3*** tab to select that sheet and deselect the others.	Only ***Sheet3*** is now selected.
5. Hold the **[Ctrl]** key and click the ***Sheet4*** and ***Sheet1*** tabs.	Using the **[Ctrl]** enables non-continuous selection, sheets 1, 4, and 3 all selected. They all share a white tab color and green bottom border, the names are all bold but only the active (visible) worksheets' name is green.
6. Right-click any sheet tab and choose *Select All Sheets* from the menu.	All the sheets are selected.

Editing Across Multiple Worksheets

When you have multiple worksheets selected, you are able to edit and/or add content simultaneously to all the sheets at one time. Selecting and editing a cell on the visible worksheet selects and edits the same cell on all actively selected worksheets.

This is an easy way to setup the base structure and formatting of workbooks that contain multiple worksheets.

Note

Do not try creating formulas when multiple worksheets are actively selected, as this will enter the same formula into all the cells simultaneously.

Establishing the structure

- Create the desired number of worksheets.
- Select all select worksheet that will share the same structure and formatting.
- Begin adding the structural content on the visible worksheet.
- Apply the formatting.
- Deselect the worksheets and you are ready to begin entering data and formulas.

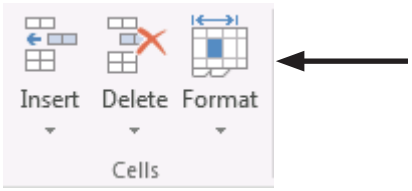
Action 1.4 - Editing Across Multiple Worksheets

Instructions:	Results/ Comments:
1. Select all the worksheets in the workbook using any method you prefer.	If necessary.
2. Select cell **B3,** type **< Monday >**.	This is the first day of the week.
3. Use the Autofill handle to pull the rest of the weekdays across to cell **H3**.	The Autofill will enter the rest of the weekdays.
4. Format the text as bold.	With the cells still selected used the **[Ctrl + B]** shortcut to apply the bold formatting or use the **[Bold]** button on the ***Home Tab*** or on the ***Mini Toolbar***.
5. Select cell **A3**, type in **Regions**.	This will be the header of the column.
6. Select cell **A4** and type in **Region 1**.	This is the first entry of the regions.
7. Use the Autofill handle to pull the list of regions down to cell **A10**.	Regions 1 through 7 are entered on the sheets.
8. Select cells **A3** to **A10**.	
9. On the ***Home Tab*** in the **Font Group** click the **[Cell Color]** button drop-down and choose a light color.	These selected cells are formatted.
10. Select cell **A1**, type **ABC Corp-Jan**.	The document title is added.
11. Select cells **A1** through **H1**.	You will be merging these cells.
12. On the ***Home Tab*** in the **Alignment Group** click the **[Merge and Center]** button.	The selected cells are now merged into a single cell for the title.
13. Apply a cell color and format the text to be bold.	
14. Click any of the other sheet tabs.	All the worksheets share the same structure and formatting.
15. Save the file.	**[Ctrl + S]**.

Renaming Worksheets

By default, the sheet tabs are named ***Sheet1, Sheet2, Sheet3***. You can, however, rename these to reflect the information on the worksheet.

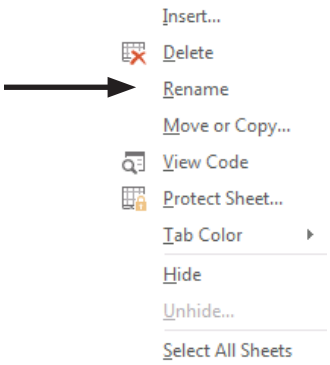
- Click on the sheet tab you wish to rename.
- On the ***Home Tab*** in the **Cells Group,** click on the **[Format]** button. Select ***Rename*** sheet from the menu.



- Type in the new name then press **[Enter]**.

- OR -

- Right-click on the sheet tab you wish to rename, then select ***Rename*** from the menu.



- Type in the new name then press **[Enter]**.

- OR -

- Double-click on the sheet tab.
- When the sheet name is highlighted, type in the new name then press **[Enter]**.

Tab Color

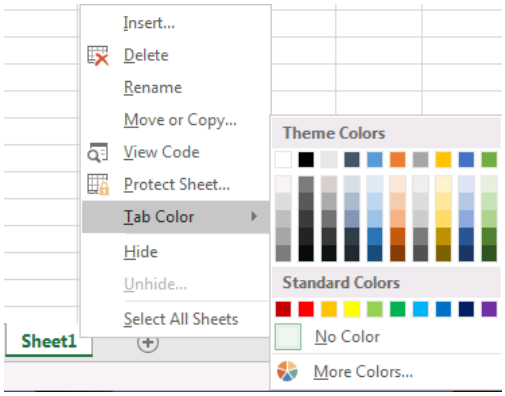
You can also add color to the sheet tabs. This can help, if you wish to color code the worksheet tabs or to simply have certain sheet tabs stand out from the others.

Note

While the sheet is active, the sheet tab will appear white with a colored underline.

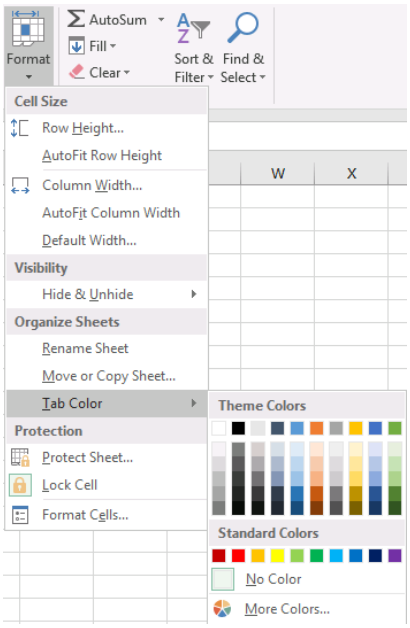
Adding Tab Color

- Right-click on the tab you wish to add color to.
- Select ***Tab Color*** from the menu. The color palette will be displayed.
- Click on the desired color. The menu will close. The sheet tab will appear with its new color.



- OR -

- Click on the tab you wish to add color to.
- On the ***Home Tab*** in the **Cells Group, c**lick on **[Format]** button, then click ***Tab Color***. Select a color from the menu.



Action 1.5 - Renaming Worksheets and Applying Tab Colors

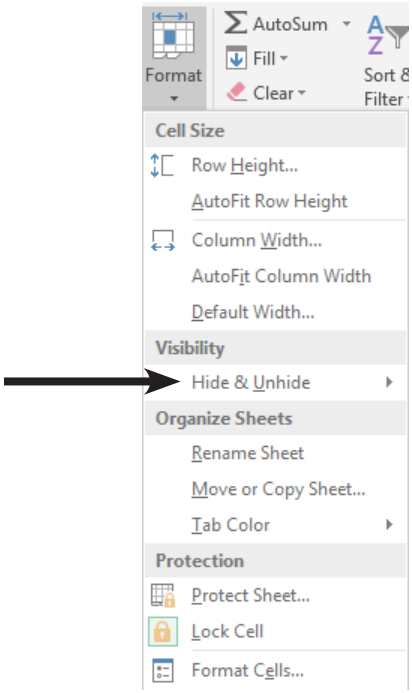
Instructions:	**Results/ Comments:**
1. Select ***Sheet1***.	Click the ***Sheet1*** tab.
2. Right-click the sheet tab and choose *Rename* from the menu.	The current name of Sheet1 is highlighted.
3. Type **Summary** and tap the **[Enter]** key to apply the name.	The name is entered and the sheet tab should display the new name.
4. Select the next worksheet**.**	Click the worksheet tab.
5. Double-click the sheet tab, type **Week1** and tap the **[Enter]** key.	The current name of ***Sheet2*** is highlighted.
6. Rename the remaining sheets as **Week2** , **Week3**, and **Week4** .	Use your preferred method to rename the sheets.
7. Select the ***Summary*** sheet.	Click the ***Summary*** tab.
8. Right-click the sheet tab , choose a gold color from the ***Tab Color*** set of options.	The sheet tab is now colored.
9. Select the ***Week1*** sheet.	Click the ***Week1*** tab.
10. Hold the **[Shift]** key and select the ***Week4*** sheet tab.	All the week sheets are now selected.
11. Right-click any sheet tab , choose a red color from the ***Tab Color*** set of options.	All the week sheets are now colored.
12. Save the file.	**[Ctrl + S]**.

Hiding and Unhiding Worksheets

When there are worksheets that are needed but not necessary to see, you can hide them. This allows you to keep the data in the file without having them in the way. Formulas that pull from the data will not be affected.

Hiding the Worksheet

- Select the worksheet to be hidden.
- Click the ***Home Tab***, in the **Cells Group**, click the **[Format]** button drop-down arrow.

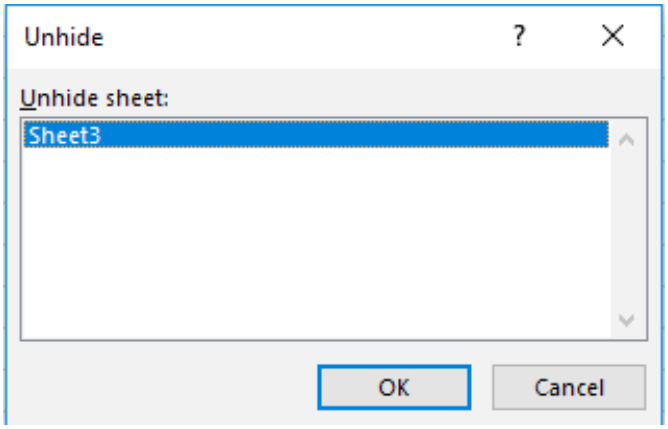


- The Visibility options, click ***Hide & Unhide***, and then click *Hide Sheet*.

Hiding and Unhiding Worksheets, continued

Unhiding the Worksheet

- Click the ***Home Tab***, in the **Cells Group**, click the **[Format]** button drop-down arrow.
- The ***Visibility*** options, click ***Hide & Unhide***, and then click *Unhide Sheet*.
- The *Unhide Dialog* opens.



- In the *Unhide* dialog, double-click the name of the hidden sheet that you want to display and click the **[OK]** button. Only one worksheet can be unhidden at a time.

Action 1.6 - Hiding and Unhiding Worksheets

Instructions:	Results/ Comments:
1. Select only the ***Week4*** sheet.	Click the ***Week4*** tab. You may need to deselect the sheets. Right-click any of the selected sheets and choose *Ungroup Sheets* from the menu.
2. Right-click the sheet tab and choose *Hide* from the menu.	The sheet is no longer displayed in the list of worksheets. It is still part of the workbook but currently not accessible.
3. Right-click the ***Week2*** sheet tab and choose *Hide* from the menu.	The ***Week2*** sheet is removed from the sheet list.
4. Right-click any of the remaining sheet tabs and choose *Unhide* from the menu.	The *Unhide* dialog opens.
5. Select the ***Week2*** sheet from the list and click the **[OK]** button.	You can only select one hidden sheet at a time to unhide. The hidden sheet is redisplayed in the list of sheet and fully accessible.
6. Right-click any of the remaining sheet tabs and choose *Unhide* from the menu.	The *Unhide* dialog opens.
7. Select the ***Week4*** sheet and click the **[OK]** button.	The hidden sheet is redisplayed in the list of sheet and fully accessible.
8. Save the file.	**[Ctrl + S]**.

Viewing multiple Worksheets

Creating New Windows

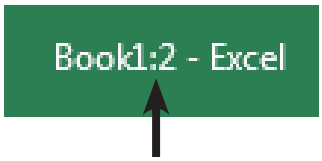
Having to constantly switch between worksheets can become confusing, so it may be easier to work with those sheets side by side. This is done by opening new windows from the same workbook.

Note

It is a good idea to minimize the ribbon before opening new windows, to avoid having the full ribbon in view on each new window.

Opening New Windows in a Workbook

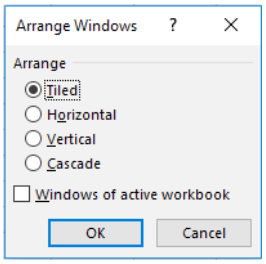
- Click the ***View Tab,*** in the **Window Group** click the **[New Window]** button.
- When the new window opens, take note of the workbook name in the *Excel* title bar.



  - A full colon and number are added to the title of the file. The number indicates the number of windows the file has open.

Viewing Multiple Worksheets from the Same Workbook

- Click the ***View Tab,*** in the **Window Group click the [Arrange All]** button.
- The *Arrange Windows* dialog opens.



- Select how you want to arrange the window: ***Tiled, Horizontal, Vertical,*** or ***Cascade***.
- If you want to see just the windows of the active workbook, click on ***Windows of active workbook***. Otherwise you will see all open workbooks.
- Click on the worksheet tab in each window that you would like to view.

Action 1.7 - Viewing Multiple Worksheets

Instructions:	**Results/ Comments:**
1. Select the ***Summary*** sheet.	
2. Double-click the ***Home Tab*** to minimize the ribbon.	It is a good idea to minimize the ribbon before opening new windows since each window will have a full ribbon.
3. On the ***View Tab*** in the **Windows Group**, click the **[New Window]** button.	Notice the file in the program title bar in the new window, there is a **:2** added to the file name. This indicates that there are two open windows in relation to the file.
4. Try the **[Alt] [W] [N]** key sequence to open a new window.	Another new opens with the **:3** added to the file name.
5. Open two more windows.	Use your preferred method. When done there should be a total of five open windows.
6. On the ***View Tab*** in the **Windows Group**, click the **[Arrange All]** button.	The *Arrange Windows* dialog opens.
7. Choose the *Tiled* option and click the **[OK]** button.	The screen is divided into five parts.
8. Click into each window and select a sheet so that each window will display one of the sheets.	You can now see each sheet in the file at the same time.
9. Click the window with the ***Summary*** sheet.	The active window title bar displays the title in white text.
10. Select the merged cell	**A1:H1**.
11. Click the ***Home Tab*** in the **Font Group** click the **[Font Color]** button drop-down and change the color of the font	The ***Summary*** sheet title is re-colored.
12. Save the file and close all the windows.	**[Ctrl + S]** and **[Ctrl + W]** as needed.
13. Double-click the ***Home Tab*** to maximize the ribbon.	The ribbon will be maximized when the next files are opened.

Opening Multiple Workbooks

There will be many instances where more than one workbook contains required data. While having many worksheets in a workbook allows for large and varied data sets within a single file, it is still common to have data broken down into smaller more manageable sets in individual files.

Being able to open more than one file at a time is a common necessity. Opening multiple files is done just like open single files. When the needed files are in the same location (folder) using the **[Shift]** and **[Ctrl]** keys to select all the workbooks at one time.

- Go to the ***File Tab***, choose *Open* from the left side of the backstage then navigate to when the files are stored.

- OR-

- If you have added the **[Open]** button to the *QAT*, click the button.

- OR -

- **[CTRL+ O]** will open the *Open* dialog, navigate to where the files are stored.
  - **[Shift]** : is used for continuous selection. Select the first file then hold the **[Shift]** key and click the last files and all files between are selected.
  - **[Ctrl]** : is used for non-continuous selection. Select the first file then hold the **[Ctrl]** key down and click each for the other files, only the files that you clicked on are selected.
- Then click the **[Open]** button

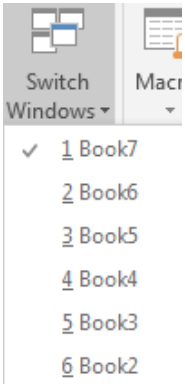
Viewing Workbooks and Worksheets

Newer versions of *Excel* open multiple workbooks in their own window, each window is a complete interface. Allowing more flexibility when working with more than one monitor. When working with several workbooks concurrently, you will need to switch between or view workbooks at the same time.

Switching Windows

When there are several workbooks open and you need to switch between them, there are several methods

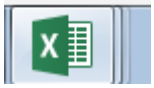
- Go to the ***View Tab*** and in the **Windows Group** click the **[Switch Windows]** button to show a list of all open workbooks.



- Click the desired workbook to view it.

- OR -

- When there are multiple workbooks open in *Excel*, look to the ***Task Bar*** at the bottom of the screen. The *Excel* icon will appear stacked.



- Click the *Excel* icon and the list of all open workbooks are displayed.
- Click the desired one to make it active.

- OR -

- Hold down the **[Alt]** key and tap the **[Tab]** key to display the list of all open applications and files.
- Press the **[Tab]** key to move to the next in the list, until the desired application or file is highlighted and let go of the **[Alt]** key.

Viewing Workbooks and Worksheets, continued

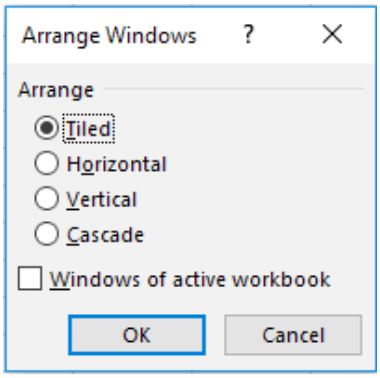
Arranging the Window

When working with multiple workbooks and worksheets, it is advantageous to view more than one workbook or worksheet within a workbook on the screen at the same time. This is very useful when comparing data, creating 3D formulas, and/or copying and pasting between workbooks and worksheets.

Viewing Multiple Workbooks

Note: In *Excel 2019* when the workbooks or worksheets are tiled, each window will also display the ribbon. At this point you may consider hiding the ribbon in the windows.

- Open the workbooks you want to view. Click on the worksheet in each workbook that you would like to see. (If you want to view multiple worksheets in the same workbook, see the next section).
- On the *View Tab* in the **Window Group** click the **[Arrange All]** button. The *Arrange Windows* dialog will open.



Note: The active file used to start the tiling will be the upper left tile.

- Select one of the following:
  - ***Tile*** - places the windows like a tile floor.
  - ***Horizontal*** - stacks windows horizontally.
  - ***Vertical*** - places windows side by side.
  - ***Cascade*** - places the windows so that you can see the title bar of each workbook, much like a stack of file folders.

If the *Windows of active workbook* checkbox is checked, all open workbooks and windows will be shown. Otherwise only the open workbooks are arranged.

- Click **[OK]** or press **[Enter]**.

Viewing Workbooks and Worksheets, continued

If the ***Arrange All*** feature is not working properly, it could be an issue with having *Excel Add-ins*.

To turn off the Add-ins:

- Go to the ***File Tab*** and select *Options*.
- Select the *Add-ins* category on the left of the options window.
- Click the **[Go]** button next to the **Manage:** field drop-down. Leave the **Manage:** field set to *Excel Add-ins*.
- Uncheck any checked Add-ins and click **[OK]**.
- Try using the ***Arrange All*** feature again.

Making a Workbook Active

Once you have multiple windows open, only one window will be active at a time. The file names for the inactive windows will be greyed out. To make a window active, simply click in the window.

Action 1.8 - Opening and Viewing Multiple Workbooks

Instructions:	Results/ Comments:
1. Double-click the **Home Tab** in the ribbon.	The ribbon is minimized. Doing this before opening the files will allow more of the files to be visible instead of seeing the ribbon in each window.
2. Go to the ***File Tab*** and choose *Open* from the list of categories on the left.	**[Ctrl + O].**
3. Click the **[Browse]** button.	If necessary. The *Explorer* window opens.
4. Navigate to the lesson folder.	
5. Select the **Columbus.xlsx** file.	Click on the file once, double-clicking the file will open it.
6. Hold the **[Shift]** key and select the **Detroit.xlsx** file, release the **[Shift]** key.	By holding the **[Shift]** key you are able to select all the files between the first and second selection.
7. Now hold the **[Ctrl]** key and select the **Report.xlsx** file and click the **[Open]** button.	Using the **[Ctrl]** key allows for non-continuous selection. All four file are now opened.
8. On the ***View Tab*** in the **Windows Group**, click the **[Switch Windows]** button drop-down.	A list of all open workbooks is displayed. The one that has a checkmark next to it, is the active file.
9. Select any of the open files listed in the menu.	The chosen workbook is now the active one.
10. Move your mouse down into the ***Task-bar*** at the bottom of the screen and hover over the *Excel* icon.	A pop-up of thumbnails or list of open workbooks is displayed.
11. When the list of open workbooks is displayed, click the workbook you need to work with.	The chosen workbook is now the active one.

Instructions:	Results/ Comments:
12. Hold the [**Alt]** key and tap the **[Tab]** key, keep using the **[Tab]** key to cycle through the list of open files and programs to highlight the desired file and let go of the **[Alt]** key.	When holding the **[Alt]** key and tapping the **[Tab]**, windows will display a list of every open application and file. This method allows for quick navigation between everything you are working with. The selected workbook or application is active.
13. On the ***View Tab*** in the **Windows Group**, click the **[Arrange All]** button.	The *Arrange Windows* dialog opens.
14. Chose *Tiled,* if necessary and click the **[OK]** button.	All four open workbooks are displayed in a grid pattern. The workbook that was active when using the **[Arrange All]** feature will be located in the upper left of the grid.
15. Click the **[Maximize]** button in the upper right corner of the **Columbus.xlsx** workbook.	That workbook is now displayed full screen. You can also double-click in the **Title Bar** of the workbook window to Maximize.
16. Click the **[Restore Down]** button in the upper right corner of the screen of the **Columbus.xlsx** workbook.	That workbook is now restored down to its tiled position. You can also double-click in the **Title Bar** of the workbook window to restore down.
17. Double-click the Title Bar of the **Columbus.xlsx** workbook.	The workbook is maximized.
18. Double-click the Title Bar of the **Columbus.xlsx** workbook.	The workbook is restored down to its tiled position.

Moving & Copying Worksheets

You can make a copy of a worksheet and add them to the current workbook or to another workbook. You can also move a worksheet to another location within the workbook or to another workbook. Be careful when you move a worksheet since formulas and other data can be affected by the move and result in inaccurate data or calculations.

Using the Move or Copy Dialog

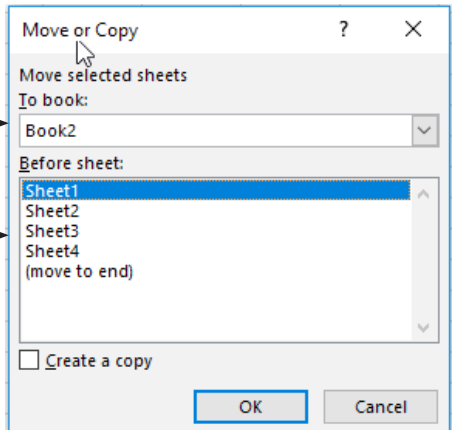
- Select the worksheet tab to move or copy. If you want to move or copy the worksheet to another workbook, make sure that workbook is open.
- On the ***Home Tab*** in the **Cells Group**, click on **[Format]**. Click on ***Move or Copy Sheet***. The ***Move or Copy*** dialog opens.

- OR -

- Right-click the mouse on the worksheet tab you want to move or copy. Select ***Move or Copy*** from the menu. The ***Move or Copy*** dialog opens.

List of open workbooks

List of workbook worksheets



- Under ***To Book:*** Select the book you want to copy to or click on (new book). Skip this if you are moving or copying within the same worksheet.
- Under ***Before sheet:*** select the name of the sheet to move the worksheet before; or select *[move to end]*.
- If you want to make a copy, click on ***Create a copy***. (If you forget to do this, the worksheet will be moved and not copied.)
- Click **[OK]**.

Moving & Copying Worksheets, continued

Using Dragging

A quicker way to move the worksheet is to click and drag the worksheet tab to its new location.

To Move within the same Workbook

- Click on the worksheet tab you want to move then drag the worksheet tab to its new location. As you drag the worksheet tab, a worksheet icon will appear along with a marker indicating where the worksheet will be placed.
- When you have reached the new location, release the mouse button.

To Copy within the same Workbook

- Click the worksheet tab you want to copy
- Press and hold the **[Ctrl]** key, the worksheet icon will appear with a + sign indicating you are copying.
- Drag the worksheet tab to the location for the copy to appear, then release the mouse button before releasing the key.

To Move/Copy to another Workbook

- Arrange the windows of the two workbooks so you can see them at the same time.
- Click and drag the worksheet icon from one workbook window to the next.
  - Using the **[Ctrl]** key while clicking and dragging will copy the worksheet.

Action 1.9 - Moving and Copying Worksheets in the same Workbook

Instructions:	Results/ Comments:
1. Maximize the **Columbus.xlsx** workbook**.**	Double-click the Title Bar of the Columbus workbook window. Notice worksheets are not in the proper order.
2. Right-click the ***Columbus-Mar*** sheet tab and choose *Move or Copy...* from the menu.	The *Move or Copy* dialog opens.
3. Select the *(move to end)* option and click the **[OK]** button.	The worksheet has been repositioned.
4. Right-click the sheet tab and choose *Move or Copy...* from the menu.	The *Move or Copy* dialog opens again.
5. Select the *(move to end)* option, check the **Create a copy** checkbox and click the **[OK]** button.	The worksheet was copied and a number added to the sheet name.
6. Click and hold the mouse key down on the ***Columbus-Mar(2)*** sheet tab, then drag the new sheet tab to the left of the ***Columbus-Jan*** sheet tab and release.	You will see a worksheet icon as you are dragging the sheet tab. A black down arrow will appear above the sheet tabs indicating where the sheet tab will be placed.
7. Holding the **[Ctrl]** key down click and hold the mouse key down on the ***Columbus-Mar(2)*** sheet tab, then drag the new sheet tab to the right of the ***Columbus-Mar*** sheet tab and release.	You will see a worksheet icon as before but it will include a + in the sheet icon. An exact copy of the sheet is added to the workbook to the right of the ***Columbus-Mar*** sheet.
8. Select cell **C2** and type **April**.	The sheet is updated to the correct month.
9. Repeat steps 8 and 9 to create sheets for May and June.	The sheet is copied and added to the workbook.
10. Rename the new sheets according to their respective months, name the first sheet as ***Summary***.	All of the months should now be in order.
11. Save the workbook and restore down.	**[Ctrl + S]** and double-click the windows' Title Bar.

Action 1.10 - Moving and Copying Worksheets to Another Workbook

Instructions:	Results/ Comments:
1. With all the workbooks tiled.	
2. Click on the **Report.xlsx** window.	To make it the active workbook.
3. Save **REPORT** workbook as **My REPORT**.	Click the ***File Tab*** and choose ***Save As*** or **[F12]**.
4. Click on the **COLUMBUS** workbook and maximize it.	To make it the active workbook and full screen.
5. Make sure the ***Columbus-Jan*** worksheet tab is active.	
6. On the ***Home Tab*** in the **Cells Group,** click the **[Format]** button drop-down and select ***Move or Copy Sheet***.	The ***Move or Copy*** dialog opens. Shortcut: Right-Click on the ***Columbus*** sheet tab and choose *Move or copy* from the menu.
7. Under ***To book***: click on the down arrow and select ***My REPORT***.	We are going to move this sheet into the **My REPORT** workbook.
8. In the ***Before sheet*** list, select ***Sheet 2.***	
9. Click **[OK]** or press **[Enter]**.	The ***Columbus-Jan*** worksheet is moved to the **My REPORT** workbook. Notice the ***Columbus-Jan*** worksheet is no longer in the **COLUMBUS** workbook because we have moved it.
10. Double-click the Title Bar to restore down back to its tiled position.	The workbooks are tiled again.
11. Make the **DAYTON** workbook active.	Click in the **DAYTON** window.
12. Click and hold on the ***Dayton*** worksheet tab. When you see the worksheet icon, drag the icon to the **My REPORT** workbook and place it after the ***Columbus-Jan*** worksheet tab.	This will move the worksheet to the **My REPORT** workbook.
13. Click in the **DETROIT** workbook.	To make it active.

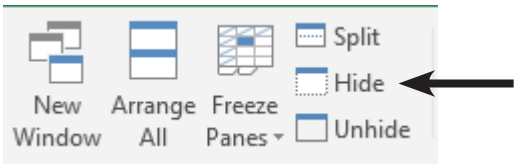
Instructions:	Results/ Comments:
14. Press the **[Ctrl]** key and then click and hold on the ***Detroit*** worksheet. You will see a worksheet icon with a plus sign in it.	By holding the **[Ctrl]** key while dragging the worksheet, the ***Detroit*** worksheet is copied to the **My REPORT** workbook.
15. Drag the icon to the **My REPORT** workbook and place it after the ***Dayton*** worksheet.	Notice because we have copied the worksheet, the ***Detroit*** worksheet is now in both windows.
16. Maximize the **My REPORT** window by clicking on the **[Maximize]** button.	You now have three new worksheets in this workbook. To see all of the worksheets, click on the left arrow on the worksheet scroll buttons.
17. Save the file.	**[Ctrl + S]**.

Hiding Workbooks

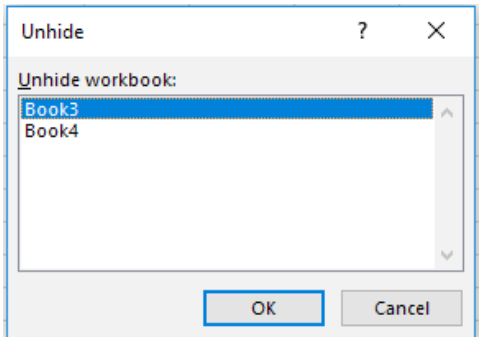
Hiding a Window

With the Hide feature, you can hide a window from view. The window will disappear from the screen, but still remain open. This is a great feature to use when you want less clutter, privacy or to prevent accidental modifications or closure.

- Click the **[Hide]** button in the **Window Group** on the *View Tab*.



- To view the window again, click on the **[Unhide]** button, then select the file name from the ***Unhide*** dialog. Click **[OK]**.



- When there is more than one hidden workbook, it is necessary to unhide each workbook since you can only select one workbook in the *Unhide* dialog.

Action 1.11 - Hiding and Unhiding Workbooks

Instructions:	Results/ Comments:
1. Click the **Columbus.xlsx** window to make it the active workbook.	
2. On the ***View Tab*** in the **Windows Group,** click the **[Hide]** button.	The **Columbus.xlsx** workbook is now hidden.
3. Click the **Dayton.xlsx** window to make it the active workbook.	
4. On the ***View Tab*** in the **Windows Group,** click the **[Hide]** button.	The **Dayton.xlsx** workbook is now hidden.
5. Click the **MyReport.xlsx** window to make it the active workbook.	
6. On the ***View Tab*** in the **Windows Group,** click the **[Unhide]** button.	The *Unhide* dialog is displayed. It shows a list of all hidden workbooks, you can only select one workbook at a time to unhide, so select the desired workbook.
7. Select the **Columbus** workbook from the list of hidden workbooks and click the [OK] button.	The workbook is now visible.
8. On the ***View Tab*** in the **Windows Group,** click the **[Unhide]** button.	The *Unhide* dialog is displayed.
9. Select the **Columbus** workbook from the list of hidden workbooks and click the **[OK]** button.	The workbook is now visible.
10. Close all the open workbooks.	**[Ctrl + W]** or click on the **[Close]** button in each window .

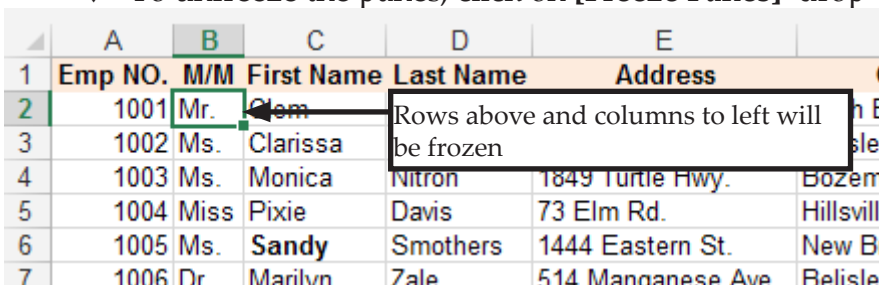
Viewing Data in Workbooks and Worksheets

Freeze Panes

It is sometimes convenient to be able to keep an eye on one part of a spreadsheet while simultaneously viewing other parts of the same spreadsheet. For example, keeping cells with headings in place while scrolling through the data. This is called *Freeze Panes*.

Freezing a Pane

- Open a workbook window.
- Figure out what you want to freeze.
  - **First Column**: On the ***View Tab*** in the **Windows Group** click the **[Freeze Panes]** drop-down and select ***Freeze First Column*** from the menu.
  - **Top Row**: On the ***View Tab*** in the **Window Group**, click on **[Freeze Panes]** drop-down and select ***Freeze Top Row*** from the menu.
  - **Your own selection**: Select the cell below the rows and to the left of the columns you want frozen. On the ***View Tab*** in the **Window Group** click on **[Freeze Panes]** drop-down and select ***Freeze Panes*** from the menu.
- To unfreeze the panes, click on **[Freeze Panes]** drop-down and select ***Unfreeze Panes***.



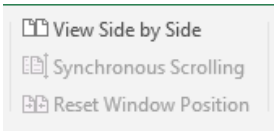
Viewing Data in Workbooks and Worksheets,
continued

Comparing Workbooks

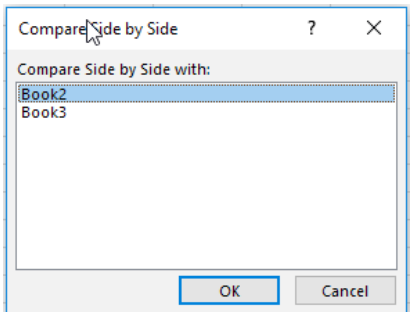
While we have been examining many ways to see more than one workbook at a time, there is still one more option available in *Excel*. The ***View Side by Side*** option allows for dynamic comparisons between two workbooks unlike any of the other methods discuss earlier. Before starting, it is a good idea to set the zoom level and freeze panes so that both workbooks look and act the same.

Side by Side Viewing

The **[View Side by Side]** button in the **Windows Group** on the ***View Tab*** allows you to view two windows simultaneously.

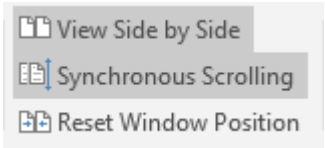


If there is more than one other workbook the *Compare Side By Side* dialog opens. Choose the workbook you want to compare to the active workbook and click the **[OK]** button.



Synchronous Scrolling

The [**Synchronous Scrolling]** button in the **Windows Group** on the ***View Tab*** is active by default when viewing side by side. Allowing you to scroll through the data on both windows at the same time.

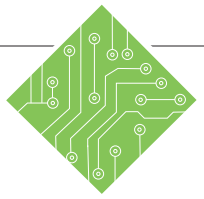


The **[Reset Window Position]** button is used if you resize the windows to see one larger than the other.

To turn off the view side by side feature, simply click the **[View Side by Side]** button.

Note

If you turn off Synchronous Scrolling, consider using the **[Ctrl + Home]** keys to reset the position in each window before turning Synchronous Scrolling back on.



Instructions:	Results/ Comments:
1. Open the file **Sales2007.xlsx**.	
2. Scroll to view cell **K465** and then return to the top of the worksheet.	Notice that it would be difficult to know which month or which item you were viewing numbers for.
3. Click in cell **B5**	We are going to freeze panes so we can view both the column and row labels.
4. On the ***View Tab*** in the **Window Group,** click on **[Freeze Panes]** button drop-down and select ***Freeze Panes*** from the menu.	Two black lines (horizontal and vertical) will appear showing where the freeze panes are.
5. Scroll through the worksheet again.	Notice that the row and column labels always stay in view.
6. Return to the top of the worksheet.	Press **[Ctrl + Home]**.
7. Click on **[Freeze Panes]** button drop-down and select ***Unfreeze Panes***.	
8. Click in cell **A1**.	
9. Open the file **Sales2008.xlsx**.	Before viewing these files side by side, we should turn on Freeze Panes in both files.
10. In the **Sales2008** window, click in cell **B5** then follow Step 4 to freeze panes.	To turn on Freeze Panes for **Sales2008**. Both workbooks will appear in the window.
11. On the ***View Tab*** in the **Window Group,** click on **[Switch Window]** button and choose the **Sales2007** workbook.	To make the workbook active.
12. Repeat Step 10 to freeze panes in **Sales2007**.	To turn on Freeze Panes for **Sales2007** at cell **B5**.

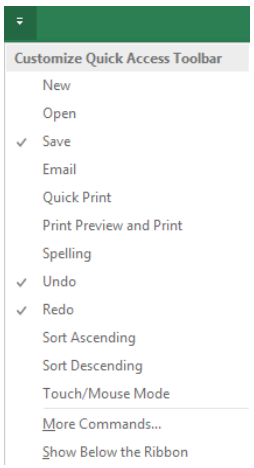
Instructions:	Results/ Comments:
13. On the *View Tab* in the **Window Group,** click on the **[View Side by Side]** button.	Both workbooks will appear in the window. If there are multiple files open you will see the ***Compare Side by Side with:*** list select the desired file and click **[OK]** or press **[Enter].**
14. In the **Sales2008** window, click on the down arrow on the scroll bar and scroll down. Scroll back up to the top of the workbook.	Notice now you have synchronous scrolling and you can see both column headers and row labels. By default, scrolling is synchronized.
15. Scroll through the worksheets.	If you do not want the scrolling to be synchronized, click on the **[Synchronous Scrolling]** button. This will deselect the option.

Closing Multiple Workbooks

When you are done working with multiple workbooks and want to close them, you can close each one or by using the [Close All] button close all open files at once. This button is one that is hidden until added to the QAT or to a custom tab.

Adding the Close All button to QAT

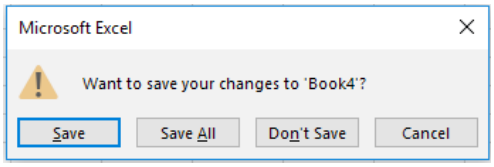
- Go to the *Excel* Options/ **Quick Access Toolbar** Window.
  - ***File Tab*** / *Options* / **Quick Access Toolbar**.
  - Choose *More Commands* from the ***QAT*** drop-down menu.



  - **[Alt] [F] [T]**, then select *Quick Access Toolbar* from the list of categories on the left of the *Options* window.
- Choose *All Commands* from the **Choose commands from...** field drop-down.
- Scroll down to find the *Close All* command and double-click it to add it to the ***QAT***.
- Click the **[OK]** button to apply the change.

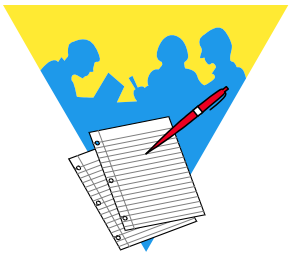
Note: Remember the **[Alt]** keyboard shortcuts are sequential

Click the **[Close All]** button in the ***QAT*** to close all workbooks at once. If any changes have been made in any open files the *Save* dialog opens, choose the appropriate option.

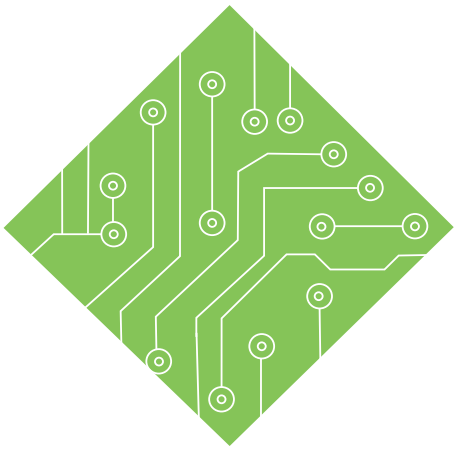


Action 1.13- Closing multiple Workbooks

Instructions:	**Results/ Comments:**
1. Click the ***File Tab*** and choose *Options* from the categories on the left.	The Options window opens.
2. Select *Quick Access Toolbar* from the list of categories on the left.	The ***Quick Access Toolbar*** controls are displayed in the Options window.
3. In the **Choose Commands from:** drop-down choose *All Commands*.	The list of available options changes.
4. Scroll down through the list to find and select *Close All*.	Every command in *Excel* is now available, they are listed in alphabetical order.
5. Click the **[Add]** button and then click the **[OK]** button.	The command is now listed in the right column of commands (these are the commands already on the ***QAT***). You can also double-click a command to add it to the ***QAT***.
6. In the ***QAT***, click the newly added **[Close All]** button. If prompted to save any changes choose *Don't Save*.	All open files are now closed. If there are any unsaved changes in a workbook, you will be prompted to save before closing.



Tips and Notes

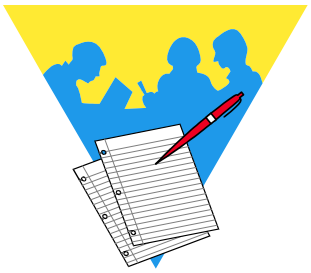


Lesson 2: Names

Lesson Overview

You will cover the following concepts in this chapter:

- Names
- Defining Names
- Name Manager
- Editing Names
- Using Names to Navigate
- Using Names in Formulas



Lesson Notes

Names

When working with a complex formula involving several cell ranges, the formula can be difficult to understand and individual cells containing important data can be hard to find on a large worksheet. Cell references like **D5:D22** or **A33:C33** don't really communicate anything about the data they contain. In *Excel*, you can create a meaningful Name for cells or cell ranges to be used in the place of cell references, making it easier to identify the data contained in the cell. Names can also be used with the ***GoTo*** command to simplify movement within the worksheet.

Names can be given to individual cells, cell ranges, constants, formulas or tables. By default, Names are absolute, so if you copy or AutoFill a formula using a Name, it will maintain its original cell references. Names will make formulas much more readable and they will make it easier to find and reference individual cells, improving clarity, organization to the overall design.

Rules for Defining Names

The following are guidelines to use when naming a cell or range of cells. If you do not enter the name in the correct manner, an error message will be displayed.

- The first character in the name must be a letter, underscore or backslash.
- You cannot use a C, c, R, or r as a defined name.
- You cannot have spaces between words. You must use the underscore or period as word separators instead.
- *Excel* does not distinguish between upper and lower case letters. For example, *Excel* will see **Profit** and **PROFIT** as the same word.
- A Name can contain up to 255 characters.
- A Name cannot be the same as a cell reference.

Scope

The scope of a Name refers to where the Name will be recognized. A workbook scope means that the Name is recognized on any worksheet within the workbook and is considered a global level. A worksheet scope means that the Name will only be recognized on a designated worksheet and is considered the local level.

Names,
continued

A Name must always be unique within its scope. You can use the same name in different scopes. If you use the same Name on the local level and global level, the local level name takes precedence on the worksheet in which it was created. A local name can be used on another worksheet, but you must use the name of the worksheet along with the range name. Example: **Sheet1!rangename**.

Defining Names

Defining a Name

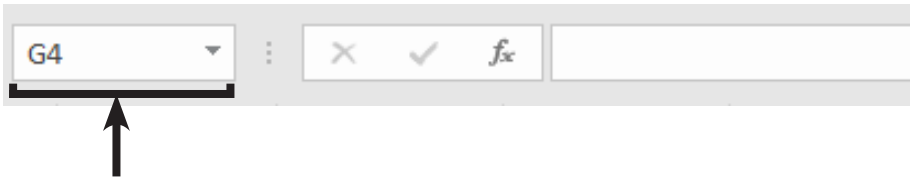
There are several different ways to define a name. Using the *Name Box* on the Formula Bar, creating names from existing column or row labels and using the *New Name* dialog.

Note

To select cell in a non-contiguous manner, hold the **[Ctrl]** key as you click the desired cells.

Using the Name Box

- Select a cell or range of cells that you want to name. You can even select a nonadjacent group of cells.
- Click in the *Name Box* located to the left of the Formula Bar to activate it.

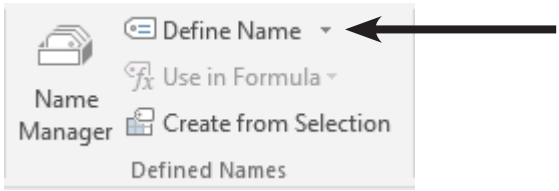


- Type the name for the range following the "Rules for Defining Names".
- Press **[Enter]**. The new name is added to the Name list. The list can be accessed by clicking the down arrow on the *Name Box*.
- By default, the scope of Names created using the *Name Box* will be global.

Using Define Name

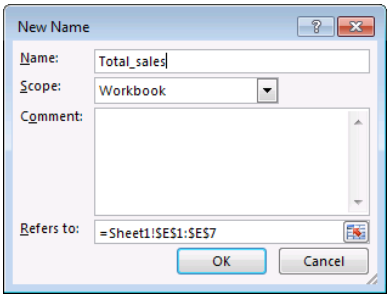
Use the *New Name* dialog when you want to specify the scope of a name and if you want to create a comment.

- Select the cell or ranges of cells you want to create a Name for. You can also skip this step and select the cells in the *New Name* dialog.



Defining Names,
continued

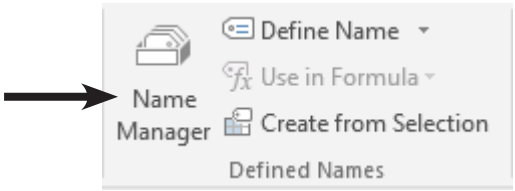
- Click on **[Define Name]** button in the **Defined Names Group** on the ***Formulas Tab***. The *New Name* dialog opens.



  - In the ***Name*** field, type in the name for the formula or cells. *Excel* will suggest a name if there is text in the active cell, above the cell or to the left of the cell.
  - In the ***Scope*** field select a scope. By default, the scope will be workbook. To select worksheet, click on the down arrow and then select the worksheet from the list.
  - In the ***Comment*** field, add a comment that helps you remember the purpose of the name.
  - In the ***Refers to*** field - If you have already selected a range, the cell reference should be shown. If you have not, enter the cell reference or click on the **[Collapse dialog]** button on the right side of the box. You will be returned to the worksheet. Highlight the cell or range of cells, then press **[Enter]** or click on the **[Expand dialog]** button .
- Click **[OK]** or press **[Enter]**.

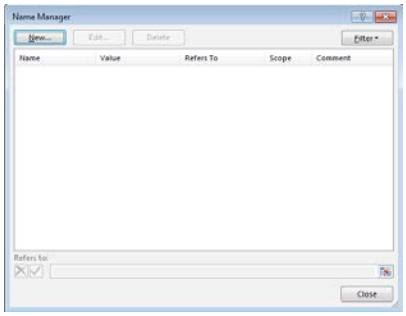
From within the Name Manager

- Click on **[Name Manager]** button in the **Defined Names Group** on the ***Formulas Tab***.



Defining Names,
continued

- The *Name Manager* dialog opens.



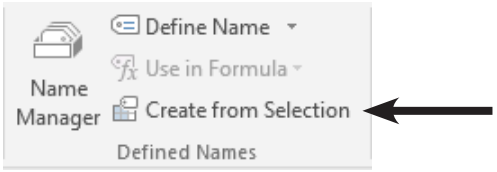
- The *Name Manager* dialog opens, in this dialog click the **[New]** button to open the *New Name* window.

From Selections

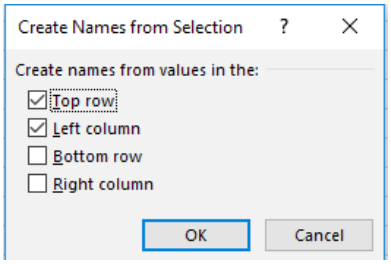
- Select the range that you want including the row and/or column headings.

	Total Sales	Avg Sale	Highest Sale
Ohio	$ 100,000.00	$ 7,500.00	$ 9,000.00
Indiana	80,000.00	7,500.00	8,000.00
Michigan	75,000.00	6,000.00	8,500.00
Pennsylvania	85,000.00	7,000.00	7,500.00
Total	$ 340,000.00	$ 7,000.00	$ 9,000.00

- Click on **[Create from Selection]** button in the **Defined Names Group** on the ***Formulas Tab***.



- The *Create Names from Selection* dialog opens.



- In the *Create Names from Selection* dialog, designate the location that contains the labels selecting from *Top row*, *Left column*, *Bottom row* and *Right column*. (Can be row, column or both).

Defining Names,
continued

- Click **[OK]** or press **[Enter]**. The names have been added to the Names List. Check the *Name Box* drop-down to verify.
  - If the Labels had blank spaces in the text , those have been replaced by underscores in the names.
- Names created using this procedure refer only to the cells that contain values and not the row and column labels. By default, the scope of the names will be at the global (workbook) level. If you create another set of names using the same labels, then that set will be created at the local (worksheet) level.

Defining Names for 3-D References

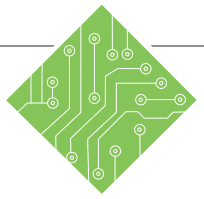
In the previous chapter, you learned how to create a 3-D reference and use it in a formula. You can also give that 3-D reference a name. This makes it much easier to remember the data that you are using and is highly recommended.

Note: 3-D references can span many sheets but must always refer to the same cell or range of cells on all the sheets.

- Click on **[Define Name]** button in the **Defined Names Group** on the ***Formulas Tab***. The *New Name* dialog opens.
- In the ***Name*** field, enter the name for the 3-D reference.
- In the **Comment** field, enter a comment to describe what the data is, if desired.
- In the ***Refers to:*** field, click on the **[Collapse dialog]** button.
- In the workbook, click on the first worksheet tab that you want included in the reference.
- Hold down the **[Shift]** key then click on the last worksheet tab that you want included in the reference.
- Select the cell or range of cells to be referenced.
- Click on the **[Expand dialog]** button.
- Click **[OK]**. The *New Name* dialog closes and you are returned to the worksheet.

Action 2.1 - Defining Names

Instructions:	Results/ Comments:
1. Open the **YTD Ohio.xlsx** file.	**[Ctrl + O]**.
2. Click the ***Name Box*** drop-down.	Since this file does not have any named cells, ranges, or values this drop-down is empty.
3. Select the ***Mar*** sheet.	
4. Select cells **B8**.	
5. Click into the ***NameBox*** and type **Mar_Avg** and tap the **[Enter]** key to apply the name.	The cell has been named. Remember names can not contain blank space or special characters.
6. Select cells **B9**.	
7. Click into the ***NameBox*** and type **Mar_Highest** and tap the **[Enter]** key to apply the name.	The cell has been named.
8. Select cells **B3:B6**.	
9. On the ***Formulas Tab*** in the **Defined Names Group**, click the **[Define Name]** button.	The *New Name* dialog opens.
10. Type in **MarSales** in the **Name:** field. Leave the **Scope:** field set to *Workbook*. Type in **These are the March Sales** in the **Comment:** field. Check that the **Refers to:** field reads *=Mar!$B$3:$B$6* and click the **[OK]** button.	This will be the name of the cell range. This means that you can refer to this name in any worksheet in this workbook. This will help users understand the name. These are the cells being named. The cell range is named.
11. Select the ***Feb*** sheet and select cell **A8:B9**.	
12. On the ***Formulas Tab*** in the **Defined Names Group**, click the **[Create from Selection]** button.	The *Create Names from Selection* dialog opens.



Instructions:	Results/ Comments:
13. With only the ***Left Column*** checkbox checked click the **[OK]** button.	Cells **B8** and **B9** are named with the text in cells **A8** and **A9** respectively.
14. Click the ***Name Box*** Drop-down.	The new names have added underscores.
15. On the ***Formulas Tab*** in the **Defined Names Group**, click the **[Name Manager]** button.	The *Name Manager* dialog opens. You should see all existing names listed in the dialog.
16. Click the **[New]** button in the *Name Manager* dialog.	The *New Name* dialog opens.
17. Type **Products** in the **Name:** field. Set the **Scope:** field to *Feb*. Check that the **Refers to:** field reads *=Feb!$B$11:$B$15* and click the **[OK]** button.	You are defining a new name.
18. Click the **[New]** button in the *Name Manager* dialog.	The *New Name* dialog opens.
19. Type **Products** in the **Name:** field. Set the **Scope:** field to *Mar*. Check that the **Refers to:** field reads *=Mar!$B$11:$B$16* and click the **[OK]** button.	You are defining a new name.
20. The new names are added to the list of names in the *Name Manager*, click the **[Close]** button.	The name is added to the file and the dialog closes.
21. Select the ***YTD*** sheet and select cells **B3:B10**.	
22. Name these cells and **YTD _Total**.	Use whatever method you prefer to name the cells.
23. Save the File.	**[Ctrl + S]**.

Action 2.2 - Defining a 3-D Name

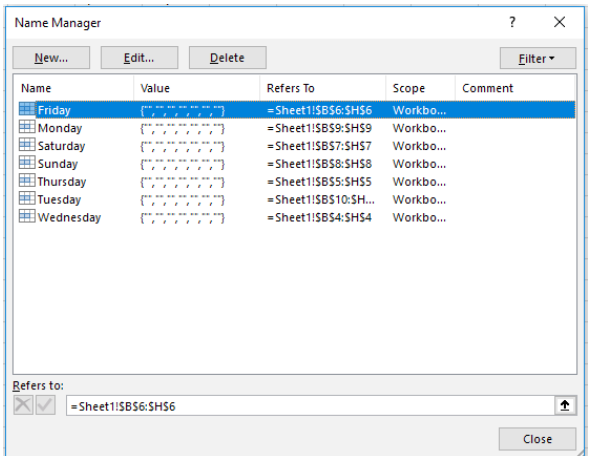
Instructions:	Results/ Comments:
1. Select the ***YTD*** sheet.	It really does not matter what sheet is active when creating 3-D named ranges.
2. On the ***Formulas Tab*** in the **Defined Names Group**, click the **[Define Name]** button.	The *New Name* dialog opens.
3. Type in **Widget1Total** in the **Name:** field. Leave the **Scope:** field set to *Workbook*. Type in **The total of Widget1 sales** in the **Comment:** field. Click into the **Refers to:** field and click the ***Jan*** sheet and click the ***Mar*** sheet then select cell **B11** and click the **[OK]** button.	When adding the references in the **Refers to:** field, using a comma allows you to add a cell or range on one sheet and add others from other sheets.
4. Save the file.	**[Ctrl + S]**.

Name Manager

Once you have created names in the workbook, you can organize, rename and delete them using the Name Manager.

Opening and Viewing the Name Manager

- Click the **[Name Manager]** button in the **Defined Names Group** on the ***Formulas Tab***. The *Name Manager* dialog opens.



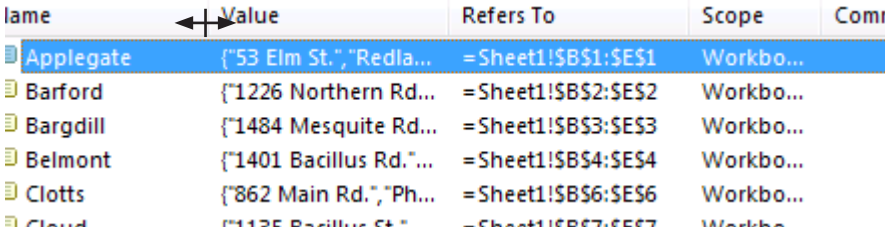
- The *Name Manager* has four buttons across the top:
  - **[New]**: Allows you to create new names.
  - **[Edit]**: Allows you to edit the name, comments, or reference.
  - **[Delete]**: Allows you to remove the name from the file.
  - [Filter]: Allows you to quickly filter the list of Names in the names list.
- A list of existing Names, broken down into several columns
  - ***Name***: The range name.
  - ***Value***: The actual values in the name.
  - ***Refers to***: The worksheet and cells references that the name refers to.
  - ***Scope***: Whether the name is local (worksheet) or global (workbook).
  - ***Comments***: A preview of comments are displayed here.

Note

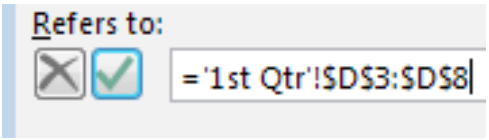
Should a name be deleted, any formulas using the name will now have #Name errors since the name can no longer be found.

Name Manager,
continued

- If you want to see all of the information in a column, double-click the right side of the column header. The column will automatically widen so that you can see everything in the column.
  - The cursor will change to a double headed arrow cursor.



  - You can sort in ascending or descending order by clicking on any one of the column headings.
- At the bottom of the *Name Manager* dialog is the **Refers to:** field, this changes in relation to the selected name.
  - If you make edits in this field, you must remember to click the **[Checkmark]** button to apply the edit.
  - If the edit is incorrect, click the **[X]** button to clear



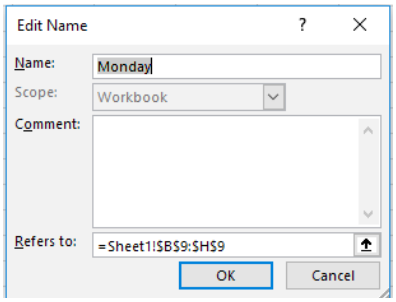
  any changes.

Editing Names

Editing a Name

Once you have created a name you can go back and change the name. For example, you can change a name that is more general like **Costs** to one that is more specific like **January.Costs**. You can also change the cells the name refers to if you have moved or added data.

- Click the **[Name Manager]** button in the **Defined Names Group** on the ***Formulas Tab***. The *Name Manager* dialog opens.
- In the Name list, click on the name you want to edit.
- Click on **[Edit]**. The *Edit Name* dialog will open.

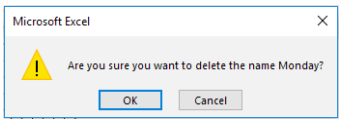


- Change the name or cell references as desired.
- Click **[OK]**.

Deleting a Name

If you no longer need a name, you can delete it in the *Name Manager*. When you delete a name that is used in a cell or in a formula, you will see the error message **#NAME?** If you have a local (worksheet) name and a global (workbook) name that are the same, the local level takes precedence over the global name. If you delete that local name, the global name will automatically be used instead.

- Click the **[Name Manager]** button in the **Defined Names Group** on the ***Formulas Tab***. The *Name Manager* dialog opens.
- In the Name list, click on the name you want to delete.
- Click on **[Delete]**. A warning box will appear.
- If you are sure you want to delete the name, click **[OK]**.



Action 2.3 – Using the Name Manager to Edit or Delete Names

Instructions:	Results/ Comments:
1. On the ***Formulas Tab*** in the **Defined Names Group**, click the **[Name Manager]** button.	The *Name Manager* dialog opens.
2. Resize the dialog so that all the columns are visible.	The dialog may not be wide enough to show all the columns.
3. Set your cursor between the columns header, when the double headed arrow appears, click and drag to resize the width of the column.	You are able to adjust the width of the columns so you are able to see the information in the column.
4. Select the *YTD _Total* name.	This name needs to be edited to refer to the correct range of cells.
5. In the **Refers To:** field below the list, change the **$B$10** cell reference to **$B$8** and click the **[Checkmark]** button.	When using the **Refers To:** field in the *Name Manager*, you must remember to click the **[Checkmark]** button in order to apply the edit.
6. Select the *YTD _Total* name.	The name still need to be corrected.
7. Click the **[Edit]** button above the list.	The *Edit Name* dialog opens.
8. In the *Edit Name* dialog, click into the **Refers To:** field and change the cell reference of **$B$8** to **$B$6** and click the **[OK]** button.	The cell range the name refers to is now correct, clicking the **[OK]** button applies the edit.
9. Click the **[Close]** button to exit the *Name Manager.*	The *Name Manager* dialog closes.
10. Save the file.	**[Ctrl + S].**

Using Names to Navigate

The Name Box drop-down

Before names are created, the Name Box drop-down arrow will only show an empty field. When the workbook has names, they can be quickly accessed by clicking the Name Box drop-down arrow. Once a name is listed from the list, the cell or cell range will be actively selected.

Names with Global Scopes can be accessed from the Name Box list in any worksheet. Local names are only available on the Name Box list when working or the worksheet.

The GoTo dialog

Note

Press **[F5]** to open the *Go To* dialog - this is another way to get to a Name.

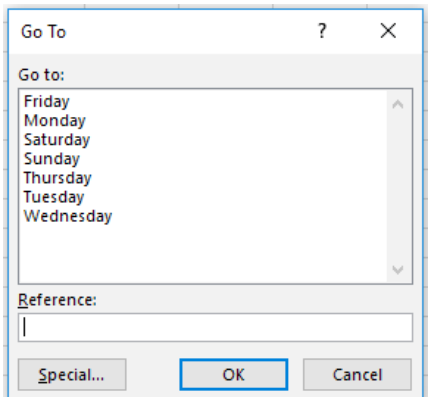
Open the *Go To* dialog by:

- Going to the ***Home Tab*** in the **Editing Group**, click the **[Find & Select]** button drop-down and choose *Go To* from the menu.

- OR -

- **[Ctrl + G]**

- The *Go To* dialog opens.



- Choose the named cell or range and click the **[OK]** button.

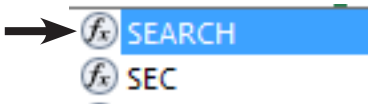
Action 2.4 - Navigating the Workbook with Names

Instructions:	**Results/ Comments:**
1. Click the ***Name Box*** drop-down and choose **Mar_Avg** from the list.	You are now on the on the ***Mar*** sheet with cell **B8** selected.
2. Click the ***Name Box*** drop-down and choose **YTD_Total** from the list.	You are now on the on the ***YTD*** sheet with cell **B3:B6** are selected.
3. On the ***Home Tab*** in the **Editing Group**, click the **[Find & Select]** button drop-down and choose *Go To* from the list.	The *Go To* dialog opens. A list of all names whose scope is to the workbook or the sheet you are in are displayed. If there is a name with a scope outside the sheet it will not be included on the list.
4. Choose the **MarSales** name and click the **[OK]** button.	The ***Mar*** sheet is active and cells **B3:B6** are selected.
5.	
6. Use the **[Ctrl + G]** keys to open the *Go To* dialog and choose another name from the list.	The cell or cells on the sheet you selected in the *Go To* dialog are active.
7. Save the file.	**[Ctrl + S]**.

Using Names in Formulas

Since names are absolute references they are idealy suited for use in formulas instead of cell references. By using a name in place of a cell address in your formulas, you get several benefits:

- When looking over a workbooks' formulas, they are much easier to read and understand.
- There is no need to worry about converting the cell address from relative to absolute.
- Names appear in the functions list as you type in the cells formula.
  - Functions are displayed with the silver FX circle icon

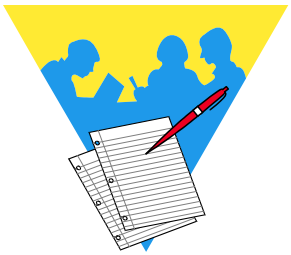


  - Names are displayed with the cells tag icon

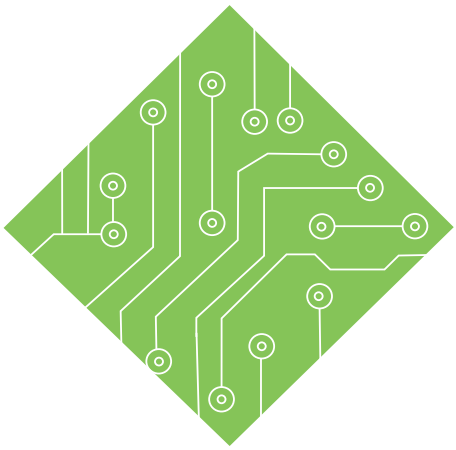
- It is much easier to remember there is a cell named *Tax* instead of remembering the address **PP2345**.
- Add Apply Name from Define Name drop-down

Action 2.5 - Using Names in Formulas

Instructions:	Results/ Comments:
1. Select the ***YTD*** sheet.	Click the ***YTD*** sheet tab.
2. Select cell **B10**.	This cell is where you need to total all the sales for the month of March.
3. Type an **=** and then the word **sum**.	The list of functions beginning with the letter S are displayed. As you continue to type the name of the function the list narrow in relation to the available functions.
4. As the Function ***SUM*** is highlighted, tap the **[Tab]** key.	Using the **[Tab]** key will enter the highlighted function and also add the open parenthesis, you are now ready to enter the augments of the function.
5. Type the letter **M**.	The list of functions also shows names. The names have a cells tag next to them.
6. Use the down arrow key to highlight *Mar_Sales* and tap the **[Tab]** key, then tap the **[Enter]** key.	The arrow keys allow you to move through the list of available functions and names. The formula is completed and the results are shown in cell **B10**.
7. Select cell **A14** and type; **Widget 1 Total**.	
8. Select cell **B14**, enter the following formula; **=SUM(Widget1_Total).**	The formula now returns the total number of Widget1 units sold over the three months.
9. Save the file.	**[Ctrl + S]**.



Tips and Notes

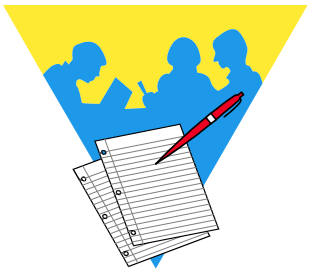


Lesson 3: Referring to Data in Another Worksheet/Workbook

Lesson Overview

You will cover the following concepts in this chapter:

- Referring to Another Worksheet
- Referring to Other Worksheets in Formulas
- Formulas with 3-D References
- Formulas Using Multiple Varied References
- Referring to Another Workbook
- 3-D Formulas Referencing Other Workbooks
- Working with Links



Lesson Notes

Referring to Another Worksheet

We have learned that a cell reference is used to identify the location of a cell or range of cells on a worksheet. For example **A1** is the cell reference for the first cell in the worksheet grid, column A and row 1. When you reference cells or cell ranges from another worksheet you are able to:

- Quickly create summaries.
- Break the data down into more manageable units.
- Combine information from several sources.
- Updated data automatically.

Referring to Another Cell

You can create a reference to another cell, either in this or another worksheet in a couple of ways. The first method is to create a formula that references a cell in another location in the workbook. Another method is to copy the cell and paste it into another cell as a link. In either case the syntax is the same:

=WorksheetName!CellAddress

Text followed by an exclamation point indicates the worksheet in the workbook where the cell being referenced is located. If the cell being referenced is on the same worksheet, then there is no need to refer to what worksheet it is on.

=CellAddress

Entering the Reference Manually

- Select the cell that will be pulling information into from another cell. You want to place the reference (where you want the data).
- Type an = sign.
  - If the cell being referred to is on the same worksheet: click the cell and tap the **[Enter]** to apply the formula.
  - If the cell being referenced is on another worksheet: click on the worksheet tab that contains the data you want and then the cell, then tap the **[Enter]** key to apply the formula.

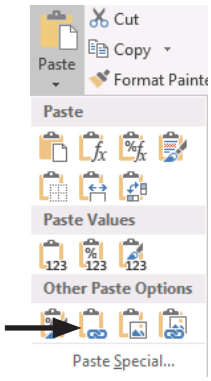
Note

When referring to cells on other worksheets, remember to not click back onto the sheet where the formula is being entered, use the **[Enter]** or **[Ctrl + Enter]** key(s) to enter the formula and you will be back where you started.

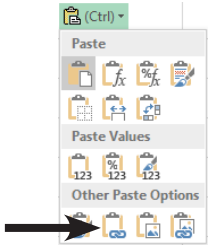
Referring to Another Worksheet, continued

Using Copy & Paste

- Select the cell that contains this desired information.
- Copy the cell by:
  - Click the **[Copy]** button in the **Clipboard Group** on the ***Home Tab***.
  - Right-click the cell and choose *Copy* from the menu.
  - Use the **[Ctrl + C]** keyboard shortcut.
- Click on the worksheet tab and cell where the copied data is to be pasted.
- Paste the content as a link, by:
  - Clicking the lower half of the **[Paste]** button in the **Clipboard Group** on the ***Home Tab***, choose *Paste Link* from the menu.



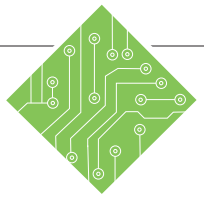
  - Use the **[Ctrl + V]** shortcut, then click the ***Paste Options*** that appears after pasting, choose *Paste As Link* from the menu.



  - Right-click into the cell where you want the data placed and choose *Paste Link* from the menu.

Action 3.1 - Creating a Reference from Another Worksheet

Instructions:	**Results/ Comments:**
1. Open the **YTD_Ohio** file.	
2. Save as **My_YTD_Ohio.xlsx**.	
3. On the ***YTD*** sheet click in cell **E2**.	We are going to record the average sale for January.
4. Type: **=**.	To start the formula.
5. Click on the ***JAN*** worksheet tab.	The formula now reads **=Jan!**.
6. Click in cell **B8**. Press **[Ctrl + Enter]**.	Notice the Formula Bar, it shows the formula: **=JAN!B8**. This tells you the name of the worksheet - in this case ***JAN*** and the cell reference. Worksheet names are always followed by an exclamation point. Using the **[Ctrl + Enter]** keys applies the formula and keeps the active cell selected.
7. Click on the ***JAN*** sheet and select cell **B9**.	You will use the Copy & Paste method to create the 3D reference.
8. Copy the cell using whatever method you prefer.	Right-click / Copy, or click the **[Copy]** button in the **Clipboard Group** on the ***Home Tab***, or **[Ctrl C]**.
9. Click on the ***YTD*** sheet and right-click on cell **E3**. Choose *Paste as Link* from the menu.	From the menu choose the icon showing a chain link.
10. Go to the ***Jan*** worksheet. In cell **B5** change the number to **9500**.	



Instructions:	**Results/ Comments:**
11. Return to the ***YTD*** worksheet.	Notice both the Highest Sale and Average Sale reflect the change. This illustrates the advantage of referring to other cells versus typing in data manually. The worksheet using referenced cells will automatically update as the data changes.
12. Select cell **G2** and type; **= ,** click the ***Mar*** sheet and select cell **B8** then tap the **[Enter]** key.	Notice when done that the formula reads **=Mar_Avg**. Since cell **B8** on the ***Mar*** sheet was named, the formula uses the name instead of the cell address.
13. Select cell **G3** and type; **= Mar_Highest.**	Use the arrow keys to select the appropriate name and use the **[Tab]** key to apply it.
14. Save the file.	**[Ctrl + S]**.

Referring to Other Worksheets in Formulas

Formulas that pull data from other worksheets

We have learned that when you create a formula, you use cell addresses in the formula, such as **=Sum(A1:A5)** to add the contents of the cells from **A1** to **A5** of the same worksheet where the formula is being entered. Formulas can also calculate data from cells on a different worksheets or even from multiple worksheets using worksheet and cell references.

Note

If the data changes in the referenced cell(s), formulas referencing those cells will automatically be updated.

The syntax of a function formula that uses data on other worksheets is:

=Function(WorksheetName!CellAddress:CellAddress)

Calculations based on values in cells on other worksheets are created by:

- Select the cell where the formula needs to be entered, on the current worksheet.
- Choose the desired function by:
  - Using the **[Insert Function]** button on the ***Formula Bar*** or ***Tab*** to open the *Function Library* window.
  - Use the **[AutoSum]** button drop-down on the ***Home*** or ***Formula Tab*** (for standard functions).
  - If you know the function to be used, begin typing the formula in- when the function you need is highlighted use the **[Tab]** key to enter the function.
- Click on the worksheet tab that contains the data you want.
  - The formula should read something like: **=Function(Worksheet!**
  - Select the cells containing the values to be calculated and tap the **[Enter]** key to finish entering the formula. **=Function(Worksheet!Cell:Cell)**
- After entering the formula, you should see the cell now returns a value based on data from other worksheets.

Note

When you select another worksheet while entering a formula, *Excel* displays the selected worksheet even though you are still really on the same worksheet where you are entering the formula.

Action 3.2 - Creating a Formula Using Another Worksheet

Instructions:	Results/ Comments:
1. You should have **My_YTD_Ohio**.	If not, open the file.
2. Select the ***YTD*** sheet and click in cell **B8**.	We are going to total the sales for **January**.
3. Click on the **[AutoSum]** button in the **Editing Group** on the ***Home Tab***.	You will see **=SUM()**.
4. Click on the ***JAN*** sheet tab.	The worksheet that contains the data we need.
5. Select cells **B3:B6**.	All of the Sale Associates data for January.
6. Press **[Enter]**.	The answer in cell **B8** is 33,000.
7. Click in cell **B8** and observe the formula: **=SUM(JAN!B3:B6)**	This shows the function, sheet name and range of cells.
8. Repeat steps 2 through 6 to find the total sales for February in cell **B9**.	
9. Select cell **B10**, enter the formula; **=SUM(MarSales).**	Referring to names in formulas can make them easier to create and understand later.
10. Save the file.	**[Ctrl + S]**.

Formulas with 3-D References

Creating a Formula Using a 3-D Reference

A very effective way of consolidating data from different worksheets is by creating formulas using 3-D references. A 3-D reference refers to the same cell or range of cells on multiple worksheets.

The workbook must be set up so that each worksheet contains the same type of data located in the same range. Formulas using a 3-D reference can be affected by changes to the location of the source cell or by the addition of worksheet tabs in the workbook. The 3-D reference contains a beginning point and an ending point (the two worksheets named in the formula). If you move or delete a worksheet outside of the two endpoints, then that data will be removed from the calculation. Conversely, if you move or copy a worksheet anywhere in between the two end points, that data is added to the calculation. If you move the ending point to include more worksheets, then those worksheets are included in the calculation as well.

Creating a 3-D Reference

- Click in the cell where you want the formula, on the current worksheet.
- Begin entering the needed function as before:
  - Select the Function that you want to use from the Function Library.
  - Enter the formula manually by typing.
- Click on the worksheet tab of the first worksheet you would like to include in the formula, the formula should read as;
- **=Function(Worksheet!**
- Hold the **[Shift]** key and select the last worksheet contains values to be used in the calculation, the formula should read as; **=Function(Worksheet:Worksheet!**
- Select the cell or cell range on the visible worksheet (*Do not click back to the sheet where the formula is being entered.*) and tap the **[Enter]** key to finish entering the formula, it should now read as;
  =Function(Worksheet:Worksheet!CellAddress)
  or
  =Function(Worksheet:Worksheet!CellAddress: CellAddress)

Action 3.3 - Creating a Formula Using Multiple Worksheets

Instructions:	Results/ Comments:
1. **My_YTD_Ohio** should still be open.	If not, open it.
2. Click the ***YTD*** sheet.	
3. Click in cell **B3**.	We are going to create a formula to calculate the total sales for James.
4. Click the **[AutoSum]** button in the **Editing Group** on the ***Home Tab***.	You can also type: **=Sum(**.
5. Click on the ***JAN*** tab, hold the **[Shift]** key, then click on the ***MAR*** tab, Click in cell **B3**,	This selects all worksheets between ***JAN*** and ***MAR***. In this case just ***FEB***.
Press **[Ctrl + Enter]**.	This cell contains common data from all three spreadsheets.
6. Observe the formula: **=SUM(JAN:MAR!B3)**.	This returns you to cell **B3** on the ***YTD*** spreadsheet.
	SUM is the function. **JAN:MAR!** tells you the worksheets included in the calculation. In this case, all the worksheets between ***JAN*** and ***MAR***. **B4** is the cell that is used in the calculation. You could also select a range of cells to include in the calculation.
7. Following Steps 3-7, find the total sales for Gene.	
8. Use the fill handle in cell **B4** to fill in the calculations for Kathy and Henry.	Click on the fill handle and drag down. Notice the formula changes to reflect the correct cell references: **B5** and **B6**.
9. Observe the **Total Sales** numbers for each salesperson.	
10. Click on the ***FEB*** tab and drag it behind the ***MAR*** tab.	This moves ***FEB*** outside the endpoints of the 3-D reference.
11. Undo the change just made.	**[Ctrl + Z]**.

Formulas Using Multiple Varied References

Formulas Referring to Various Locations

Information is not always laid out in a way that allows 3-D referencing in formulas. In cases where the data is in differing cells on different worksheet the structure of the formula will change only slightly.

If the formula is using straight mathematic operators then enter the worksheet and cell address, add the operator, add the next worksheet and cell, etc. You can manually type in the formula or use the mouse to select each worksheet and cell. Continue adding all the references needed to complete the formula.

=Worksheet!CellAddress+Worksheet!CellAddress

- Select the cell where the formula is needed.
- Type an equal sign **(=)** to begin the formula.
- Select the first worksheet and cell. Type the desired operator such as **+**, **-**, * etc.
- Select the second worksheet and cell. If required, type another operator and then select the next cell.
- Once you are finished, tap the **[Enter]** key.
  The formula will look something like this:
  =Sheet2!D3*Sheet3!A5.

If using a function formula, use the comma to separate each worksheet cell address combination.

- Select the cell where the formula is needed.
- Enter the function to begin the formula.
  =Function(
- Select the first worksheet and cell.
  =Function(Worksheet!CellAddress
- Type a comma.
  =Function(Worksheet!CellAddress,
- Select the next worksheet and cell
  =Function(Worksheet!CellAddress,
  Worksheet!CellAddress
- Until all of the cells have been selected.
- Tap the **[Enter]** key. The formula will appear as:
  =AVERAGE(Sheet2!C3,Sheet3!A2).

Action 3.4 - Creating a Formula Using Varied 3-D References

Instructions:	Results/ Comments:
1. **My_YTD_Ohio** should be open.	If not, open it.
2. Click the ***YTD*** sheet.	We are going to total all the number of Products sold each month. The location of that total number is different on each worksheet.
3. Click in cell **B12**.	
4. Click the **[AutoSum]** button in the **Editing Group** on the ***Home Tab***.	The cells above will be selected, just ignore this.
5. Click on the ***JAN*** sheet, Click on cell **B15,** Type: **,**	The comma is important It shows the end of the cell reference and sets you up to enter another one.
6. Click on the ***FEB*** sheet, Click on cell **B16,** Type: **,**	
7. Click on the ***MAR*** sheet, Click on cell **B17**, Press **[Enter]**.	This is the end of the formula. You are returned to the ***YTD*** worksheet. The answer in **B12** is 305.
8. Click in cell **B12** and observe the formula: **=SUM(JAN!B15,FEB!B16,MAR!B17)**	This shows the Function **(SUM)**, followed by each worksheet and cell reference used in the formula.
9. Save the file.	**[Ctrl + S]**.

Referring to Another Workbook

You can also refer to other cells or range of cells on worksheets from another workbook. These reference cells are called external references or links. Similar to referring to cells in another worksheet, an external reference/link is created with a formula.

The workbook that contains the cell you wish to reference is called the Source Workbook. The workbook that contains the external reference/link is called the Destination Workbook. If the referenced data in the Source Workbook is updated, it will also be updated in the Destination Workbook. However, any changes made in the Destination Workbook will not effect the Source Workbook.

Note

Consider arranging the workbooks to make referring other workbooks in your formulas easier.

Creating an External Reference/Link

Just as when referencing a cell on another worksheet within a workbook is done by either copy/pasting or manually, the same methods are used when referring to data in other workbooks.

Manual Entry

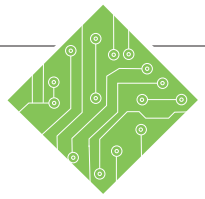
- Open all workbooks that are being linked.
- In the Destination Workbook, click in the cell that will contain the formula or referenced cells.
- If you are going to refer to a single cell, type an equal (=) sign to start the formula.
- Click on the Source Workbook and then the worksheet that contains the cell to be referenced.
  =[Book.xlsx]Worksheet!CellAddress
- Tap the **[Enter]** key to complete the reference.

Copy/Paste

- Open all workbooks that are being linked.
- Click on the Source Workbook and then the worksheet that contains the cell to be referenced.
- Copy the cell using any of the copy methods.
- In the Destination Workbook, click in the cell that will contain the formula or referenced cells.
- Paste the copied data as a link, use any of the methods discussed earlier.

Action 3.5 - Creating an External Reference/Link

Instructions:	Results/ Comments:
1. **My_YTD_Ohio** should be open.	If not, open it.
2. Open the **Midwest Summary** file.	This file summarizes data from different states. The Ohio data is missing.
3. Click the **[Enable Content]** button.	
4. Save as **My Midwest Summary**.	
5. Click the **[Arrange All]** button in the **Window Group** on the ***Home Tab***.	The *Arrange All* dialog opens.
6. Choose *Tiled* in the *Arrange All* dialog and click **[OK]**.	When working with multiple files it is easier to simply tile the windows.
7. Click on the **My Midwest Summary** window.	This makes this file active.
8. Click in cell **D3**.	We are going to pull the information for the Highest Sales figure first.
9. Type: **=**.	To start our formula.
10. Click on **My_YTD_Ohio** window.	When you are creating an external reference, the source file always has to be open.
11. Make the ***YTD*** worksheet active, then click in cell **H3**.	Notice the Formula Bar shows **='[My YTD Ohio.xlsx]YTD'!$H$3**. The name of the workbook is in brackets followed by the name of the worksheet and then the cell. Notice the cell address is absolute.
12. Press **[Enter]**.	You are returned to **My Midwest Summary** and the number appears in cell **D3**.
13. Click the **My_YTD_Ohio** window.	This file is now active.
14. Click in cell **H2**.	This is the cell that contains the data we need in the Midwest Summary file.



Instructions:	Results/ Comments:
15. Copy the cell using any method you prefer.	Right-click and select *Copy*, **[Ctrl + C]**, or click the **[Copy]** button in the **Clipboard Group** on the ***Home Tab***.
16. Click the **My_Midwest_Summary** window.	This file is now active.
17. Select cell **C3**.	This is the cell where we want the data to be placed.
18. Right-click the cell and choose ***Paste As Link*** from the menu.	Choose the icon showing the chain link.
19. Observe the formula.	The formula is the same as in cell **D3** but refers to cell **$H$2**.
20. Select cell **B3** in the **My_Midwest_ Summary** window.	We are going to create a formula to calculate the total sales.
21. Click on the **[AutoSum]** button in the **Editing Group** on the ***Home Tab***.	You can also type: **=SUM(.**
22. Click on **My_YTD_Ohio** window.	To go to the Source Workbook.
23. Select cells **B3:B6**.	To set the range of cells in the source file you want to total.
24. Press **[Ctrl + Enter]**.	You are returned to cell **B3** and keeps the cell active.
25. Observe the formula: **=SUM('[My YTD Ohio.xlsx]YTD'!YTD_ Total)**.	SUM is the function used. **My_YTD_ Ohio**, the Source Workbook is shown in brackets. The worksheet ***YTD!*** is next followed by the name applied to the cell range.
26. Click the **MY_YTD_Ohio** window.	Notice the values in **My_Midwest_ Summary** are updated to reflect the changes. When both files are open, any changes made in the source file are instanting updated in the destination file.

Instructions:	Results/ Comments:
27. Click on the ***JAN*** worksheet tab. Change the number in cell **B6** to **5000.**	
28. Activate the **My_Midwest_Summary** file.	
29. Save and close the file.	**[Ctrl + S]** and **[Ctrl + W]**.
30. In the **My_YTD_Ohio** file change the value in cell **B4** on the ***Jan*** sheet to **35000**.	
31. Save and close the file.	**[Ctrl + S]** and **[Ctrl + W]**.

Working with Links

Once you have created links in the document, you can update the link, view a list of Source Workbooks, change the source of a link and break a link.

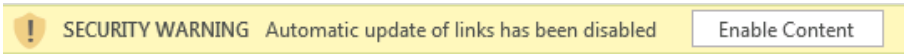
Updating/Editing External References/Links

When you make changes to the Source Worksheet in a linked cell, updates to the Destination Worksheet will occur in two ways:

- ***Immediately:*** If the Destination and Source Workbook are open, changes made to the linked cells in the Source Workbook will immediately be updated in the Destination Workbook.

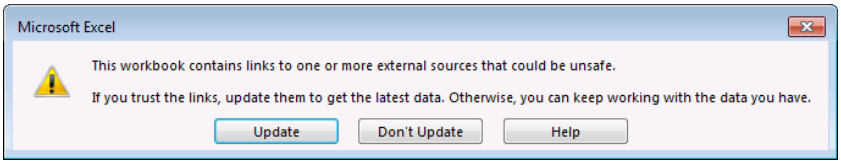
-OR-

- ***Upon opening:*** when opening a Destination File, the Trust Bar will appear above the worksheet.



  - Destination and Source Workbooks are not open, and automatic updates have been disabled.

Otherwise, you will get a dialog message prompting you to ***Update Links*** or ***Don't Update***.



- To update the links now: Click **[Enable Content]** in the Trust Bar or click the **[Update]** button in the dialog.

- OR -

- To update the links later: Click **[Don't Update]** in the dialog, or ignore the Trust Bar and update the links manually in the *Edit Links* dialog. This is discussed in the next section, **Updating References/Links Manually.**

Note

If you have more than one **Source Workbook**, make sure all **Source Workbooks** are closed to ensure that updates are uniform.

Note

The security warning appears only once if the file is not in the trusted documents list. Once the update is performed, it is added to the list and you will not see the Trust Bar again.

Referring to Another Workbook, continued

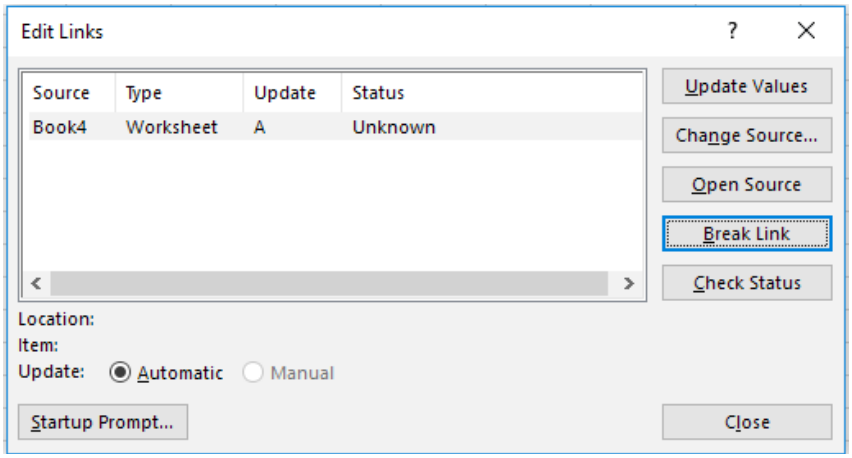
Note

You will also find an **[Edit Links]** button on the right side of the **Info** page, when you click on the ***File Tab***.

Updating a Link Manually

To make changes to the links and/or view the Source Workbooks, you need to open the *Edit Links* dialog. From here, you can update values, change the source of a link, open a source, break a link and even check the status of a link.

- Click on the **[Edit Links]** in the **Connections Group** on the ***Data Tab***. This will open the *Edit Links* dialog.



- In the *Edit Links* dialog, click on the Source Workbook you would like to update.
- Click on **[Update Values]** to manually refresh the data from external sources.
- When you are finished working in the *Edit Links* dialog, click **[Close]**.

Opening a Source File

- In the *Edit Links* dialog, click on the Source Workbook you would like to open.
- Click **[Open Source]** to open the Source Workbook file.

Changing the Source File

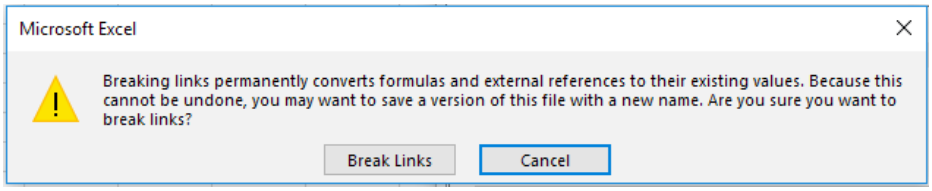
- In the *Edit Links* dialog, click on the Source Workbook you want to change.
- Click on **[Change Source]**. The *Change Source* dialog will open.
- Select the new source file. Click **[OK]**. This will change the Source Workbook for all links that used the original Source Workbook.

Referring to Another Workbook, continued

Breaking a Link

Breaking a link in the Destination Worksheet will remove the linking formulas in the worksheet cells and replace them with their values. You can not undo a Break Link so make a copy of the file before you break the link.

- In the *Edit Links* dialog, click on the Source Workbook whose link you want to break.
- Click on **[Break Link]**. A warning will appear:

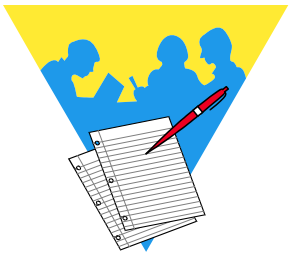


- Click **[Break Links]** to continue with the break or click **[Cancel]** to quit the operation.

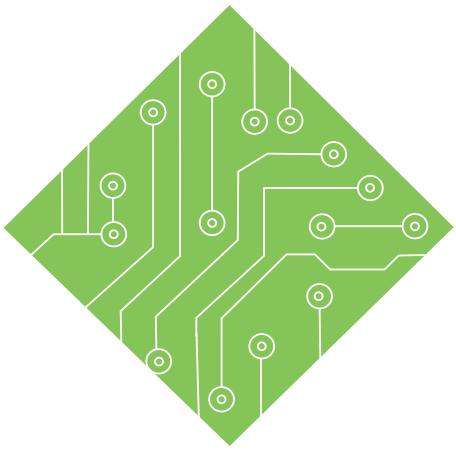
Action 3.6 - Editing Links

Instructions:	Results/ Comments:
1. Open **My_Midwest_Summary**.	The Trust Bar will appear above the worksheet or the *Links* dialog will open.
2. Click on the **[Enable Content]** button or **[Update Links]**.	Because we know what changes we have made and know that this source file can be trusted, it is OK to update the links here. If you are unsure of the source file, then you would want to manually update them in the *Edit Links* dialog. The links have been updated. The Trust Bar is removed from the screen.
3. On the ***Data Tab*** in the **Connections Group,** click the **[Edit Links]** button.	The *Edit Links* dialog opens.
4. Make sure the **My_YTD_Ohio** file is selected, click on **[Open Source]**.	This is a quick and easy way to open and update a Source Workbook.
5. Click on the ***FEB*** worksheet tab. Change cell **B3** to **9,000**.	Notice the change in the **Total Sales** and **Average** are changed.
6. Make **My_Midwest_Summary** workbook active.	The changes are reflected here as they are made in the source file.
7. Make **My_YTD_Ohio** active	
8. Save as **My_YTD_Ohio_2**.	**[F12]**.
9. Select the **My_Midwest_Summary** file	
10. On the ***Data Tab*** in the **Connections Group,** click the **[Edit Links]** button.	Notice that when you renamed **My_YTD_Ohio** to **My_YTD_Ohio_2** the link source file was automatically updated.
11. Click on **[Change Source]**	
12. In the *Change Source* dialog, select **My_YTD_Ohio**. Click **[OK]**.	

Instructions:	Results/ Comments:
13. The *Edit Links* dialog should be open.	You will see the new source workbook listed in the *Edit Links* dialog.
14. Select the *My_YTD_Ohio* link.	
15. Click on **[Break Links]**.	A warning box will appear. Be careful when you break a link. Save the file beforehand. You cannot use the Undo command to restore a link.
16. Click on **[Break Links]**.	Notice the Source Workbook is removed from the *Edit Links* dialog.
17. Click **[Close]**.	The dialog closes.
18. Click in cells **B3**, **C3**, **D3** and look in the Formula Bar.	Notice the link information has been replaced with values.
19. Save and close **My_Midwest_Summary**.	**[Ctrl + S]** and **[Ctrl + W]**.
20. Close **My_YTD_Ohio_2**.	**[Ctrl + W]**.



Tips and Notes

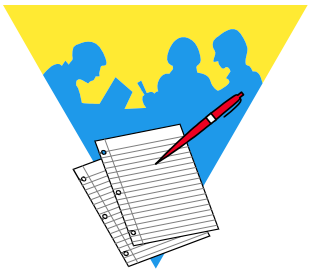


Lesson 4: Working with Data

Lesson Overview

You will cover the following concepts in this chapter:

Contents



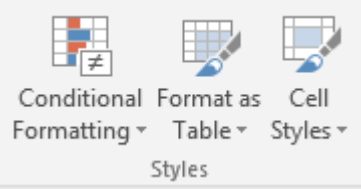
Lesson Notes

Conditional Formatting

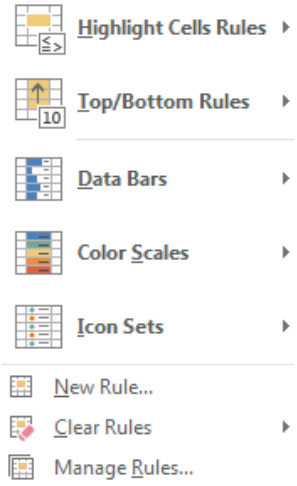
It is not easy to see specific things within large worksheets of data. *Excel* allows users to apply formatting to cells when they fit within defined parameters to make seeing or finding data simpler. In the newer versions of *Excel* you can apply multiple conditional checks to better understand the data at a glance. As the value in the cell is entered or modified the formatting will change in relation to the parameters defined in the conditional formatting.

Applying Basic Conditional Formatting

- Select the cell or cells to be formatted.
- Conditional formatting is accessed from the ***Home Tab*** in the **Styles Group.**



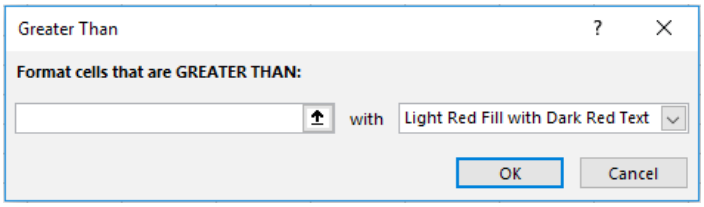
- Clicking the drop-down of the **[Conditional Formatting]** button reveals the list of options.



- The ***Highlight Cell Rules*** and ***Top/Bottom Rules*** offer lists of commonly used conditional formatting rules.
- The ***Data Bars***, ***Color Scales***, and ***Icon Sets*** are all live preview galleries, allowing you to see the formatting before choosing it.

Conditional Formatting, continued

- When you use rules from the top two Option sets you may see an options dialog open. This is where you are able to set the parameters you want.



  - The window will offer choices in relation to the conditional formatting chosen.
  - Set the values and choose the formatting from the drop-down list, then click the [OK] button
- If you are using any of the ***Data Bars***, ***Color Scales***, and ***Icon Sets*** options, the formatting is applied right away.

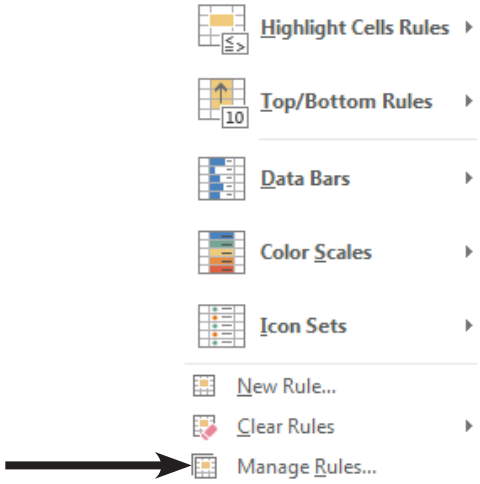
Action 4.1 - Using Conditional Formatting

Instructions:	Results/ Comments:
1. Open the **Test Scores** file.	The data in this spreadsheet is a series of 10 test scores for 20 students. As the course instructor, you would like a color coded grading scale applied.
2. Select cells: **B2:K21.**	You must always select the cells that you want to apply conditional formatting to first, either all or just part of the data.
3. On the ***Home Tab*** in the **Styles Group,** click the **[Conditional Formatting]** button.	The **Conditional Formatting** drop-down menu will open.
4. In the menu, point to ***Highlight Cells Rules*** then select *Less Than....*	This opens the *Less Than* dialog. Observe the change to the worksheet.
5. Leave all settings as is and click **[OK]**.	All grades less than 60 are now filled with red, these are the failing grades.
6. On the ***Home Tab*** in the **Styles Group,** click the **[Conditional Formatting]** button. In the menu, point to ***Highlight Cells Rules*** then select *Between....*	This opens the *Between* dialog. Allowing you to set the upper and lower parameters and choice of formatting.
7. Set the values to **60** and **69**, from the **With** field drop-down choose *Yellow* then click **[OK]**.	All grades between 60 and 69 are now formatted with a yellow fill and text, these are the D grades.
8. On the ***Home Tab*** in the **Styles Group,** click the **[Conditional Formatting]** button. In the menu, point to ***Highlight Cells Rules*** then select *Between....*	The *Between* dialog is re-opened.
9. Set the values to **70** and **79**, from the **With** field drop-down choose Green then click **[OK]**.	All the C level grades are formatted Green.

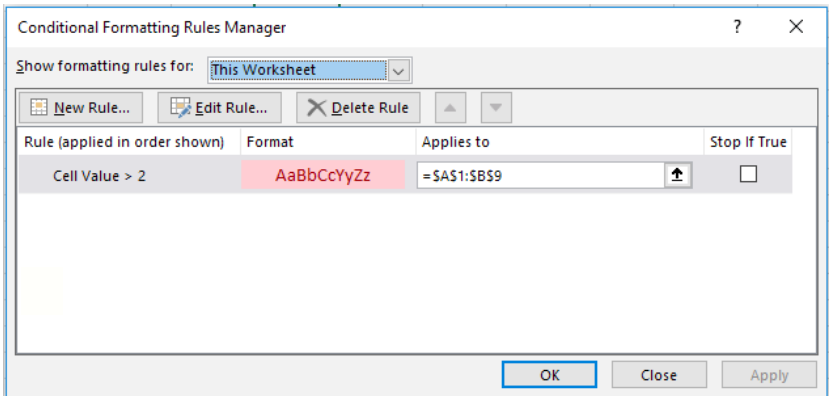
Instructions:	Results/ Comments:
10. On the ***Home Tab*** in the **Styles Group,** click the **[Conditional Formatting]** button. In the menu, point to ***Highlight Cells Rules*** then select *Between....*	The *Between* dialog is re-opened.
11. Set the values to 80 and 89, from the **With** field drop-down choose *Custom Format.*	The *Format Cells* dialog opens, here you are able to change number and text formatting as well as fills and borders.
12. Select the *Fill Tab* in the *Format Cells* dialog, choose a light blue fill color and click the **[OK]** button twice to finish.	The B level grades are formatted with a light blue fill.
13. On the ***Home Tab*** in the **Styles Group,** click the **[Conditional Formatting]** button. In the menu, point to ***Highlight Cells Rules*** then select *Greater Than....*	The *Greater Than* dialog opens.
14. Set the greater than value to 90, from the **With** field drop-down choose *Custom Format.*	
15. Select the *Fill Tab* in the *Format Cells* dialog, choose a light purple fill color and click the **[OK]** button twice to finish.	All grades above 89 are formatted.
16. Save the file.	**[Ctrl + S]**.

Managing Conditional Formatting

Should you need to modify any conditional formatting rules that have been applied. You are able to see and modify any existing rule by choosing the *Manage Rules* option from the **[Conditional Formatting]** drop-down menu.



The *Manage Rules* dialog opens. In this dialog you can define where you are searching for rules from the **Show formatting rules for:** field drop-down. Any existing rules in use within the defined scope in **Show formatting rules for:** field are displayed below.



Note

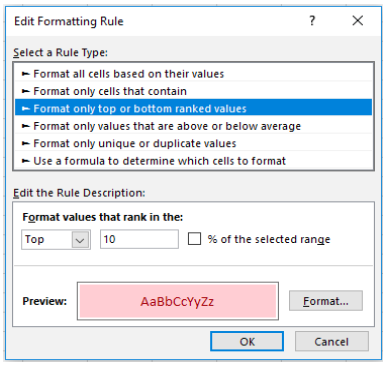
From within this dialog you are able to create and define new rules to the selected cells, edit any existing rule, or delete rules by using the buttons below the **Show formatting rules for:** field.

- Choices in the **Show formatting rules for:** field include:
  - ***Current Selection***: the selected cell or range of cells.
  - ***This Worksheet***: any rules anywhere on the worksheet.
  - ***Other Worksheets***: all rules on the specific worksheet chosen.

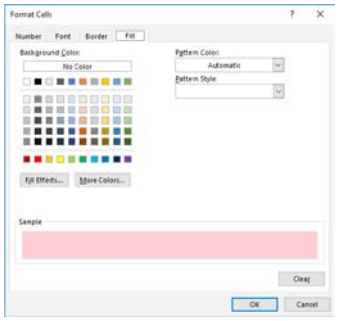
Managing Conditional Formatting, continued

Editing a Rule

- Click the cell containing the rule in need of modification.
- Click the **[Conditional Formatting]** button drop-down and choose *Manage Rules* from the menu.
- In the *Conditional Formatting Rules Manager* dialog select the appropriate region from the **Show formatting rules for:** field.
- Select the rule to be modified.
- Click the **[Edit]** button to open the *Edit Formatting Rule* dialog.



- Choose the type of rule in the **Select Rule Type:** field.
- The controls of the rule will be displayed in the **Edit the Rule Description:** field.
- To change the formatting choices, click the **[Format]** button, the *Format* dialog opens.



- Apply the formatting and click the **[OK]** button.
- Click the **[Apply]** button to see the edits.
- Click the **[Close]** button when done.

Action 4.2 - Editting Conditional Formatting

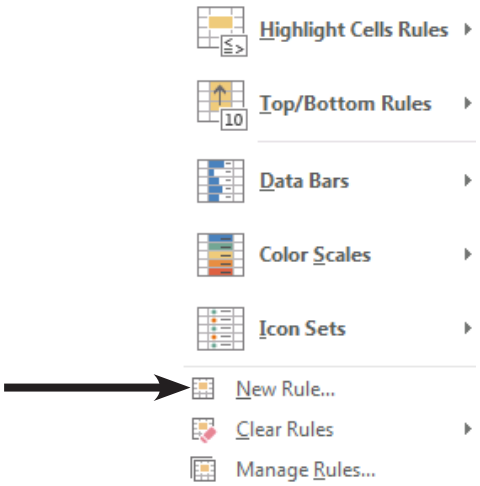
Instructions:	Results/ Comments:
1. With any cell selected.	It does not matter what cell is active in this case.
2. On the ***Home Tab*** in the **Styles Group,** click the **[Conditional Formatting]** button. In the menu, select *Manage Rules*.	The *Conditional Formatting Rules Manager* dialog opens.
3. In the **Show formatting rules for:** field drop-down choose *This Worksheet*.	By choosing *This Worksheet*, any rules used on the sheet are displayed in the list of rules.
4. Select the *Cell Value > 90* rule and click the **[Edit Rule]** button.	This is the rule to edit, the rule currently allow a gap for any value of 90. The *Edit Formatting Rule* dialog opens.
5. In the ***Edit the Rule Description:*** area change the greater than operator to *Greater than or equal to* and click the **[OK]** button.	By changing the rule from ***greater than*** to ***greater than or equal to*** any grade of 90 will also be formatted.
6. Click the **[Apply]** button to see how the change effects the formatting. Click the **[OK]** button.	It is a good idea to check to see how the edits work before closing the dialog.
7. Save the file.	**[Ctrl + S]**.

Conditional Formatting Based on Formulas

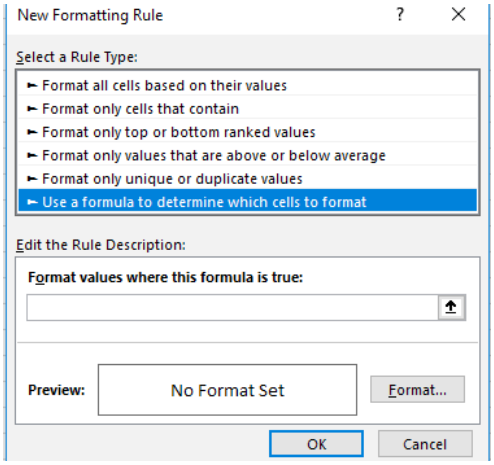
While the list of availible conditional formatting rules will cover most needs, there will still be times when they are not up to the task. In these instances you are able to create conditional formatting rules that use formulas to determine when to apply formatting. Formulas can be used to compare the values in the cell against the values in others or other more complex formulas.

Using Formulas in Conditional Formatting

- Select the cell where the conditional formatting is needed.
- Click the **[Conditional Formatting]** button drop-down and choose *New Rule...* from the menu.



- The *New Formatting Rule* dialog opens.



- Select *Use a formula to determine which cells to format* option in the **Select a Rule Type:** field at the top of the dialog.

Conditional Formatting Based on Formulas, continued

- The lower half of the dialog changes to allow you to enter a formula.
- In the **Format values where this formula is true:** field is where you enter the formula.
  - Enter formula is just like every other formula in *Excel*.
  - Do not use the point and click method to select cells as the references will come in as absolute addresses.
- When the formula is complete, click the **[Format]** button to set the formatting of the cell when the formula is true.
- Click the **[OK]** button to apply your conditional formatting.

Note

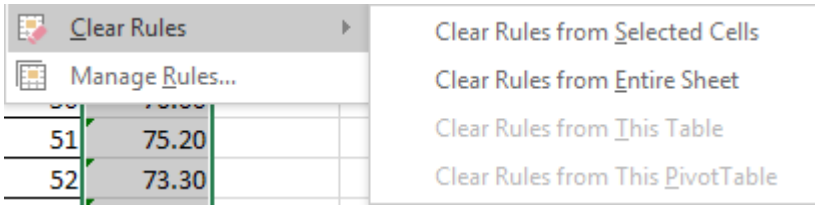
You can use the **[F4]** key to convert the cell address type while entering the formula.

Clearing Conditional Formats

Clearing Conditional Formats

If there are specific cells from which you want to clear the rules, select the cells first.

- Click the **[Conditional Formatting]** button drop-down.
- Select ***Clear Rules*** from the menu.
- Choose one of the following — *Clear Rules from Selected Cells* or *Clear Rules from Entire Sheet*.



Action 4.3 - Clearing Conditional Formatting

Instructions:	Results/ Comments:
1. Select any cell on the worksheet.	Here again it is not important to select the formatted cells first.
2. On the ***Home Tab*** in the **Styles Group,** click the **[Conditional Formatting]** button. In the menu, point to ***Clear Rules*** then select *Clear Rules from Entire Sheet.*	All formatting is removed from the entire sheet.
3. Select cells **A2:K21**.	You will be formatting the entire row of data if a specific condition is met.
4. On the ***Home Tab*** in the **Styles Group**, click the **[Conditional Formatting]** button. In the menu select *New Rule...*	The *New Rule* dialog opens.
5. In the **Select a Rule Type:** area, selct the *Use a formula to determine which cells to format* option.	As you choose the type of rule above the lower half of the dialog offers the controls related to your choice.
6. In the **Format values where this formula is true:** field enter; **=average($b2:$k2)>70** click the **[Format]** button, choose a yellow fill and click **[OK]** twice.	In this formula it is necessary to set the columns as absolutes while the rows are relative.
7. Save and close the file.	**[Ctrl +S]** and **[Ctrl +W]**.

Sorting

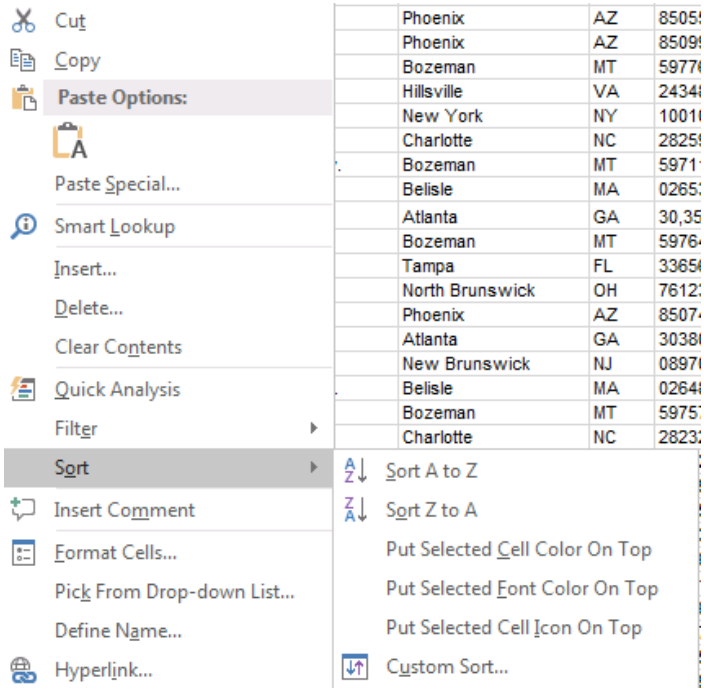
Once the data has been entered into the worksheet, you can organize it in a different order from the way it was entered using Sort. For example, you could alphabetize a list of companies, or list items by date order.

Performing a Sort

A regular sort will sort by the first column in a range of columns. It will sort by the type of content in the column. If the content is text, you can sort from A to Z; or Z to A. If the content is numbers, you can sort by Smallest to Largest; or Largest to Smallest.

When sorting in a worksheet, you must make sure that all of the data is contiguous or that you select all of the data. This will ensure that information in the rows that you need to keep together will stay together. For example, if you perform a sort on a list including names and addresses and you select just the first name and last columns or you have a blank column dividing the data, *Excel* will sort the names and not move the addresses with them. Therefore, it is always a good idea to save the file first before performing a sort.

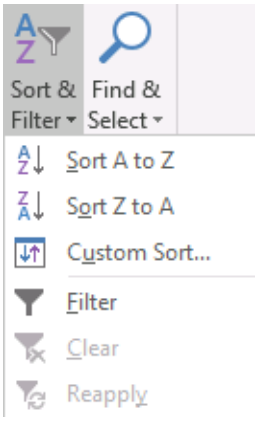
- Right-click the cell and choose from the ***Sort*** menu.



- OR -

Sorting,
continued

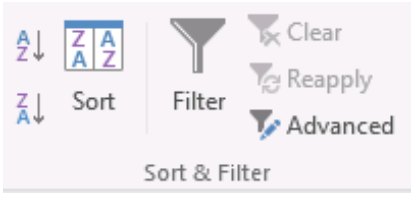
- Click one of the cells that you wish to sort.
- Click on the **[Sort & Filter]** button in the **Editing Group** on the ***Home Tab***, a menu will appear.



- Select the Sort you want to perform. The sort options available are based upon the data in the column.
  - **Numbers**: *Smallest to Largest* or *Largest to Smallest*
  - **Text:** *A to Z* or *Z to A*
  - **Dates**: *Newest to Oldest* or *Oldest to Newest*

- OR -

- After selecting the cells, click the **[Sort Smallest to Largest]** button in the **Sort & Filter Group** on the ***Data Tab***.



Action 4.4 - Performing a Basic Sort

Instructions:	Results/ Comments:
1. Open the file **Employee_Records**.	**[Ctrl + O]**.
2. Save the file as **My_Employee_Records**.	We are going to be sorting this worksheet, it is a good idea to save the file first. **[F12]**.
3. Observe the list.	Make sure the ***Home Tab*** is selected.
4. Select cell **A3**.	It is currently alphabetized by name. We are going to sort it by Employee ID.
5. Click the **[Sort & Filter]** button drop-down in the **Editing Group** on the ***Home Tab*** and select *Sort Smallest to Largest* from the menu.	Notice the change in the list. Now all the Employee ID's are in order.
6. Make sure cell **A3** is still selected.	We are going to look at another location to do the sort.
7. Click on the **[Sort Largest to Smallest]** button in the **Sort & Filter Group** on the ***Data Tab***.	We have now reversed the Employee ID order. You can choose to perform sorts and filters on either the ***Data Tab*** or ***Home Tab***. Choose the most convenient for you.
8. Save the file.	**[Ctrl + S].**

Custom Sorting

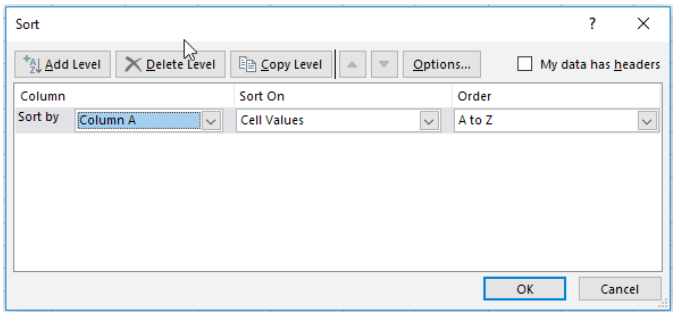
Performing a Custom Sort

A custom sort allows you to specify what column you want to sort or to sort by several non-adjacent columns at one time. For example, you can sort by a last name column and then sort by a first name column.

- Save the file, then select the cells in the worksheet that you wish to sort.
- Click the **[Sort & Filter]** button drop-down in the **Editing Group o**n the ***Home Tab***, and select *Custom Sort* from the menu.

- OR -

- Click the **[Sort]** button in the **Sort & Filter Group** on the ***Data Tab***. The *Sort* dialog opens.



- If you have given the columns headers titles, make sure that the *My data has headers* checkbox is checked. This will use the header names in the ***Column*** lists.
- Under ***Column***, in the *Sort by* field, click on the down arrow to select the column by which you want to sort.
- Under ***Sort On*** select what you want to sort on. You will most often keep the default of **Values**, but you can also sort by cell color, font color or cell icon.
- Under ***Order***, select the order that you want to perform the sort such as A to Z or Z to A.
- If you want to sort by another column, click the **[Add Level]** button. Then, make the selections for ***Column***, ***Sort On*** and ***Order***. Continue until you have all of the columns that you want included in the sort. You can have a maximum of 64 levels in the sort.
- Click **[OK]**.

Note

If you wish to sort by rows, in the *Sort* dialog, click on **[Options]** and then select *Sort left to right*. You can then set up the sort using rows instead of columns.

Action 4.5 - Performing a Custom Sort

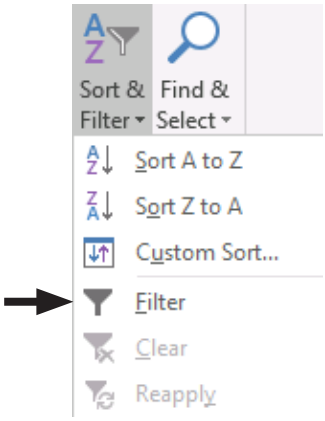
Instructions:	Results/ Comments:
1. **My Employee Records 2** should be open.	If not, open the file.
2. Select cell **A2**.	
3. Click on the **[Sort]** button in the **Sort & Filter Group** on the ***Data Tab***.	The *Sort* dialog opens. We are going to do a custom sort and sort by Dept. and then alphabetize by name.
4. In the ***Sort by*** text box, click on the down arrow and select *Dept*. (The last item on the list).	Observe the ***Sort On*** and ***Order*** fields.
5. Under ***Column***, in the *Sort On* text box **Values** should be selected.	We want to sort by values, however, you can sort by cell color, font color and cell icon.
6. In the ***Order*** text box, click on the down arrow and select *A to Z*.	You can also sort by a custom list you have created.
7. Click on **[Add Level]**.	Located at the top of the dialog. This gives you another level to sort by.
8. Click on the down arrow on the ***Then by*** text box and select *Last Name*.	We are leaving all other selections the same.
9. Add another level and set the ***Then by*** to *First Name*.	Leave all other selections the same.
10. Click **[OK]**.	Observe the list. Notice the departments are listed in alphabetical order. Employees in each department are then listed in alphabetical order.
11. Save the file.	**[Ctrl + S]**.

Filtering

Filtering allows you to pull information from the worksheet that you wish to see and filter out all of the other information. For example, you can use the filter on a large list of employees to see only those employees who work in the marketing department or find the employees whose anniversary date falls in June. When you are finished with the filter, you can turn the filter off and the entire list will come back into view.

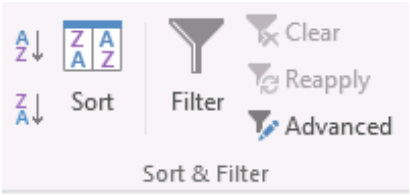
Performing a Filter

- Click into the range of cells you would like to perform the filter on.
- Click the **[Sort & Filter]** button drop-down in the **Editing Group** on the ***Home Tab***, select *Filter* from the menu.



- OR -

- Click the **[Filter]** button in the **Sort & Filter Group** on the ***Data Tab***.



- The column headers will appear with menu arrows. This allows you to perform a filter or sort on any of the columns.
- Click on the down arrow for the column that you want to perform the filter on. A menu will appear for you to choose what you want to filter.

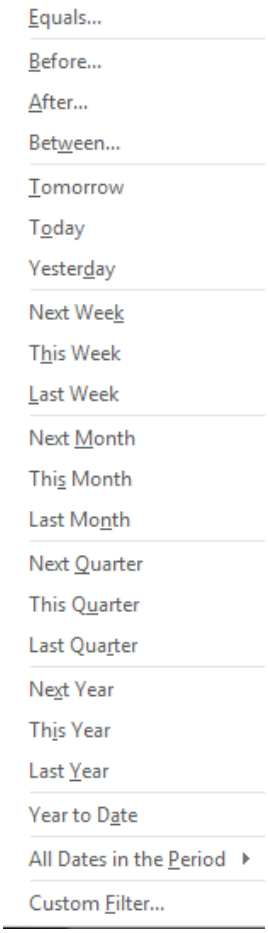
Filtering,
continued

- At the bottom of the menu, you will see all the variables in the column. Deselect *Select All*. This will clear all of the check boxes.
- Click in the check box or boxes of the items that you want to include in the filter. Click **[OK]**. Only the items you selected will appear. You will see a Filter icon on the column you performed the filter on.

Performing a Text, Date and Number Filter

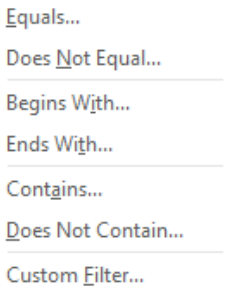
Text, Date and Number filters help you create a filter that is much more precise by allowing you to really zero in on the data you are looking for. *Excel* offers the appropriate type of filter based on the type of data in the given column.

Date Filters



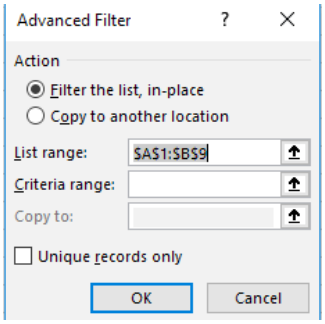
Number Filters

Text Filters



Filtering,
continued

- Start the filter as shown in **Performing a Filter**. You can apply number and text filters to selected items or all of the items in the list.
- In the Filter menu, click on ***Number Filters*** (if the values in the column are numbers), ***Text Filters*** (if the values in the column are text) or ***Date Filters*** (if the values in the column are dates). A menu will appear giving you filter options.
- Select an option from the menu. The *Custom AutoFilter* dialog will open.



- In the first text box, you will see the filter option you selected in the menu. If you wish, you can change the option. In the text box to the right, enter the value that you want the filter based on or click on the down arrow and select a value from the list.
- Click **[OK]**. *Excel* will perform the filter and bring up those rows meeting the criteria.

Turning Off Filters

- To turn off the filter, click on the filter icon on the column on which you performed the filter. From the menu, select *Clear Filter*.
- To turn the filter off from the worksheet, click the **[Sort & Filter]** button in the **Editing Group** on the ***Home Tab***, and click on *Filter*. The worksheet will return to normal.

- OR -

- Click on the **[Filter]** button in the **Sort & Filter Group** on the ***Data Tab***.

Action 4.6 – Filtering Data

Instructions:	Results/ Comments:
1. **My Employee Records 2** should still be open.	If not, open the file.
2. Select cell **A2**.	
3. Click on the **[Filter]** button in the **Sort & Filter Group** on the ***Data Tab***.	Notice the header row now has filter arrows on each header label.
4. Click on the filter arrow on the **ST** column.	A menu will open up. (Notice you can also sort here.)
5. At the bottom of the menu, you will see a list of the states in the worksheet. Click on *Select All*.	This will deselect all of the states by removing all the check marks.
6. Click on *MA*.	This will tell *Excel* to show only those employees living in Massachusetts.
7. Click **[OK]**.	Notice *Excel* filtered out all other employees. Notice the row numbers. This shows you the row numbers where these employees are on the list.
8. Click on the filter arrow on the **ST** column and select *Clear Filter from ST*.	The full worksheet comes into view. This did not affect the custom sort you did in Action 3.
9. Click on the filter arrow on the **Pay Rate** column .	We are going to find all employees whose pay rate is $40.00 or greater.
10. Point to Number Filters and then click on *Greater Than Or Equal to*	This opens the *Custom AutoFilter* dialog.
11. In the top right text box, click on the down arrow and select *$40.00* from the list.	You can also just type it into the text box.
12. Click **[OK]**.	*Excel* finds employees earning $40.00 or greater. You could also create a filter that finds numbers between two values.

Instructions:	Results/ Comments:
13. Click on the filter icon on the **Pay Rate** column and select *Clear Filter from Pay Rate*.	Now let's turn off the Filter from the worksheet.
14. Click on the **[Filter]** button.	This deselects the filter and returns the worksheet to normal.
15. Save and Close the file.	**[Ctrl + S]** & **[Ctrl + W]**.

Tables

If you are going to be spending a great deal of time sorting and filtering the data in the worksheet, you may want to consider creating a Table. When you create a table, it is automatically set up to conduct sorts and filters. A table also gives you more functionality, such as the ability to use table styles and table style options, easily add columns and rows, add a total row, and check for duplicates.

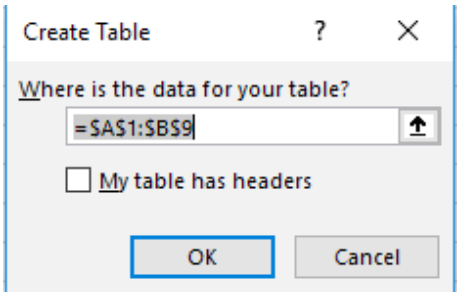
Creating a Table

You can create a table from an existing set of data or you can create a table and then add the data. Normally a table is made from adjacent columns of data, with a unique label or heading for each column. You can create a table by inserting a table or by applying a table style.

Note

[Ctrl + T]
or
[Ctrl + L]
will both open the *Create Table* dialog.

- Select a cell in the set of data. Make sure all the data and headings are in adjacent columns and rows.
- Click on the **[Table]** button in the **Tables Group** on the ***Insert Tab***.
- The *Create Table* dialog opens.



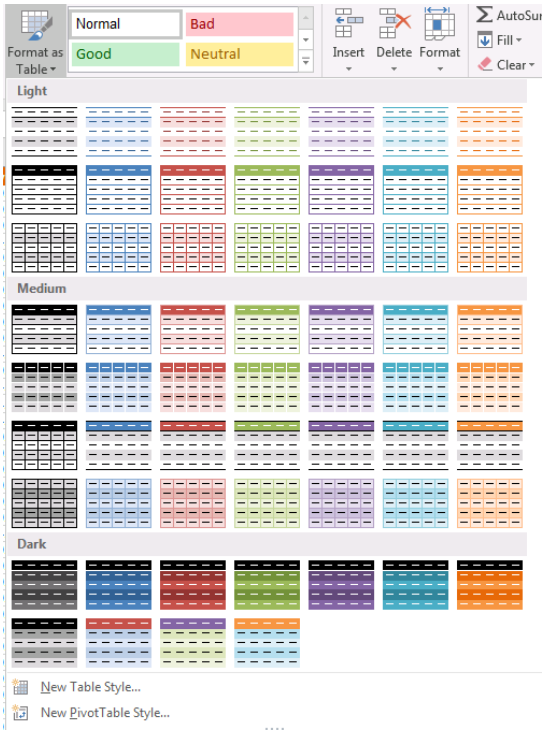
- The range of cells you have selected should be shown in the text box. Correct this if needed. Make sure that you have the *My table has headers* check box selected.
- Click **[OK]**.
- The range will appear as a table using the default table format. The ***Table Tools/Design Tab*** will be displayed.

- OR -

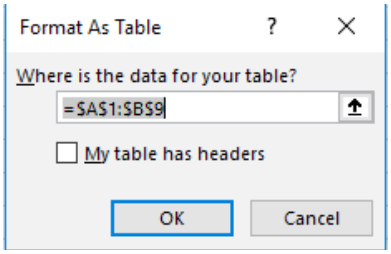
- Select a cell in the set of data. Make sure all the data and headings are connected in adjacent columns and rows. (no blank columns or rows)

Tables,
continued

- Click on the **[Format as Table]** button in the **Styles Group** on the ***Home Tab***. The ***Table Style Gallery*** is displayed.



- Click on a Table Style of your choice. The *Format As Table* dialog opens. Make sure the *My table has headers* check box is selected. Click **[OK]**.



- The table is generated as described in the previous method. The ***Table Tools/Design Tab*** are displayed.

Action 4.7 - Creating a Table

Instructions:	Results/ Comments:
1. Open the file **Orders**.	
2. Save the file as **My Orders**.	**[F12]**.
3. Select cell **A1**	This is in the range we want for our table.
4. Click on **[Format as Table]** button in the **Styles group** on the ***Home Tab***.	This is the quickest way to create a table. You can also click on the ***Insert Tab*** and then select **[Table]** or use the **[Ctrl + T]** or **[Ctrl + L]** shortcuts.
5. From the menu select *Table Style Medium 2*.	This is the second style in the first row of the Medium section.
6. In the *Format as Table* dialog, check to make sure that the *My table has headers* check box is selected.	You can select the range in this text box. We have already selected a cell in our range, so we do not need to do anything else.
7. Click **[OK]**.	The range is converted to a table. It has the Table Style you selected. Notice that the Table Tools are now available. You can see the same filter menu arrows on the column labels that you used when filtering data.
8. Scroll to the bottom of the table.	Notice that the column labels always remain in view. A great benefit of creating a table.
9. Click outside the table.	The ***Table Tools/Design Tab*** is no longer displayed.
10. Click in the table.	The ***Table Tools/Design Tab*** is displayed.
11. Click on the ***Table Tools/Design Tab***.	We will be working with these tools in the next Action.

Tables,
continued

Using Table Tools

Once you have created the table, you may change the table style, add or subtract style options, increase or decrease the size of the Table, and insert or delete rows or columns as needed. Note that the Table must be selected in order to use the Table Tools under the ***Design Tab***.

Changing the Table Style

- Click in the table to access the ***Table Tools/Design Tab***.
- In the **Table Styles Group,** click on a new style. Use the scroll arrows to view more styles. To see all of the styles at once, click on the **[More]** button (the bottom most arrow).

Formatting with Table Style Options

Another way to format the table is by selecting individual items from the **Table Style Options Group** in the ***Table Tools/Design Tab***. Each item works like a toggle switch. If a check appears in the check box next to an option, that option is applied or "on". To turn an option "off", click in the box again and the check will be removed.

Table Style Option	Function
Header Row	Turns on/off the header
Total Row	This will insert a row at the end of the table and automatically totals the last column. From the down arrow, you can also select other functions such as Avg., Min., Max., Count etc. For more on the Total Row see: **Adding a Total Row**.
Banded Rows	If this is selected, the row color will alternate between two colors. If this is turned off, all of the rows will be the same color.
First Column	Will apply formatting to distinguish the first column.
Last Column	Will apply formatting to distinguish the last column.
Banded Columns	The column color will alternate between two colors. If this is turned off all of the column colors will be the same.

Tables,
continued

Adding a Total Row

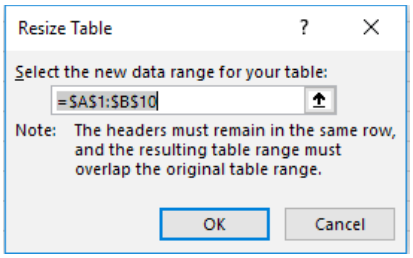
When you add a row to the table, the Total Row will update automatically. If you sort the table, the Total Row will not be effected. If you apply a filter to the table, the Total Row will appear, but will include only those items in the filter in its calculation and not the entire table.

- Click in the table to access the ***Table Tools/Design Tab***.
- In the **Table Style Options Group**, click on the *Total Row* check box. A Total Row will appear at the bottom of the table with a menu arrow next to it and the last column will be totaled.
- To change the function used in the formula, click on the menu arrow and select a new function.
- To insert a formula in the total row for other columns, click in the cell at the bottom of the desired column, then click on the down arrow and select the appropriate function for the column.
- By default, the Row label is **Total**. To change the label, click in the cell and change the label name.

Resizing a Table

You can resize the table to include worksheet columns or rows that were not previously included in the table. This can include columns and rows that already contain data as well as empty columns and rows.

- Click in the table to access the ***Table Tools/Design Tab***.
- Click on **[Resize Table]** button in the **Properties Group**. The *Resize Table* dialog will open.



- In the text box, enter the new range or click on the **[Collapse Dialog]** button to highlight a new range in the worksheet. The current range will be surrounded by a flashing border.

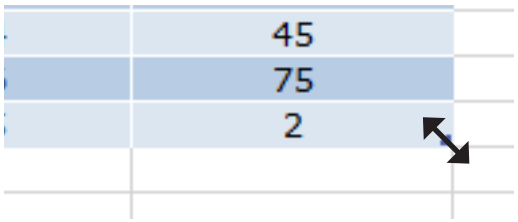
Tables, continued

- Click and drag to change the range, or hold the **[Shift]** key and press the right and down arrow keys to increase the range; the left and up arrow keys to decrease the range.
- Click in the **[Expand Dialog]** button to return to the dialog. Click **[OK]**.

Adding/Inserting a Row or Column

You can add a new column or row in the following ways:

- Click in the last cell of the table. Press the **[TAB]** key. A new row will be inserted.
- Click in the next available column/row in the worksheet and begin entering the text. The Column will automatically be added to the Table.
- Position the mouse over the re-size handle in the bottom right hand corner of the last cell of the table.



When you see a double-headed arrow drag, the mouse to the right to add columns drag down to add rows. You can add multiple columns and rows with this method.

- Click **[Insert]** button the down arrow in the **Cells Group** on the ***Home Tab***. Select *Insert Table Rows Above* or *Insert Table Columns to the Left*.
- Select the row or column heading and then right-click the mouse and select ***Insert*** from the shortcut menu.

Deleting a Row or Column

You can delete a column or row in the following ways:

- Click in the row or column you want to delete. Click the **[Delete]** button down arrow in the **Cells Group** on the ***Home Tab***. Select *Delete Table Rows* or *Delete Table Columns.*

Tables, continued

- Select the row or column heading and then right-click the mouse and select ***Delete*** from the shortcut menu.

Using Calculated Columns

In a table, when you enter a formula into one of the column cells, *Excel* will automatically place the same formula in the rest of the column adjusted for each row. The is called a Calculated Column. The column will expand automatically when new rows are added.

What if you don't want a calculated column? When a calculated column is created the **[Auto Correct Options]** button appears. Click on this to select one of the following: *Undo Calculated Column* or *Stop Automatically Creating Calculated Columns*.

Using the Convert to Range

If you like the Table Style formatting, but do not need the functionality of the table, you can convert the table to a normal range of cells.

- Right-click the mouse. Select ***Table***, then select *Convert to Range*

- OR -

- Make sure the Table Tools are visible. In the **Tools group**, click on **[Convert to Range]**.
- Click **[Yes]** in the dialog.

Action 4.8 - Using Table Tools

Instructions:	Results/ Comments:
1. **My Orders** should still be open.	If not open it.
2. Click in cell **H2**. Enter the following formula using the pointing method: Type: **=** Click once on cell **F2** Type: ***** Click once on cell **G2** Press: **[Enter]**	If you enter a formula using the pointing method, *Excel* uses Table references for you. This is helpful when you want to reference table data in other formulas or worksheets. The entire column is completed with the formula. This is a calculated column. If you did not want a calculated column, you can click on the **[AutoCorrect]** options button that appears when the column is created and select *Undo Calculated Column* from the menu.
3. Click on ***Banded Rows*** in the **Table Style Options Group** on the ***Table Tools/ Design Tab***.	This removes the check mark. Notice the rows are all the same color.
4. Click on ***Banded Columns.***	The columns should now show alternating colors.
5. Click on ***Total Row.***	A Total Row is added to the bottom of the table. By default, the last column was totaled. You can add a formula at the bottom of any column.
6. Click in cell **G66**. Click on the down arrow and select *Sum*.	Notice that you can choose from a number of different functions. This will give you the total number of items ordered.
7. To add a row, click in cell **H65**. Press the **[Tab]** key.	A row is added to the table.

Instructions:	Results/ Comments:
1. Enter the following information in the new row. Press **[Tab]** after each entry: **12/1/08** **Sandy** **Smothers** **Product 2** **3224** **36** **7**	Notice that the formatting carried through to the new row and the calculated amount for Total Order was automatically entered as soon as you tabbed to that column.
2. Click in cell **I65,** then press **[Ctrl + ↑]**	This will take you to cell **I1**
3. In cell **I1,** type **Date Paid** then press **[Enter]**.	The column is automatically added to the Table.
4. Double-click between I and J and display the label.	To increase the column size.
5. Click on the down arrow on the Last Name column. Point to ***Text Filters*** then select *Equals*.	We are going to perform a filter to find all of the orders for Linda Walters.
6. In the text box type **Walters**. Click **[OK]**.	This brings up all of the Walters in the list. This is great, because we do not have to search the entire list to find this data. If you had more than one Walters, you could conduct a second filter using the first name. Notice that the Total Row now shows just the total for these four orders.
7. Enter the following dates in the four cells under Column I. Press **[Enter]** after each date. **3/19/08** **6/30/08** **8/14/08** **9/12/08**	By filtering our records, we are able to easily mark when the orders were paid, without having to look through the entire list.

Instructions:	Results/ Comments:
8. Click on the Filter Icon on the **Last Name** column. From the menu, select *Clear Filter from Last Name*.	The entire table comes into view. If you scroll through the table, you can see the dates that you entered.
9. On the ***Table Tools/Design Tab***, in the **Tools Group**, click on **[Convert to Range]** button.	If you want the formatting of the table, but do not need the functionality, you can convert the table to a normal range of cells.
10. Click **[Yes]**.	Notice the filter buttons are removed from the screen. If you click in the calculated column, the formula no longer references the table. The Total Row is now just an ordinary row. The formatting remains.
11. Save the file.	**[Ctrl + S].**
12. Close the file.	**[Ctrl + W].**

Charts

A chart is a graphic representation of the worksheet data. Using a chart creates a better understanding of the data than simply presenting the numbers in a spreadsheet.

In *Excel,* Charts can be created using the ***Insert Tab,*** a key command, or from the **Quick Analysis** tag. On the ***Insert Tab*** is the **Charts Group** which contains a great array of charts from which to choose. Before you select a chart, first consider the type of chart that you require. Pie and bar charts are good for showing comparisons. Line graphs can be useful for showing trends and plotting relationships between variables. Each chart has a menu of variations from the basic 2 dimensional charts to 3-D charts.

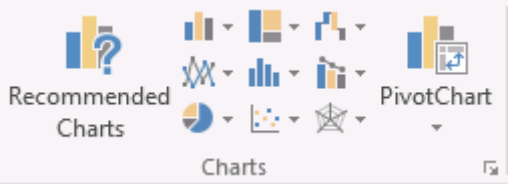
Creating a Chart

- Select the data and labels that you want to base the chart on. Note: When creating a pie chart, select only one set of numbers (variable) and labels.

Note

Select the range of the data. Then press **[F11]**. A column chart will be created on a new worksheet.

- On the ***Insert Tab*** in the **Charts Group**, click on the type of chart you would like to create. This will display a list of possible chart options to choose from. Note: if you are unsure what type of chart to choose, use the **Recommended Charts** to help.



- Click on the chart option you would like to create. The chart will appear in the worksheet below the data. The ***Chart Tools*** will open under the ***Design Tab*** and ***Format Tab***.
- You can use the tools to customize the chart. We will cover these tools in more detail later. To accept the chart as is, click in the worksheet outside the chart area. The ***Chart Tools*** will close.

Action 4.9 - Creating a Pie Chart

Instructions:	Results/ Comments:
1. Open the **Unit Usage** file.	
2. Save the file as **My Unit Usage**.	**[F12]**.
3. Select cells **A2:B7**.	When creating a pie chart, only choose one set of variables (select labels and one set of numbers).
4. Click the **[Pie]** button drop-down in the **Chart Group** on the ***Insert Tab***, and select the *3-D Pie* from the menu.	The pie chart will appear in the worksheet. The chart represents the unit usage per product for the North region. Notice that when the chart is added to the spreadsheet, additional tabs appear above the ribbon for Chart Tools. We will be working with these later.
5. Point to the left border of the chart. When you see a four headed arrow, click and drag the chart to the left until it is lined up with cell **A9**.	You can move the chart anywhere you want in the worksheet.
6. Place the mouse pointer over the bottom right hand corner of the chart box. When the pointer turns into a double-headed arrow, drag the mouse toward the center of the chart until the chart is the same width as the worksheet data.	This is how a chart is resized.
7. Click outside the chart.	The worksheet is now active again. The Chart Tabs and controls are no longer displayed. To work with the chart, you simply click in the chart to make it active and bring back the Charting tabs and controls.
8. Change the number in cell **B7** to **3,000**.	Notice that the chart changed as well reflecting the new amount.
9. Now let's create another pie chart using the South set of data.	You can create numerous charts and place them in one worksheet.

Instructions:	Results/ Comments:
10. Select cells **A2:A7** press and hold the **[Ctrl]** key and select cells **C2:C7**.	In a pie chart, always select one set of labels and one set of data. If you want to see the data for one of the products lines (rows) such as Conduit, you would select cells **A2:E3**.
11. Create a 3-D Pie Chart.	Follow the steps on the previous page. Place the South Chart below the North Chart. Resize as necessary.
12. Click in the worksheet.	This deselects the chart.

Action 4.10 - Creating a Column Chart

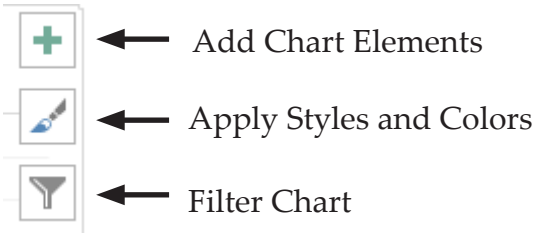
Instructions:	Results/ Comments:
1. You should have **My Unit Usage** open on the screen.	If not, open it.
2. Select cells **A2:E7.**	
3. Click on **[Column]** button drop-down in the **Chart Group** on the ***Insert Tab***, and select *3-D Clustered Column* from the menu.	A column chart is able to compare several variables at one time.
4. Drag the Column Chart to the top of the spreadsheet and to the right of the data.	This chart compares the unit usage for each region for each product type.
5. Keep the chart selected.	In the next lesson, we are going to learn how to use some of the easy design features to change the appearance of the chart.
6. Save the file.	**[Ctrl + S]**.

Charts,
continued

Using Chart Tools

After you create a chart, you can alter its appearance by using the Chart Tools. Note that the Chart must be selected in order to use the Chart Tools located under the ***Design Tab*** and the ***Format Tab***.

Charts in *Excel* have three buttons along the upper right side of the chart for quick access to basic formatting and now filtering of the chart and its data.



Adding Chart Elements

- Click anywhere into the chart.
- Click the **[Add Chart Elements]** button drop-down in the **Chart Layouts Group** on the ***Chart Tools/Design Tab*** to open the menu.
- Select the element you wish to either add or remove.

-OR-

- Click the new **[Add Chart Elements]** button on the right side of the chart.
- Check or uncheck the element checkboxes to turn those elements on or off.

Using a Quick Layout

Excel offers a few pre-built chart configurations from this button menu. These layouts have different chart elements already in position so you may not need to manually set them up.

- Click the **[Quick Layout]** button drop-down in the **Chart Layouts Group** on the ***Chart Tools/Design Tab*** and choose from the menu.

Charts,
continued

Changing Chart Styles

- Click anywhere into the chart, then click the **[Chart Styles]** button on the right side of the chart.
- At the top of the menu choose ***Styles*** and scroll through the list to find one you like.

-OR-

- Click the **[More]** button on the Styles gallery in the **Chart Styles Group** on the ***Chart Tools/Design Tab*** and choose the style you like.

Changing Chart Colors

- Click anywhere into the chart, then click the **[Chart Styles]** button on the right side of the chart.
- At the top of the menu choose ***Colors*** and scroll through the list to find one you like.

-OR-

- Click the **[Change Colors]** button drop-down in the **Chart Styles Group** on the ***Chart Tools/Design Tab*** and choose the one you like from the menu.

Changing Chart Type

This button allows you to change the chart type of the current chart.

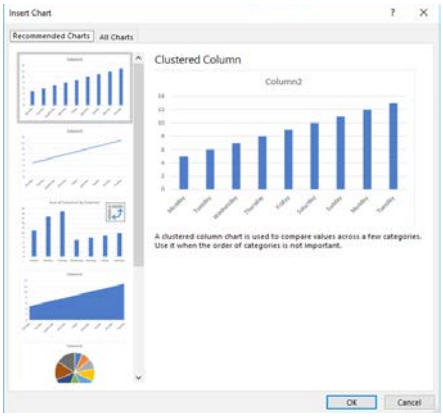
- Right-click into the chart and choose ***Change Chart Type*** from the menu to open the *Change Chart Type* dialog.

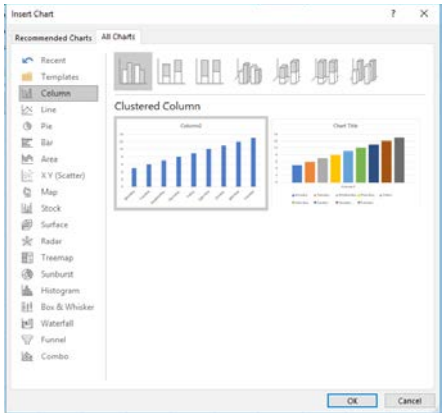
-OR-

- Click on the **[Change Chart Type]** button in the **Type Group** on the ***Chart Tools/Design Tab***. This opens the *Change Chart Type* dialog.

Note

When you change the chart type, *Excel* will suggest a chart type based on the data. These suggestions are listed under the ***Recommended Charts***.





Charts,
continued

- Click the tab for either ***Recommended Charts*** or ***All Charts***.
- Click the desired chart type.
- Click **[OK]** or press **[Enter]**.

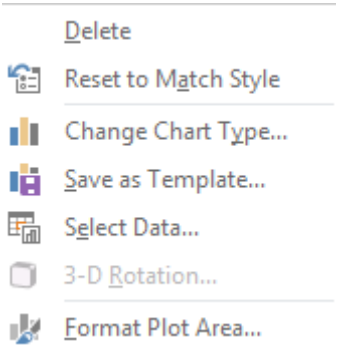
Note

When a **Chart Template** is saved, do not change the location where it is being saved. Once it is saved into the default **Charts** folder, it can be used in any of the other *Office* programs.

Saving as a Template

You can open a file containing an already formatted chart or use the current chart to save the formatting for future use. The button is not readily available on the ribbon, but it is accessed by right-clicking the chart and found in the contextual menu.

- Right-click on the chart and select ***Save as Template***.



- Name the template.
- Click **[OK]** or press **[Enter]**.

Switching a Row/Column

By default *Excel* will plot the data in the chart by rows. Each row represents a "series". This means, you are comparing row data that is then grouped in columns. The column labels will appear in the legend and the row labels appear on the x axis.

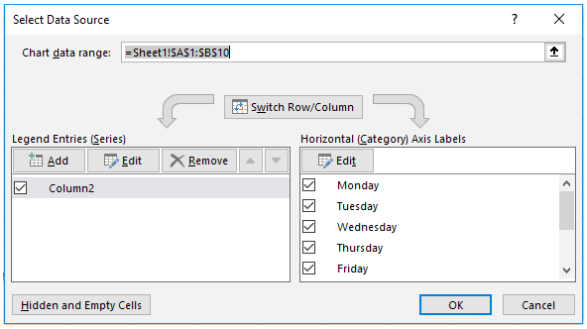
When you click the **[Switch Row/Column]** button, the data will switch so that now you are comparing the column data. The legend will show the row labels and the column labels will appear on the x axis. You can switch back and forth as much as you want.

Charts,
continued

Selecting Data

You will find at times that you do not wish to plot all of the data, wish to change the data you have selected or add additional data in the chart. Use this button to accomplish all of this by selecting a new data range. To do this:

- Click the **[Select Data]** button in the **Data Group** on the ***Chart Tools/Design Tab***. This opens the *Select Data Source* dialog.

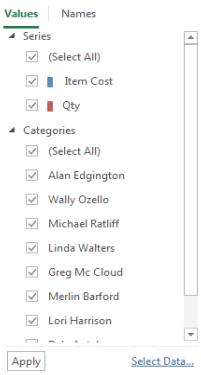


- Select the new range in the worksheet or use the Chart data range text box.
- Click **[OK]**.

Filtering Chart Data

While it is easy to redefine the data that is shown in the chart, *Excel* now allows you to filter the chart. The third button on the right side of the chart will allow you to choose what data will be displayed in the chart without having to redefine the charts original data set.

- Click into the chart.
- Click the **[Chart Filters]** button.
- Check or uncheck the boxes for the data and click **[Apply]**.

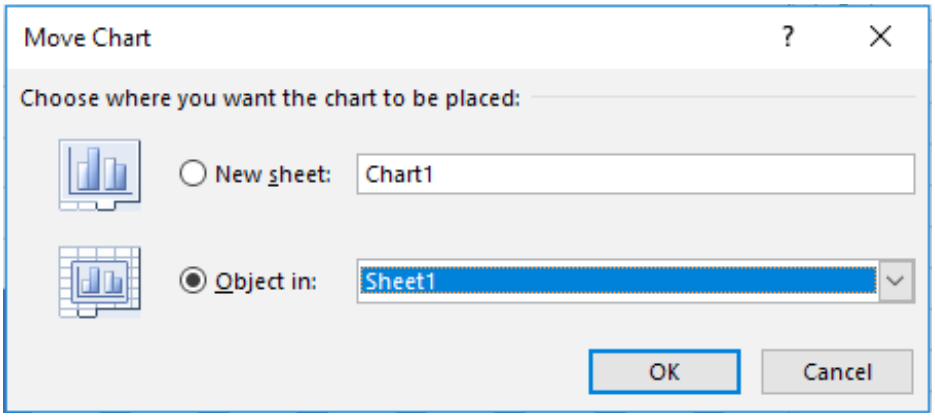


Charts,
continued

Moving a Chart

By default *Excel* will place a chart into the worksheet that contains the data. However, you can place the chart on a different worksheet by itself or with other charts. To do this:

- Click on the **[Move Chart]** button in the **Location Group** on the ***Chart Tools/Design Tab***.
- The *Move Chart* dialog opens.



- To put it on a new sheet, click on ***New sheet*** and then type a name in the text box.

- OR -

- To move it to an existing worksheet, click on ***Object in*** (this may already be selected). Click on the down arrow and select from the list of existing sheets.
- Click **[OK]** or press **[Enter]**. The chart will move to the new location.

Action 4.11 - Using Chart Tools

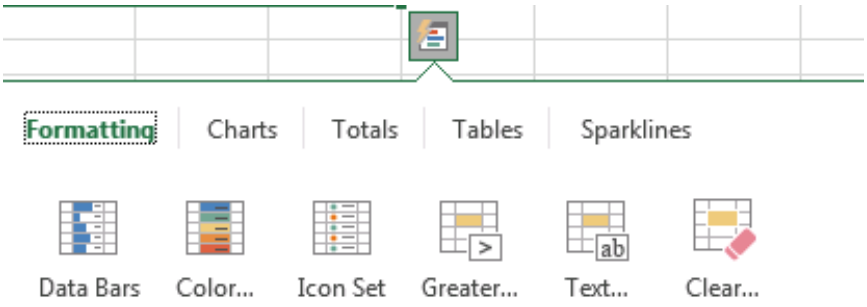
Instructions:	Results/ Comments:
1. **My Unit Usage** should be open.	If not, open it.
2. Click in the Column chart to access ***Chart Tools/Design Tab***.	
3. Click on the **[Change Chart Type]** button in the **Type Group** on the ***ChartTools/ Design Tab*** or right-click the chart and choose ***Change Chart Type*** from the menu.	The *Change Chart Type* dialog opens.
4. Select ***Bar*** on the left. Click on *Clustered Bar* at the top (first one in the row). Click **[OK]**.	The chart is changed to chart type you chose.
5. Click on the **[Switch Row/Column]** button in the **Data Group** on the ***Chart Tools/Design Tab***.	Notice that the row labels (products) are in the legend. The column labels are on the y axis.
6. Click on the **[Select Data]** button in the **Data Group** on the ***Chart Tools/Design Tab***.	The data in the chart will have a flashing border around it. You may need to drag the dialog out of the way to see it.
7. Click in the worksheet and highlight cells **A2:C7**. In the dialog, click **[OK]**.	Notice the change in the chart. We are now comparing just two of the regions.
8. Click on *Layout 1* from the **[Quick Layout]** button drop-down in the **Chart Layouts Group** on the ***Chart Tools/ Design Tab***.	A text box for a chart title has been added. You can now add a title to the chart.
9. Select the placeholder for Chart Title and type: **1st Qtr Unit Usage**. Press **[Enter]**	You could also double-click to highlight and change the title. Note the new title may only appear after you press **[Enter]**.
10. Click in the **North Pie Chart**.	
11. Click the **[Quick Layout]** button drop-down in the **Chart Layouts** group on the ***Chart Tools/Design Tab***, select *Layout 1* from the menu.	You can now see the percentage usage for each product.

Instructions:	Results/ Comments:
12. Click the **[Chart Styles]** button on the upper right side of the chart.	
13. Click the word ***Styles*** at the top of the menu and try different chart style types	The Style menu is displayed
14. Click the word ***Color*** at the top of the menu and try different color schemes.	The Color menu is displayed
15. Click the **[Filter Chart]** button on the upper right side of the chart.	The Filter menu is displayed.
16. Uncheck some to the boxes and click the **[Apply]** button.	Only the data fields that were checked are shown in the chart.
17. Click the **[Filter Chart]** button on the upper right side of the chart.	The Filter menu is displayed again.
18. Check the select all checkboxes and click the **[Apply]** button.	All the data is redisplayed in the chart.
19. Select the **Bar Chart.**	This chart is active.
20. Click the **[Move Chart]** button in the **Location Group** on the ***Chart Tools/ Design Tab***.	The *Move Chart* dialog opens.
21. Click the ***New Sheet*** button. In the text box type: **North & South**. Click **[OK]**.	You are creating and naming a new sheet all at once. The chart is moved to it's own sheet.
22. Click on the **1st Qtr** worksheet tab.	You are back in the first worksheet. The column chart does not appear on the worksheet. Any changes that you make to the data in the worksheet will still effect the column chart.
23. Save and close the file.	**[Ctrl + S]** & **[Ctrl + W]**.

Quick Analysis

When you select a cell range the **Quick Analysis** smart tag is displayed at the lower right of the selected range. When clicked, it offers suggestions of how you may want the data to be displayed. There are five main categories in the tag:

- ***Conditional Formating:*** uses rules to highlight interesting data
- ***Charts:*** recommends chart types based of the configuration of the selected data to visualize data
- ***Totals:*** automatically calculates totals
- ***Tables:*** helps sort, filter, and summarize data
- ***Sparklines:*** mini charts placed in single cells

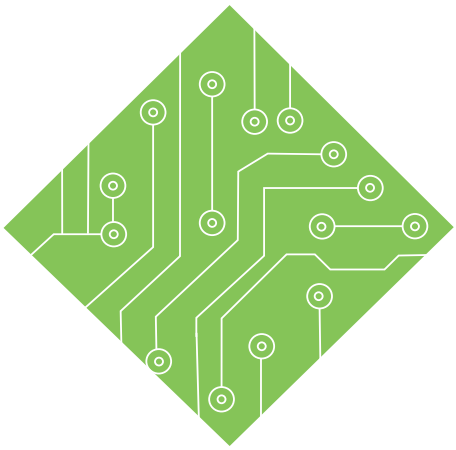


Conditional Formatting uses rules to highlight interesting data.

This feature is designed to help you get started with data analysis but it is just a beginning point. For more control you will still use the tools as before.

Action 4.12: Using the Quick Analysis tag

Instructions:	Results/ Comments:
1. Open the **Quick Analysis** file.	
2. Select cells **A3:E7**.	The **Quick Analysis** smart tag is displayed when you select a range of cells.
3. Click on the **[Quick Analysis]** tag.	**[Ctrl + Q]** also opens the **Quick Analysis** when a range is selected
4. Scroll over some of the recommended formatting options to see what *Excel* suggests as viable ***Conditional Formats***.	
5. Click on the ***Charts*** and scroll over some of the recommended charts to see what *Excel* suggests as viable chart types and styles.	
6. Click on the ***Totals*** and scroll over some of the recommended totals to see what *Excel* suggests as viable totals.	
7. Click on the ***Tables*** and scroll over some of the recommended tables to see what *Excel* suggests as viable tables and pivottables.	
8. Click on the ***Sparklines*** and scroll over some of the recommended sparklines to see what *Excel* suggests as viable sparklines.	
9. Click on any option to see it fully applied.	
10. Close the file without saving.	**[Ctrl + W]**.

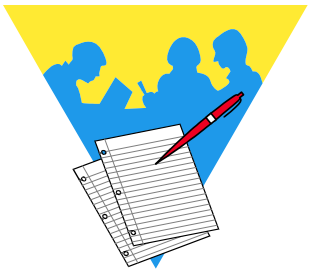


Lesson 5: Protecting the Worksheet/Workbook

Lesson Overview

You will cover the following concepts in this chapter:

- Protecting Worksheets
- Unprotecting a Worksheet
- Hidden Cells
- Allow Users to Edit Ranges
- Protecting Workbooks
- Protecting the File with Encryption
- Protecting the File with Passwords
- Workbooks Versions (optional)



Lesson Notes

Protecting Worksheets

There are times when you will need to protect the worksheet or workbook from unwanted changes and yet still allow others access to the worksheet or workbook. This can happen when you have created a worksheet in which you need to have others provide additional data (i.e. budget numbers, expenses, sales figures etc).

Protecting the Contents of a Worksheet

Note

You have the option of protecting the entire worksheet and not allowing any changes to be made. To do this, keep all the cells and objects locked then apply protect the worksheet.

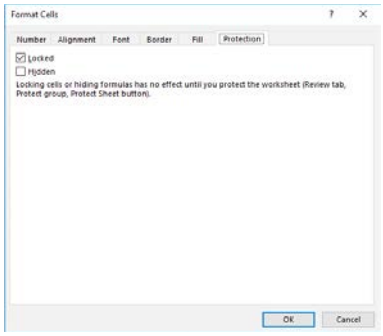
You can protect content and attributes of the worksheet data, such as formatting, data, formulas, graphic objects, etc., from unwanted changes by allowing changes only to selected ranges on a worksheet.

Protecting the contents of a worksheet is a two-step process:

1. Unlock the cells and graphic objects you want to be able to edit after the worksheet is protected. By default, all cells and object are locked.
2. Apply Protection to the worksheet.

Unlocking Cells

- Right-click on any selected cell or range and choose ***Format Cells***. In the *Format Cells* dialog, select the ***Protection*** tab.



- Uncheck the *Lock Cell* box. This will unlock the cells so you can change them after the worksheet is protected.

-OR-

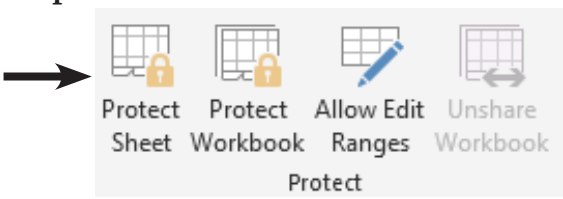
- Highlight the cell or cells where users are to edits.
- From the ***Home Tab***, in the **Cells Group**, click the **[Format]** button drop-down and click *Lock Cell* to unlock the cell or cells.

Protecting Worksheets, continued

Applying Worksheet Protection

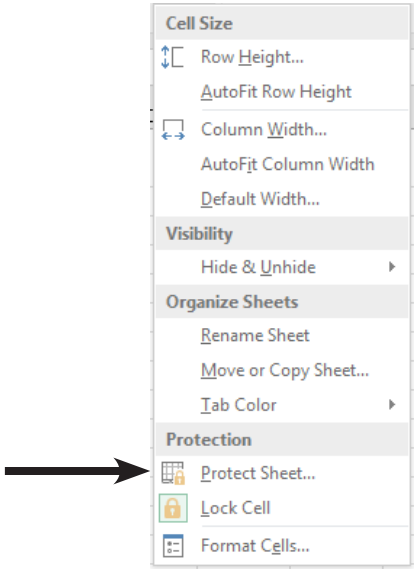
Once you have protected the document, you will only be allowed to change those cells that have been unlocked. Many of the commands will be gray because the cells are locked.

- Click on the **[Protect Sheet]** button in the **Changes Group** on the *Review Tab*.

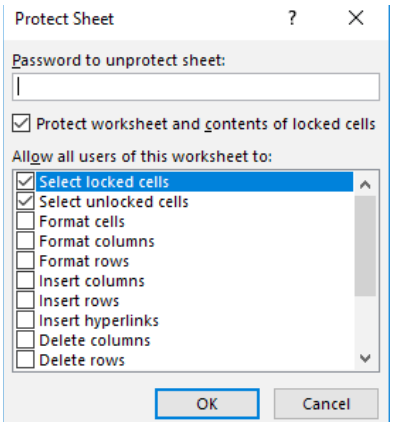


- OR -

- Click on **[Format]** button in the **Cells Group** on the *Home Tab*, , select ***Protect Sheet*** from the menu.



- The *Protect Sheet* dialog will open.



Note

Be careful not to forget your password. If you lose it or forget it, there is nothing you can do. You are locked out until you can remember it.

Protecting Worksheets, continued

- Under ***Password to unprotect sheet:*** enter a password, if desired. (Passwords are case sensitive.)
- Under ***Allow all users of this worksheet to:*** select those items you wish users of the worksheet to do. The default selections are:
  - *Select locked cells* - You can select the locked cells in a worksheet, but not change them.
  - *Select unlocked cells* - You can select these cells and change them.
- Click **[OK]** or press **[Enter]**. If you have entered a password, the *Confirm Password* dialog is displayed. Type the password again then click **[OK]** or press **[Enter]**.

Examine the ribbon and notice that there are many commands that are no longer available since the worksheet is protected.

Action 5.1 - Protecting Worksheet Elements

Instructions:	Results/ Comments:
1. Open the file **Protection**.	
2. Save the file as **My Protection**.	**[F12]**.
3. Select cell **F1**.	The Target Growth value cell.
4. On the ***Home Tab*** in the **Cells Group**, click on **[Format]** button drop-down and select *Lock Cell*.	This unlocks the selected cells. These cells will be unprotected when we protect the worksheet.
5. Select cells **B7:D7**.	These cells need to be unlocked.
6. Right-click the selected cells and choose *Format Cells* from the menu.	The *Format Cells* dialog will appear.
7. In the *Format Cells* dialog, activate the ***Protection*** tab.	The Protection options are displayed in the dialog.
8. Uncheck the ***Locked*** checkbox and click the **[OK]** button.	The cells are unlocked
9. Click on **[Format]** button drop-down again, then click on *Protect Sheet*.	The *Protect Sheet* dialog opens.
10. In the **Password:** field enter **Test**.	You can leave this blank if you want.
11. Examine the options for ***Allow all users of this worksheet to:*** *Select locked cells* and *Select unlocked cells* are checked. These are the default settings.	If an option is checked, you are allowing users to preform that action.
12. Click **[OK]** or press **[Enter]**.	The *Confirm Password* dialog opens.
13. Re-enter the password in the *Confirm Password* dialog and click the **[OK]** button.	The worksheet is now protected.
14. In cell **B2**, type **< 100000 >**.	The following message will be displayed: *"The cell or chart you are trying to change is on a protected sheet."*.

Instructions:	Results/ Comments:
15. Click **[OK]**.	To bypass the message.
16. Change **F1** to **0.25** and press **[Tab]**.	Since this cell is unprotected, you can type in it. Notice column **C** now needs to be widened.
17. Click the **[Format]** button and try to change the column width.	Because we have protected the document, many of the menu choices are not available.
18. Select cell **D7** and notice the formula is displayed in the formula bar.	Because the cell is not Hidden, the formulas are still visible.
19. On the ***Formulas Tab*** in the **Formula Auditing Group**, click the **[Show Formulas]** button.	The formulas are all displayed in their cells.
20. On the ***Formulas Tab*** in the **Formula Auditing Group**, click the **[Show Formulas]** button.	The values are now displayed.
21. Save the file.	**[Ctrl + S]**.

Unprotecting a Worksheet

Note

Turning off worksheet protection does not lock the cells you have unlocked. Therefore, to protect the same cells again, you can simply turn the protection back on.

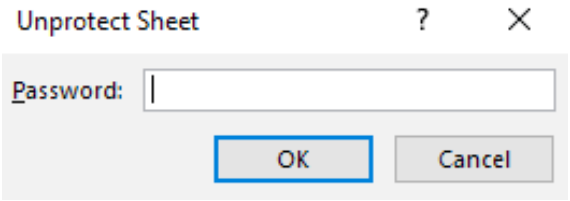
Unprotecting the Worksheet

When more changes are needed than allowed while the worksheet is protected, it will be necessary to unprotect the worksheet in order to make those changes. If you want to make changes to the worksheet again, you will need to turn off the protection or unprotect the worksheet.

- Click on **[Format]** button drop-down in the **Cells Group** on the ***Home Tab***, click *UnProtect Sheet*.

- OR-

- Click the **[Unprotect Sheet]** button in the **Changes Group** on the ***Review Tab***.
- If a password was used to protect the worksheet, you will be prompted to enter the password to Unprotect the worksheet.



- Type the password, if needed and press **[Enter]**.

Hidden Cells

Hidden Formulas

While worksheet protection prevents others from changing formulas it does not necessarily prevent them from seeing the formulas. If users are allowed to selected locked cells while the worksheet protection is on, they can look in the formula bar to see the cells contents. Even if they are not allowed to select locked cells while worksheet protection is on, they can use the **[Show Formulas]** button and see all formulas in the worksheet.

Note

If the cell is unlocked, hiding a formula does not protect it.

It is possible to prevent users from seeing the formulas on protected worksheets by using the ***Hidden*** checkbox on the ***Protection Tab*** of the *Format Cells* window. Checking this checkbox will prevent formulas from being displayed when the worksheet is protected.

- If you have already protected the worksheet, you will need to unprotect the sheet following the previous instructions.
- Select the cells containing formulas that need to be to hidden.
- Right-click selected cells and choose *Format Cells*.

- OR-

- Click the **[Format]** button drop-down in the **Cell Group** on the ***Home Tab***, select *Format Cells*.
- The *Format Cells* dialog displays. Click on the ***Protection*** tab.
- Check the Hidden checkbox. Click **[OK]** or press **[Enter]**.
- Re-protect the worksheet.
- Select a cell containing a formula and notice the ***Formula Bar*** is empty.
- Try using the **[Show Formulas]** button on the ***Formulas Tab***. The cells with formulas are blank.

Note

When cells have a mix of Locked and Unlocked or Hidden and Unhidden states the checkboxes show as filled boxes.

Action 5.2 - UnProtecting Worksheet

Instructions:	Results/ Comments:
1. The **My Protection** workbook should still be open.	If not, reopen the file.
2. On the ***Home Tab*** in the **Cells Group**, click on **[Format]** button drop-down and select *Unprotect Sheet*.	The *Unprotect Worksheet* dialog opens.
3. Enter the password in the **Password:** field and click the **[OK]** button.	The worksheet is unprotected.
4. On the ***Home Tab*** in the **Cells Group**, click on **[Format]** button drop-down to see that all the options are available.	All the options are available.
5. Select column **C** set the cursor between columns **C** & **D** and double-click when the double headed arrow appears.	The column width is auto-adjusted.
6. Select cell **B7** and enter, 7. 8. **=SUM(B3:B6)** Use the **[Ctrl + Enter]** shortcut to enter the formula.	
9. Use Autofill over to cell **D7**.	**[Ctrl +S]**.
10. Save the file.	

Action 5.3 - Hiding Formulas

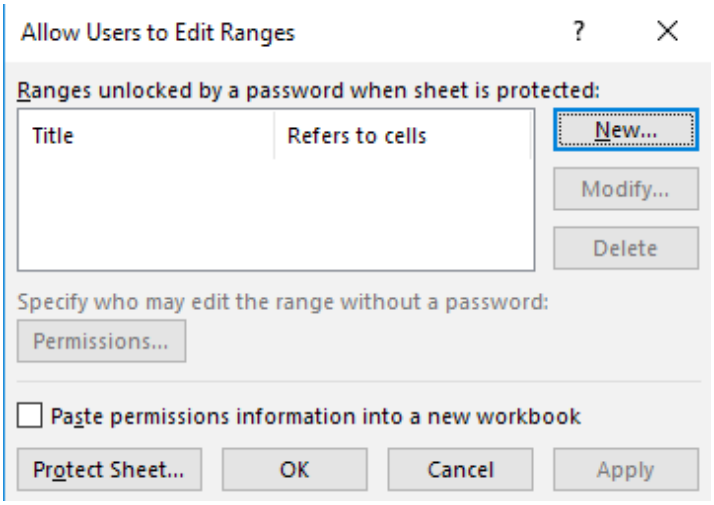
Instructions:	Results/ Comments:
1. The **My Protection** workbook should still be open.	If not, reopen the file.
2. Select cells **B3:D6**.	You will hide the formulas in these cells from view while the worksheet is protected.
3. Right-click the selected cells and choose *Format Cells* from the menu.	The *Format Cells* dialog opens.
4. In the *Format Cells* dialog, activate the ***Protection*** tab.	If necessary.
5. Check the ***Hidden*** checkbox and click the **[OK]** button.	
6. On the ***Review Tab*** in the **Changes Group**, click on **[Protect Sheet]** button.	The *Protect Sheet* dialog opens.
7. Leave the defaults as is and **Password:** field blank and click the **[OK]** button.	The worksheet is now protected.
8. Select cell **D6** and notice the formula is not displayed in the formula bar.	When cells are formatted as hidden formulas are not displayed in the formula bar.
9. On the ***Formulas Tab*** in the **Formula Auditing Group**, click the **[Show Formulas]** button.	The values in cells containing formulas are hidden but, since cells **B3:D7** are not displaying anything.
10. Notice cells **B2** displays the formulas of **TODAY()**. and the formulas in cells **B7:D7** are also displayed.	Since these cells were not formatted as hidden, the formulas are displayed.
11. On the ***Formulas Tab*** in the **Formula Auditing Group**, click the **[Show Formulas]** button.	The values in cells **B3:D7** are redisplayed.
12. Save the file.	**[Ctrl + S]**.

Allow Users to Edit Ranges

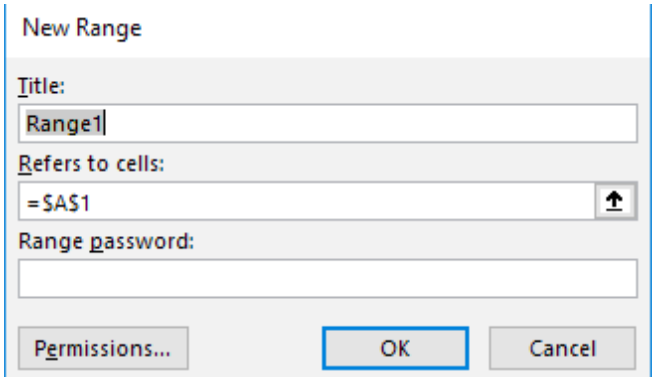
Sometimes you may want different users to have access to only their input ranges in a workbook, for these situations the tool to use will be the **Allow Users To Edit Ranges**. This will allow you to select input ranges and assign individual passwords for each user so there is no chance the anyone will enter their specific information in an incorrect area of the worksheet.

Setting up the ranges

- Click the **[Allow Users to Edit Ranges]** button in the **Changes Group** on the ***Review Tab***.
- The *Allow Users to Edit Ranges* dialog opens.



- Click the **[New]** button.
- The *New Range* dialog opens.



Allow Users to Edit Ranges, continued

Note

For a more detailed explanation of the permissions options go to: https://technet.microsoft.com/library/dn789205

- Give the range a Name.
- If necessary highlight the cell or range of cells.
- Assign a password to the selected cells.
- Repeat these steps until all the users who need access to the worksheet are included in the list.
- Click the **[Protect Sheet]** button to open the *Protect Sheet* dialog.
- Assign your password and choose what actions users can perform while working in the worksheet.
- Click the **[OK]**.
- Reenter your password in the *Password Confirmation* dialog and click the **[OK]**.
- Save the workbook.
- Remember to send each user their password so they can access the part of the worksheet they need to access

Action 5.4 - Allowing Multiple Users Access to a Worksheet

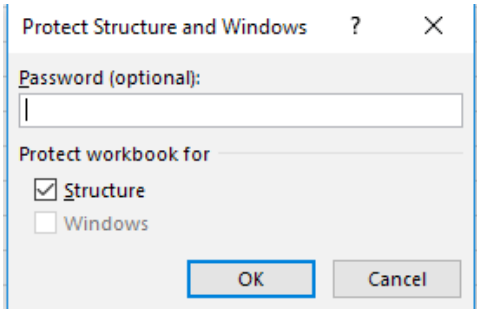
Instructions:	Results/ Comments:
1. The **My Protection** workbook should still be open.	If not, then reopen it.
2. Select the ***Sales*** sheet.	The second worksheet.
3. On the ***Review Tab*** in the **Changes Group**, click on **[Allow Users to Edit Ranges]** button	The *Allow Users to Edit Ranges* dialog opens.
4. Click the **[New]** button in the *Allow Users to Edit Ranges* dialog.	The *New Range* dialog opens.
5. In the **Title:** field enter **James.** Click into the **Refers to cells:** field, then highlight cells **B3:M3** on the ***Sales*** sheet.	These are the cells which James will be able to edit.
Click into the **Range Password:** field enter **James.**	This is his unique password to access his range of cells.
6. Click to **[OK]** button.	The *Confirm Password* dialog opens.
7. Re-enter the password and click the **[OK]** button.	The *Allow Users to Edit Ranges* dialog is displayed again.
8. Repeat steps 4 through 9 for the other three sales reps accordingly.	Apply the names as both Title and Password for each.
9. Click the **[ProtectSheet]** button in the *Allow Users to Edit Ranges* dialog	The *Protect Sheet* dialog opens.
10. The the **Password:** field enter **12345** and click the **[OK]** button.	The *Confirm Password* dialog opens.
11. Try changing the value in cell **B3**.	The *Unlock Range* dialog opens. If the user does not know the correct password, they can not modify the data.
12. Save the file.	**[Ctrl + S]**.

Protecting Workbooks

Protecting a Workbook

Protecting a workbook prevents other users working in the workbook from moving, deleting, hiding, unhiding, renaming or inserting worksheets. This should be done after all the worksheets have been structured and protected.

- Open the workbook you would like to protect.
- Click on the **[Protect Workbook]** button in the **Changes Group** on the ***Review Tab***.
- The *Protect Structure and Windows* dialog opens.



- Select ***Structure*** **-** to prevent the deletion, inserting, renaming, moving, hiding and unhiding of worksheets.
  - ***Password*** **-** to keep others from removing workbook protection. (this is optional)
  - When using a password you will be prompted to confirm the password.
- Click **[OK]** or press **[Enter]**.

Unprotecting a Workbook

- Open the workbook
- Click on the **[Protect Workbook]** button in the **Changes Group** on the ***Review Tab***.
  - The button is highlighted to let you know the workbook is currently protected.
- If a password use used to protect the workbook, you will be prompted to enter the password.

Action 5.5 - Protecting a Workbook

Instructions:	Results/ Comments:
1. The **My Protection** workbook should still be open.	If not, then reopen it.
2. Right-click either of the sheet tabs and examine the menu.	All the options in the menu are available.
3. On the ***Review Tab*** in the **Changes Group**, click the **[Protect Workbook]** button.	The *Protect Workbook* dialog opens.
4. Leave the **Password:** field blank, check the ***Structure*** checkbox and click the **[OK]** button.	The workbook is now protected. If you had entered a password the *Confirm Password* dialog would have opened.
5. Click the **[New Sheet]** button.	The **[New Sheet]** button is greyed out.
6. Right-click either of the sheet tabs and examine the menu.	Most of the menu options are greyed out.
7. Save the file.	**[Ctrl + S]**.

Protecting the File with Encryption

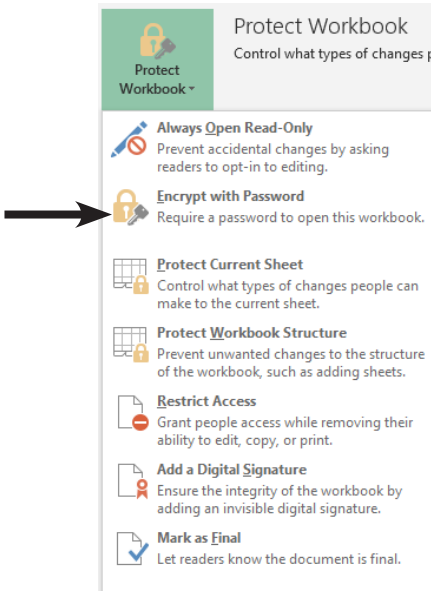
File Encryption

Some of the workbooks you create may contain confidential information that you might want to protect against unauthorized access. Using Password Protection allows documents to only be accessed if the user enters the correct password. Since 2007, *Excel* provides greater security than previous versions by adding file encryption. Encryption is a standard method used to help make the file more secure.

Although it is NOT a rule, it is strongly recommended that you create a password that uses both upper and lower case letters, numbers, and symbols. Your password can contain up to 255 characters.

Encrypting a File

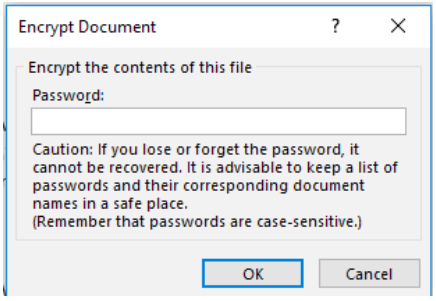
- Click the ***File Tab***, select **Info**, from the ***Protect Workbook*** drop-down choose *Encrypt with Password*.



Note: Worksheet and workbook protection can also be accessed from this menu.

Note: While Marking As Final does disable editing tools in relation to the file, it is not considered a security feature. Removing the Mark as Final status enables all editing controls.

- The *Encrypt Document* dialog opens.



Protecting the File the File with Encryption, continued

- Enter a password in the ***Password*** field. Click **[OK]**.
- Re-enter the password in the *Confirm Password* dialog. Click **[OK]**.
- Save the file.
- Once the worksheet is saved with a password, any future attempt to open the workbook will cause *Excel* to display a dialog prompting the user for the password.

Note

When selecting a password, make sure it is a password that you can remember.

Removing a File Encryption

- The workbook you would like to remove the password from should be open.
- Click the ***File Tab***, select **Info,** from the ***Protect Workbook*** drop-down menu choose *Encrypt with Password*.
- The *Encrypt Document* dialog opens.
- Highlight the password, then press **[Delete]**. Click **[OK]**.
- Save the file.

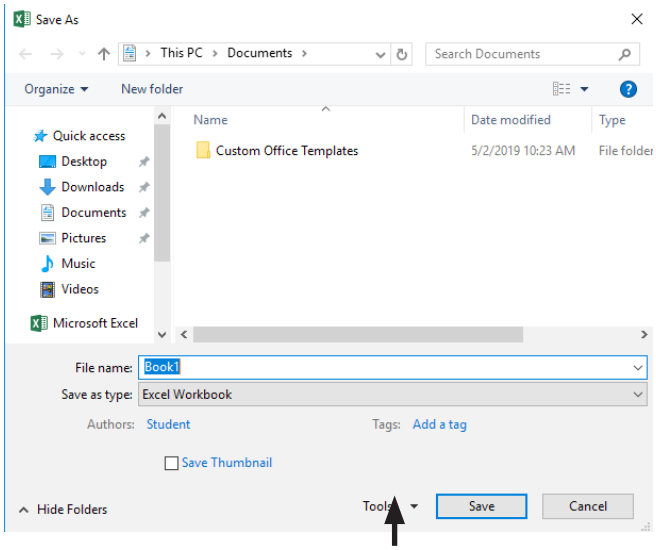
Protecting the File with Passwords

Workbook Passwords to Open/Modify

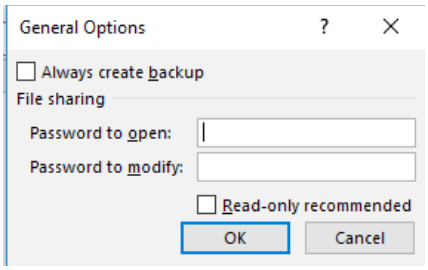
Setting a password to open and/or modify a document does not use encryption and therefore is not as secure. This is designed to share the document with individuals you trust.

Setting Passwords

- Click on the ***File Tab***.
- Select **Save As** and the *Save As* dialog opens. Choose a location to save the document.
- Click on ***Tools***, then select *General Options*.



- The *General Options* dialog opens.



- Enter a Password up to 15 characters to open the file. This will limit access to the file
- If you wish, you can also enter a Password up to 15 characters to modify the file.

-OR-

- If you want to make the file a Read-only file, click on the check box.

Protecting the File with Passwords, continued

- Click **[OK]**.
- Re-enter the password(s) in the *Password Confirmation* dialogs and click **[OK]**.
- In the *Save As* dialog, click **[Save]** or press **[Enter]**.

Removing Workbook Passwords

- Click on the ***File Tab***.
- Select **Save As**. The *Save As* dialog opens.
- Click on ***Tools*** (lower right hand corner), then select *General Options*. The *General Options* dialog opens.
- Highlight the password(s) and press **[Delete]**. Click **[OK]**.
- Click **[Save]**.

Action 5.6 - Protecting an Excel file

Instructions:	Results/ Comments:
1. The **My Protection** workbook should still be open.	If not, then reopen it.
2. Click the ***File Tab***.	The BackStage view opens.
3. Select the *Info* category on the right side of the BackStage view.	If necessary.
4. Click the **[Protect Workbook]** button to expand the choices.	The list of workbook protection options is displayed.
5. Select the *Encrypt with Password* option.	The *Encrypt Document* dialog opens.
6. In the **Password:** field enter, **Protected** and click the **[OK]** button.	The *Confirm Password* dialog opens.
7. Re-enter the password and click the **[OK]** button.	The **[Protection]** button is highlighted and informs you that a password will be required to open the workbook in the future.
8. Save and close the workbook.	
9. Open the **My Protection** workbook.	The *Password* dialog opens.
10. Enter the password to open the file.	
11. Click the ***File Tab***.	The BackStage view opens.
12. Select the *Info* category on the right side of the BackStage view.	If necessary.
13. Click the **[Protect Workbook]** button to expand the choices.	The list of workbook protection options is displayed.
14. Select the *Encrypt with Password* option.	The *Encrypt Document* dialog opens.
15. Delete the password and click the **[OK]** button.	The Password Encryption is removed.
16. Save the file.	**[Ctrl + S]**.

Instructions:	Results/ Comments:
17. Click the ***File Tab*** and choose *Save As* from the left side of the BackStage view.	**[F12]**, the *Save As* dialog opens.
18. Click the **[Browse]** button, if necessary to open an explorer window.	
19. Click the **[Tools]** button drop-down and choose *General Options* from the list.	The *General Options* dialog opens.
20. Enter a password in the **Password to open:** and **Password to modify:** fields.	
21. Click the **[OK]** button twice.	The first **[OK]** will take you back to the *Save As* dialog and the second will save the file.
22. Close the file.	**[Ctrl + W]**.
23. Reopen the file.	**[Ctrl + O]**.
24. Enter the passwords as the dialogs appears.	You must enter the passwords to open and modify the file.
25. Tap the **[F12]** key to open the *Save As* dialog.	
26. Click the **[Tools]** button drop-down and choose *General Options* from the list.	
27. Delete the passwords in both fields.	This will remove the passwords from the file and basically unprotect the file.
28. Click the **[OK]** button twice.	

Workbooks Versions (optional)

Office automatically saves versions of your *SharePoint*, *OneDrive*, and *OneDrive for Business* files while you're working on them. These versions allow you to look back and understand how your files evolved over time and allow you to restore older versions in case you have made a mistake.

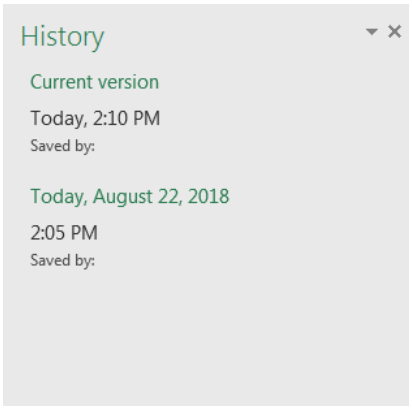
Note

If the *History* category is not listed among the categories on the left side of the Backstage, it's possible that you don't have a subscription version of Office. Click the Info button on the navigation pane and see if you can access Version History there.

Accessing Workbook Versions

Important: Version history in Office only works for files stored in *OneDrive, OneDrive for Business* or *SharePoint Online*. If you don't see this option it's possible your file is stored in a different service or on a local device.

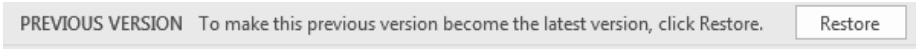
- Open the file stored on *SharePoint, OneDrive*, and *OneDrive for Business* you were previously working on.
- Click the ***File Tab*** then click the *History* category on the left to open the ***History Pane.***



- In this pane you can view and restore previous versions.
- To open and view an earlier version simply double-click the file version The file will open in a separate window as a *Read Only* copy.

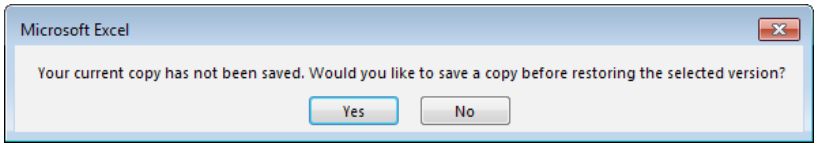
To Restore a Historical Version

- When viewing the version you want to restore, click **[Restore]** button in the message bar just below the ribbon.



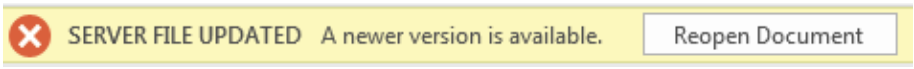
Workbooks Versions (optional), continued

- A *Save Warning* dialog opens.

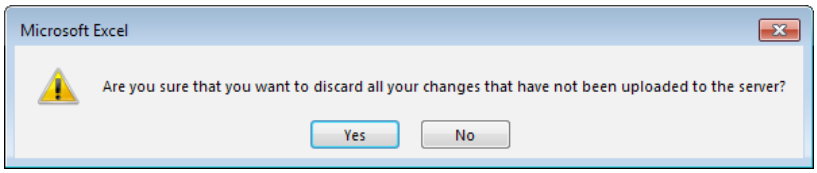


  - Clicking the **[Yes]** button will update the file to the version being restored, overwriting the newer version with the older.
  - Clicking the **[No]** button will open the restore copy without saving changes

- The Message Bar will now inform you that a newer version is available.



- Click the **[Reopen Document]** button to open the latest version.
- A warning dialog opens to verify that you wish to overwrite the current version with changes from the newer version, that was just created.



- Restore will save your current file as a new version and then replace your current file with the contents of the version you chose to restore.

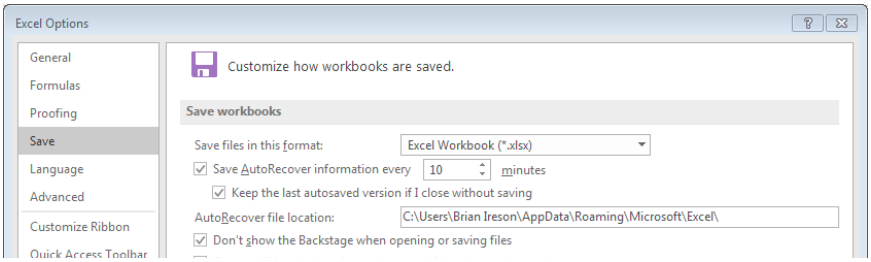
Workbooks Versions (optional), continued

The AutoRecover Feature

When your computer crashes or locks up before you were able to save the workbook, *Excels'* AutoSave can come to the rescue. In the Options window of *Excel* you are able to set the time increment from the AutoSave feature. *Excel* is saving a copy of the workbook in a temporary location for retrieval.

Setting the AutoSave options

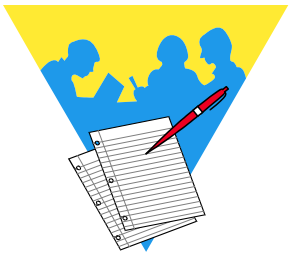
- Open the *Excel Options* window
- Select Save from the list of categories on the left.



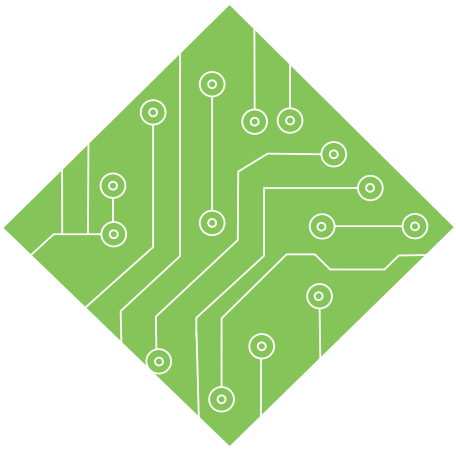
- Set the time interval you want in the **Save AutoRecover information every ___ minutes** field.
- You can also change where the files are store by enter a new folder location in the **AutoRecover file location:** field.
- Click the **[OK]** button to apply your modifications.

Recovery of Unsaved Workbooks

- When *Excel* is restarted you will see the AutoRecover Pane.
- Select the file being worked on last to reopen it.
- The **[Manage Versions]** button in the Backstage view (***File Tab***) lets you restore earlier versions of your document.
  - The *Open* window will automatically go to the default folder location where any unsaved files are stored.
  - If you changed the folder, you will need to navigate to the folder to access your unsaved files.



Tips and Notes

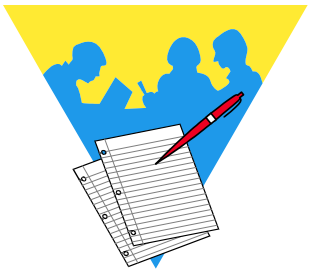


Lesson 6: Graphics, Comments, and Templates

Lesson Overview

You will cover the following concepts in this chapter:

- Graphic Objects
- Inserting Pictures
- Embedding Images
- Modifying Graphics
- Accessibility
- Notes
- Comments
- Inspecting the Document
- Templates



Lesson Notes

Graphic Objects

Graphic Objects incorporate many type of elements; images (both vector and bitmap images) stored on your system or online, shapes, smart art graphics, screen clippings and now icons and 3D models have been added to the mix. These object are used to apply corporate branding to your documents or add visual enhancements to an otherwise flat data file.

When applying corporate or agency branding, consider using colors from your logo to cell fills or text color that will reinforce your identity. Adding a logo to the cover page, the header or footer, or top of the spreadsheet sheet will help users identify and remember who made the document they are looking at.

Image looking at a list of product numbers and details, now image there are images of those products in the listings. We are visual creatures and those images help us gain a better understanding of the information being presented. Consider a list of real estate properties for sale without pictures, or a parts list without images of the parts - we simply wouldn't get as much from those files compared to files including images.

Picture Formats

Images stored on the local drive or other network drives can be inserting into workbooks. *Excel* allows for a wide variety of image formats to be inserted into workbooks, see the list below.

Format	Extension
Windows Enhanced Metafile	.EMF
Windows Metafile	.WMF
JPEG File Interchange Format	.JPG - JPEG - JFIF - .JPE
Portable Network Graphics	.PNG
Windows Bitmap	.BMP - .DIB - .RLE
Graphics Interchange Format	.GIF
Compressed Windows Enhanced Metafile	.EMZ
Compressed Windows Metafile	.WMZ
Compressed Macintosh PICT	.PCZ
Tag Image File Format	.TIF - .TIFF
Computer Graphics Metafile	.CGM
Encapsulated PostScript	.EPS
Macintosh PICT	.PCT - .PICT
WordPerfect Graphics	.WPG

Graphics,
continued

3D Model Formats

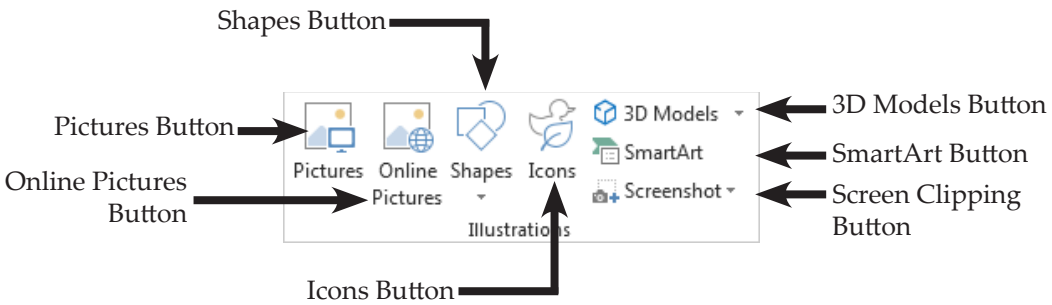
In the latest version of *Excel*, you can add 3D models of objects from files or *Microsofts' online* library. These object can be viewed or shown at any angle. 3D models stored on your system or network should be in one of the following formats to be inserted in an *Excel* file.

3D Formats
Filmbox Format (*.fbx)
Object Format (*.obj)
3D Manufacturing Format (*.3mf)
Polygon Format (*.ply)
Stereo Lithography Format (*.stl)
Binary GL Transmission Format (*.glb)

Inserting Pictures

Inserting Pictures

Image files stored on your computer or network, from online sources, or taken using the screen clipping tool can be inserted into an Excel document. All of these options are found on the I*nsert Tab* in the **Illustrations Group**.



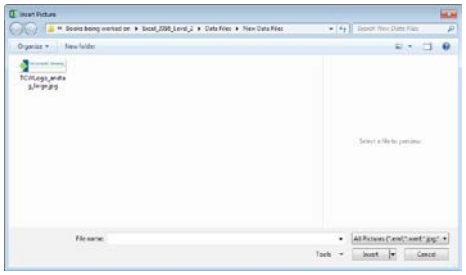
Note

Images can also be used as fills of shapes. This option allows you to adjust the transparency of images.

Inserted images are objects that float on a layer above the worksheet or can be insert images into cells.

Inserting Pictures Stored on your system

- Click the ***Insert Tab***.
- Click the **[Pictures]** button in the **Illustrations Group**.
- The *Insert Picture* dialog opens.

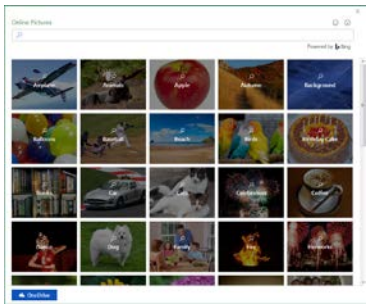


- Navigate to the folder containing the images.
- Select the desired image.
- Click the **[Insert]** button or double-click the image.

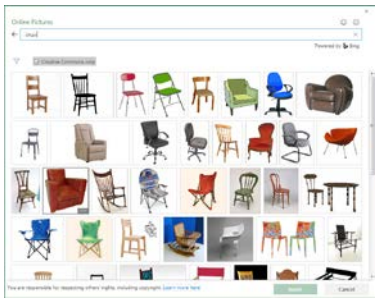
Inserting Pictures, continued

Inserting Online Images

- Click the *Insert Tab*.
- Click the **[Online Pictures]** button in the **Illustrations Group**.
- A *Bing Search* window opens.



- Type in the type of images you are searching for in the ***Search*** field or click the tile for the desired topic and press the **[Enter]** key.
  - To try a new search enter a new keyword and press the **[Enter]** key.
- The Online Pictures dialog displays the results of the search, note the Creative Commons Only check box is checked on by default.



- Scroll through the thumbnails to find a picture.
- Double-click on the picture to insert it into the worksheet or select several pictures and click on **[Insert]** button.

Note

When searching for online images, *Excel* automatically filters the results to include only images covered by Creative Commons licensing by default. This type of licensing allows otherwise copyrighted material to be used in most noncommercial or educational applications.

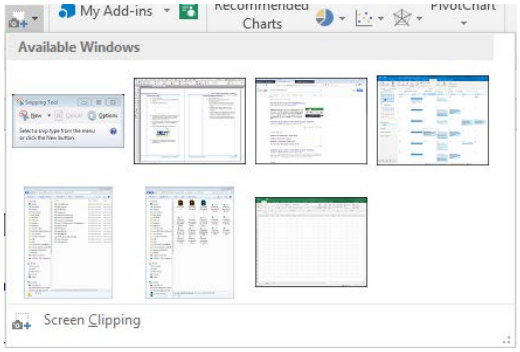
Inserting Pictures, continued

- Some images will be inserted into the file with a text box containing authoring and licensing information.

  - This text box can be edited or deleted.
  - To select the textbox, deselect the image textbox and then select the object you wish to modify or delete.

Inserting a Screenshot or Screen Clip

- Click the ***Insert Tab***.
- Click the **[Screenshot]** button in the **Illustrations**



Group.

  - A list of all open windows is displayed, choosing any of these will insert the entire window as an image.
  - Choosing *Screen Clipping* will allow you to determine only the section of the open window needed.
  - Before using the ***Screen Clipping*** option make sure that the screen you need is the last other screen or program in use before working in *Excel*.

Embedding Images

Embedding an Image Into a Cell

Once the image is inserted, sized, and positioned in relation to a row of data (a parts list with images of the parts). Adjust the column height and row width so the image will fit into a single cell or you could also select and merge the cell range below the image so the image will fit into the merged cell.

- Select the image above the cells.
- Right-click the image.
- Select *Size and Properties* from the menu.
- On the ***Format Picture Pane*** expand the *Properties* set of options.
- Click the *Move and size with cells* radio button.
- Make sure the *Print Object* and *Locked* checkboxes are checked.

Filtering data with images

To be clear, it is not possible to filter data based on images but when data is filtered the embedded images are treated as data and also filtered. With the images embedded on the row with the related data, the data can be filtered based on any column of data.

- All images have been placed on their appropriate rows of data.
- On the ***Home Tab***, click the **[Sort & Filter]** button drop-down.
- Choose Filter from the list of options.

- OR -

- On the ***Data Tab***, in the **Sort & Filter Group**.
- Click the [Filter] button in the **Sort & Filter Group**.
- Filtering controls are added to the Header row.
- Use the filtering tools in any column of data, except the column containing images.

Sorting Images as Data

If the data has been structured in a tabular form with the images embedded in single cells, the images move as the data is sorted.

Action 6.1 - Inserting an Picture from File

Instructions:	Results/ Comments:
1. Open the **Billing1.xlsx** file.	
2. Save the file as **Billing_Template.xlsx**.	**[F12]**.
3. On the ***Insert Tab*** in the **Illustrations Group**, click the **[Pictures]** button.	The *Insert Picture* dialog opens.
4. Navigate to the lessons folder and choose the **Logo.jpg** file.	
5. Click the **[Insert]** button.	The picture is inserted. It is very large and needs to be resized and moved into position.
6. Notice the ***Picture Tools Format Tab*** in the ribbon.	Since the image is actively selected, the tab is available. Try deselecting and reselecting the image to see the tab is only available while the image is selected.
7. Click on one of the corner controls of the image and drag to resize the image.	While the image is selected, control handles are visible. They allow you to resize and rotate the image.
8. Hover over the image. When the cursor is a four sided move arrow, click and drag the image to the upper left corner of the spreadsheet.	The four sided arrow cursor is the move tool.
9. Continue resizing the image to fit into the available space below the company name.	The image should not cover any of the existing text.
10. Save the file.	**[Ctrl + S]**.

Action 6.2 - Inserting an Online Picture

Instructions:	Results/ Comments:
1. Open the **SeatsUsFine.xlsx** file.	.
2. Save the file as **My_SeatsUsFine.xlsx**.	**[F12]**.
3. On the ***Insert Tab*** in the **Illustrations Group**, click the **[Online Pictures]** button.	The *Bing Insert Pictures* dialog opens.
4. Click into the **Bing Image Search:** field and type, **Chair** and tap the **[Enter]** key.	Tapping the **[Enter]** key executes the search.
5. Choose an image of a folding camping chair and click the **[Insert]** button.	The image and a caption are inserted. Notice the ***Picture Tools Format Tab*** in the ribbon. Double-clicking the chosen image will also insert it.
6. Resize and position the image so it fits into cell **A7**. Select the caption and delete it.	If necessary, delete the text box with import info. Some inserted images will include a text box with authoring and licensing info.
7. Right-click the image and choose *Size and Position* from the menu.	The ***Format Pane*** opens.
8. Expand the ***Properties*** section.	If necessary.
9. Click the *Move and size with cells* radio button, make sure the *Print object* and *Locked* checkboxes are checked.	Do this once the image is in the desired location.
10. Click the **Color** filter drop-down and uncheck the *Select All* checkbox.	Filtering should already be turned on. You may need to change color.
11. Check the Blue checkbox and click the **[OK]** button.	Only records of blue chairs is displayed, including the correct images.
12. Click the **Color** filter drop-down, check the *Select All* checkbox and click [OK].	All the chair records with their images are displayed. Try sorting based on Name.
13. Save the file.	**[Ctrl + S]**.

Action 6.3 - Inserting a Screen Clipping Image

Instructions:	Results/ Comments:
1. Make the **Billing_Template** file active.	If not, reopen it.
2. Open a browser window and navigate to **www.tcworkshop.com**	The window containing the content to clip must be the last active window before using the ***Screen Clipping*** tool.
3. Switch back to the **Billing_Template** file in *Excel*.	Hold the **[Alt]** key and tap the **[Tab]** key to switch between programs.
4. On the ***Insert Tab*** in the **Illustrations Group**, click the **[Screenshot]** button drop-down.	In the drop-down menu, a list of all open windows are shown.
5. Choose *Screen Clipping* from the menu.	*Excel* should move to the background and the browser window is visible. The window is greyed out and the cursor will be a crosshair.
6. Draw a selection around the ***Login button and phone number*** in the upper right of the web page.	As soon as you let go of the mouse button, the captured image is inserted.
7. Notice the ***Picture Tools Format Tab*** in the ribbon.	This is another image and as such you use the same editing tools
8. Click on one of the corner controls of the image and drag to resize the image.	
9. Hover over the image. When the cursor is a four sided move arrow, click and drag to move the image.	
10. Tap the **[Delete]** key.	The image is not needed at this point.
11. Save the file.	**[Ctrl + S]**.

Action 6.4 - Inserting a Text Box

Instructions:	Results/ Comments:
1. The **Billing_Template** file should still be open.	If not, reopen it.
2. On the ***Insert Tab*** in the **Illustrations Group**, click the **[Shapes]** button.	You can also use the **[Text Box]** button in the **Text Group** on the ***Insert Tab***.
3. Choose the *Text Box* from the menu.	It is the first option from the menu.
4. Click and drag diagonally to create the shape of the text box.	The text box is created.
5. Type, **All invoices must be paid within ten days.**	The text is entered in the text box.
6. Notice the ***Drawing Tools Format Tab*** in the ribbon.	The tab is automatically added to the ribbon when the shape is selected.
7. Click off the text box.	The ***Picture Tools Format Tab*** in the ribbon is removed.
8. Reselect the text box and use the corner control handle to resize the box to fit the text.	The ***Picture Tools Format Tab*** in the ribbon is redisplayed. The control handles are also ready for use.
9. Hover over the text box. When the cursor is a four sided move arrow, click and drag to move the text box	
10. Position it so it is below the spreadsheet data, in line with row 24.	
11. Save the file.	**[Ctrl + S]**.

Modifying Graphics

Once a graphic element has been added to the file it may require modifications to achieve the final appearance. This can be done by using the ***Format Tab*** in the ribbon or the *Formatting* pane. When the element is selected, the ribbon displays the appropriate formatting tab automatically be it for shapes, pictures, smart art, text boxes, etc... Right-clicking an object displays the contextual menu where you can choose *Format (Object type)* to open the *Format Pane*.

There may be more than one type of ***Formatting Tab*** available at a given time, this varies in relation to the type of selected object. In the *Format* pane, the options change in accordance to the type of object being edited. Some objects are only graphic in nature, while others also offer the ability to add and modify text.

Note

Text can be edited using the **Font** and **Paragraph Groups** on the ***Home Tab***.

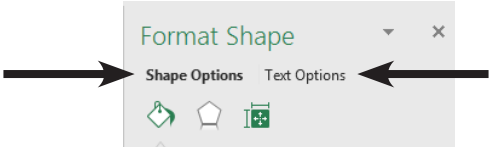
Elements of graphic objects which can be modified include: borders, fills, 3D effects, artistic effects, and shape to name a few. Formatting objects offer more options than there is time to cover within this course, so it is recommended to explore all the available options when you have time. Try playing with all the available controls to see what is possible.

Using the Format Tab

- Select the object to be edited.
- Click the ***Format Tab*** in the ribbon.
- Explore the available options in the tab.
  - The galleries offer live preview of the selected effects.

Using the Format Pane

- In the right-click contextual menu , choose *Format ...* from the menu.
- The *Format* pane opens on the right side of the screen.
- Depending on the type of object selected there are ***Shape Options*** and ***Text Options*** listed at the top of the pane. Selecting the options will display the related tools.

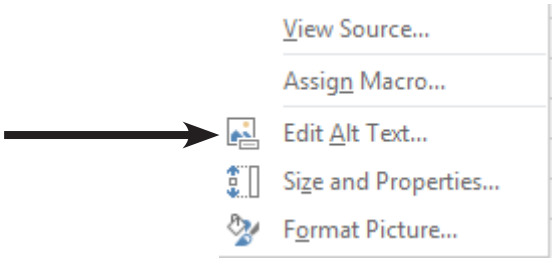


Modifying Graphics, continued

It is import to make your documents accessible to the visually impaired community. Adding Alt Text to graphic elements will help in this regard, this version of Office makes that very easy. Users who use screen reading software will hear your descriptions of the graphic elements in your files.

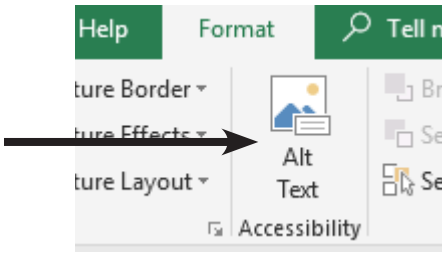
Adding Alt Text

- Select the graphic element.
- Right-click the object and choose *Edit Alt Text...* from the menu.

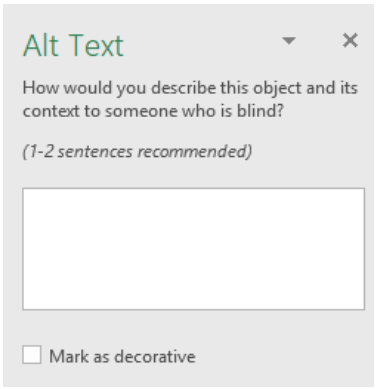


- OR -

- Select the graphic element and activate the ***Format Tab***, click the **[Alt Text]** button.



- The *Alt Text* pane opens.



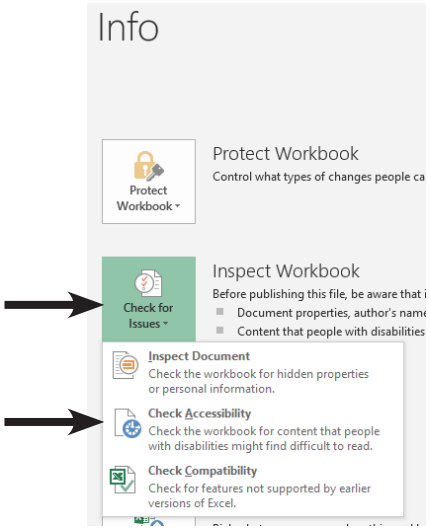
- Enter a title and brief description of the object. Be concise.

Accessibility

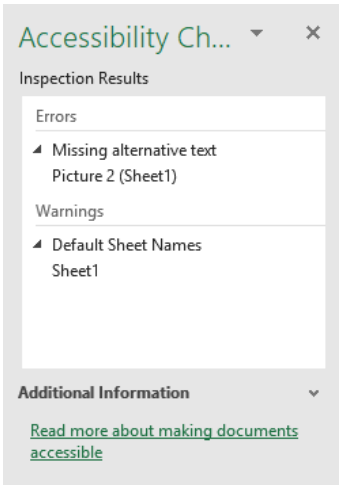
Once all the Alt Text has been added to the graphic elements in the file, it is a good idea to make sure none where missed. While adding Alt Text in very important it may not be the only issue in making the document full accessible. To check if there are any issues use the Accessibilities Checker.

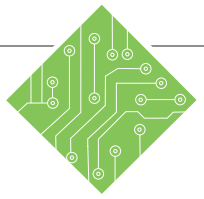
Running Accessibility Checker

- Click the ***File Tab***.
- Select the *Info* category on the left.
- Click the **[Check for issues]** button drop-down and choose *Check Accessibility*.

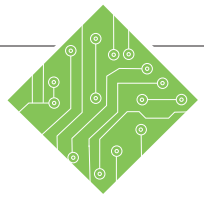


- The *Accessibility Checker* result s are displayed in a pane. If there are missing Alt Text entries, the *Alt Text* pane opens also.

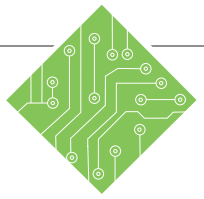




Instructions:	Results/ Comments:
1. The **Billing_Template** file should still be open.	If not, reopen it.
2. Select the *Logo* image.	The ***Picture Tools Format Tab*** is added to the ribbon.
3. Click the ***Format Tab*** in the ribbon.	Formatting controls are displayed in the ribbon.
4. Expand the **Picture Styles Gallery** drop-down.	The gallery is expanded,showing the pre-built styles.
5. Hover over each of the pre-built styles	This is a Live Preview Gallery.
6. Click the **[Picture Effects]** button in the **Picture Styles Group**.	The list of effects are displayed in a menu.
7. Scroll down to the ***Reflections*** option and select the first of the reflections from the menu.	The image now has a reflection effect applied.
8. Right-click the Logo and choose Format Picture from the menu.	The *Format Picture* pane opens.
9. Click the **Paint Bucket** icon and then click the arrow next to ***Line***.	The *Line* options are displayed.
10. Click the *Solid* radio button.	Options related to formatting the line are displayed.
11. Click the **[Color Picker]** button drop down and choose a *Green* color.	The *Color Picker* dialog is displayed,when you make a choice a border of that color is added to the picture or object.
12. Click the **[Increase Width]** spinner to set the width to *1.5pt*.	The width of the border is now 1.5pts.
13. Click the **[Effects]** button.	The Pentagon button at the top of the *Format Picture* pane.



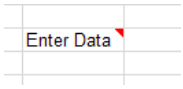
Instructions:	Results/ Comments:
14. Expand the *Artistic Effects* option.	The **[Effects]** button is active.
15. Click the **[Effects]** button and choose *Pencil Sketch* from the menu.	All the ***Artistic Effects*** are displayed in the menu. The selected effect is applied.
16. Click the **[Reset]** button..	The effect is removed.
17. Select the Text Box.	The *Format Picture* pane changes to *Format Shape* pane.
18. Select *Text Options* at the top of the *Format Shape* pane.	The Text formatting controls are displayed in the pane.
19. Click the **[Text Box]** button.	The last of the three buttons near the top of the pane.
20. Expand the ***Text Box*** options if necessary and set the ***Vertical alignment*** to *Middle*.	The text is now vertically aligned.
21. On the ***Home Tab*** in the **Paragraph Group** click the **[Center Align]** button.	The text is now center aligned in the text box.
22. Select *Shape Options* at the top of the *Format Shape* pane.	The text box shape controls are displayed in the pane.
23. Click the **Paint Bucket** icon and then click the arrow next to ***Line***.	The Fill and Line options are displayed.
24. Click the *Solid* radio button.	The Line options are displayed.
25. Click the **[Color Picker]** button drop down and choose a *Green* color.	A green border is applied to the text box.
26. Click the **[Increase Width]** spinner to set the width to *1.5pt*.	The width is set.
27. Click the **[Close]** button in the *Format Shapes* pane.	The *Format Shape* pane closes
28. Save the file.	**[Ctrl + S]**.



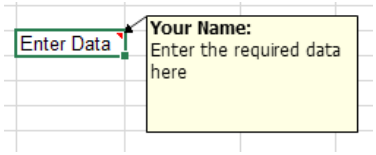
Instructions:	Results/ Comments:
1. The **Billing_Template** file should still be open.	If not, reopen the file.
2. Right-click the *Logo* image and choose *Edit Alt Text* from the menu.	The *Alt Text* pane opens.
3. In the *Alt Text* pane, click into the field and type in: **This is The Computer Workshop Logo**.	The description should be short and concise.
4. Save the file.	**[Ctrl + S]**.
5. Switch to the **MySeatsUsFine** workbook.	[Alt + Tab].
6. Click the ***File Tab***, select the *Info* category.	The *BackStage* is displayed and controls related to the document information is shown.
7. Choose *Check Accessibility* from the **[Check for issues]** button drop-down.	The *Accessibility Checker* pane opens and displays any issues.
8. Select *Missing alternative text / picture* from the listed issues.	The lower half of the pane shown additional information to explain what the issue is and how to address it. The selected picture also has a drop-down arrow offering ***Recommended Actions***.
9. Click the drop-down for the picture and choose *Add a description* from the menu.	The *Alt Text* pane opens.
10. Add an Alt Text of your own.	
11. Examine and fix the other issues.	Follow the recommendations to fix the issues.
12. Rerun the Accessibility Checker.	There should be no issues displayed in the pane.
13. Save and close the file **MySeatsUsFine**.	**[Ctrl + S]** and **[Ctrl + W]**.

Notes

Excel's new Notes are used as comments were in earlier versions of the application, use them to make notes or annotations to other users of the workbook. Commenting is now used as collaborative discussion spaces during the creation of workbooks. Cells with notes attached to them will display a red triangle in the upper right hand corner.

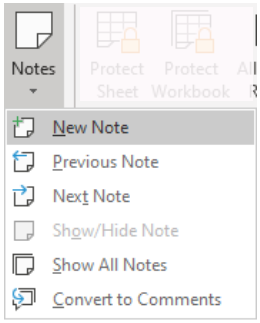


When the user hovers over the noted cell, the note pops open so they can read the note. As the cursor moves away from a noted cell the note disappears.



Inserting a Note

- Click the cell you want to attach a note to.
- Select the ***Review Tab*** and click the **[Note]** drop-down button and choose *New Note* from the menu



- OR -

- Right-click on the cell and choose *New Note* from the shortcut menu.
- In the text box enter your note. Your name will appear at the top of the comment box. If you don't want your name to appear, you can delete it.
- Resize and format as desired (see below).
- When you are finished, click outside the box. A small red triangle is placed in the upper right corner of the cell to indicate a comment is attached to the cell.

Notes,
continued

Resizing a Note

When you have entered all of the text into the note box, it may be necessary to enlarge the note in order to view all of the text.

To Resize the Note:

- Right-click the note and choose *Edit Note* or *Show/Hide Note* from the menu.

- OR -

- With the cell selected, go to the ***Review Tab*** in the **[Notes]** drop--down choose *Edit Note* from the menu.

- Point to a resize handle (similar to the resize handles on images and shapes). When you see a double-headed arrow click and drag it outward (to make the box larger) until you have reached the desired size. Dragging the handle inward will make the box smaller.

Formatting a Note

Text entered in a note can be formatted just like any other text. The note (textbox) can also be format from within the *Format Comment* dialog. To access the *Format Comment* dialog, right-click the note and choose *Format Comment* from the menu.

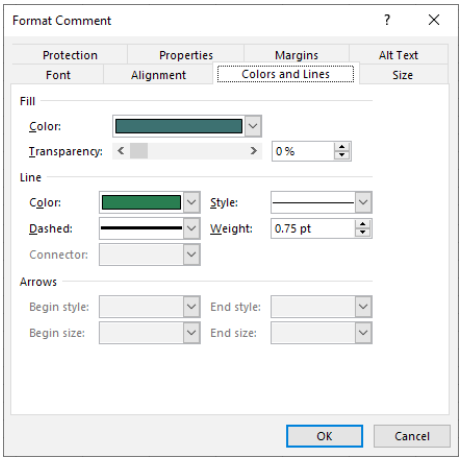
- Select the noted cell and choose *Edit Note* or *Show/Hide Note* from the menu.

- Highlight the text, go to the ***Home Tab*** and use the **Font Group** formatting tools to change font, font size color, etc...

- Right-click the note border and choose *Format Comment*. In the dialog you can change switch tabs to access controls for all aspects of the note.

Note

To access the full *Format Comment* dialog, you need to right-click directly on the border of the note. If you right-click in the note the *Format Comment* dialog will only offer text formatting controls.



Notes,
continued

Viewing Notes

Viewing a Single Note

- Pass the mouse over the cell with the triangle to view the note. This will keep the note in view as long as you are pointing to it.

Showing a Note

- Right-click on the cell containing the note and select *Show/Hide Note* from the shortcut menu. The note will remain in view until you select *Hide Comment* from the shortcut menu.

- OR -

- Choosing *Show/Hide Note* from the **[Notes]** button drop-down on the ***Review Tab***.

Showing All Notes

- On the ***Review Tab***, click the **[Notes]** button drop-down and choose *Show All Notes*.
  - To hide all the notes, repeat the same steps used to show all notes.

Editing a Note

Notes may need to be changed as the workbook is developed or is modified, changes can be to content, formatting, size, or position.

- Right-click in the cell containing the note to be edited and choose *Edit Note* from the menu.

- OR -

- Click in the cell containing the note. Click on the **[Note]** button drop-down on the ***Review Tab*** and choose *Edit Note*.
- Make the required changes and click outside the box when you are finished.

Deleting a Note

- Right-click the noted cell and choose *Delete Note* from the menu.

- OR -

- On the ***Review Tab***, click the **[Delete]** button in the **Comments Group**.

Notes,
continued

Printing Notes

- Notes can be printed with the worksheets or workbook by clicking the ***File Tab*** and choosing ***Print***. **[Ctrl + P]**
- Click the **[Page Setup]** link.
- On the ***Sheet*** tab. Click on the down arrow on the Comments box and select *At end of sheet.*
- Click **[OK]**.
- In the *Print Preview* pane use the next page button until the comments sheet is shown.
- Print the worksheet as you normally would.

- OR -

- If you want the Notes printed as they are on the worksheet, you must shown and arrange the Notes before opening the Print window.
- Select the ***File Tab*** and choose ***Print***.
- Click the **[Page Setup]** link.
- On the ***Sheet*** tab. Click on the down arrow on the Comments box and select *As displayed on sheet (legacy).*
- Click **[OK]**.
- Print the worksheet as you normally would.

Action 6.6 - Inserting and Using Notes

Instructions:	Results/ Comments:
1. The **Billing_Template file** should still be open.	If not, open it.
2. Click in cell **C12**.	This is the cell we want to insert our first Note.
3. On the ***Review Tab*** in the **Notes Group, c**lick the [**Notes**] button drop-down and choose New Note.	A note box will appear on the screen. You can also right-click the cell and choose *New Note* for the menu.
4. Type the following: **See legend for codes.**	If you wish, you can delete the author's name at the top of the note box.
5. Click any other cell on the worksheet to deselect the note.	A red triangular will appear in the upper right corner of the cell to indicate the cell has a note attached to it.
6. Point to the red triangle in cell **C12**.	The note will appear.
7. Move the mouse away from the cell.	The note will disappear.
8. On the ***Review Tab***, in the **Notes Group**, click the **[Notes]** button drop-down and choose *Show/Hide All Notes* .	All the notes on the worksheet are displayed.
9. Repeat step 8 to Hide the notes.	All notes are hidden.
10. Right-click cell **F6**, choose *Edit Note* .	The note opens.
11. In the note box, set the cursor at the end of the existing text and type: ##-##-## when finished, click outside the box.	The note is edited and disappears when deselected.

Instructions:	Results/ Comments:
12. Right-click cell **F7**, choose *Show/Hide Note*.	To show a single note on the screen.
13. Select cell **C1**.	The note remains displayed.
14. Point to the center bottom resize handle and drag down until the entire note comes into view.	The note is now large enough to display all its text.
15. Right-click cell **F7,** choose *Show/Hide Note*.	The note will no longer be displayed.
16. Right-click on cell **F8,** choose Delete Note.	The note is removed from the cell.
17. Save the file.	**[Ctrl + S]**.

Comments

Comments

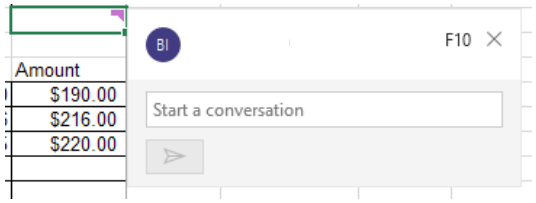
In Excel 365/ 2019 Comments are now used as a method of creating a threaded discussion tool. When working collaboratively, use comments to post questions and replies with colleagues as you develop workbooks. When the workbook is saved in OneDrive or on SharePoint, comment conversations can be held in real-time. When the workbook is stored on a network drive, users can still reply back and forth but not in real-time since workbooks are no longer shared as in the past.

Inserting a Comment

- Right-click the cell to be commented on and choose *New Comment* from the menu.

- OR -

- Select the cell to be commented on, go to the ***Review Tab*** and in the **Comments Groups** click the **[New Comment]** button.



- The new comment opens and you simply type your comment into the **Start a Conversation** field and click the **[Arrow]** button to post it.
  - The **[Arrow]** button will become active once text is added in the **Conversation** field.
- After the comment is posted, a **Reply** field is displayed when the comment is active. The next user can click into the **Reply** field and type thier response and click the **[Arrow]** button.

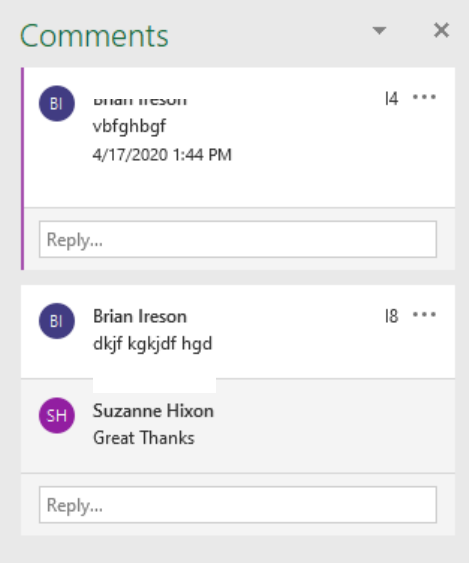
Viewing Comments

To see the comments on a cell, hover over the cell. Cells with comments have a purple comment icon in the upper right corner.

Comments,
continued

Showing All Comments

- Go to the *Review Tab*, in the **Comments Group** click the **[Show Comments]** button.
- The *Comment* pane will open to the right side of the application.

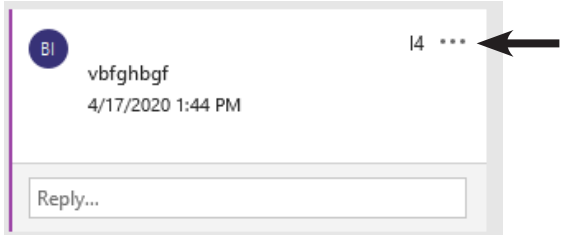


- All the comments are displayed, to view the threaded conversation of the comment, click the desired comment.
  - The conversation is expanded.
  - You are even able to add replies from within this pane.

Deleting a Thread

Once the discussion is completed and no long necessary, you are able to remove it from the file.

- In the pop-up of the comment or in *Comments* pane, there is an options button in the upper right corner.



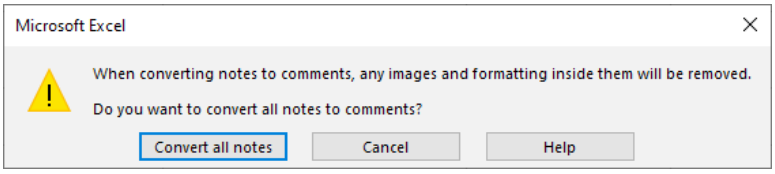
- Click the **[Options]** button and choose *Delete Thread*.
-

Comments,
continued

Convert Notes to Comments

Sometimes existing notes in the worksheet need to be converted into comments. This will open up all the notes for discussion. *Excel* offers the ability to convert notes into a comment.

- On the ***Review Tab***, click the **[Notes]** button drop-down and choose *Convert to Comments* from the menu.
- A warning window opens before the note is converted.



  - This will remove any formatting associated to the note as it is converted.

Action 6.7 - Inserting and Using Comments

Instructions:	Results/ Comments:
1. The **Billing_Template file** should still be open.	If not, open it.
2. Right-click cell **H2**, choose New Comment from the menu.	A new comment window appears.
3. Click into the **Start a conversation** field and type: **Should we use this as a template?** Then click the **[Arrow]** button.	This is a general question to your colleagues. When the **[Arrow]** button is click the comment is posted.
4. Right-click cell **F22**, choose *New Comment* from the menu.	A new comment window appears.
5. Click into the **Start a conversation** field and type: **Check the formulas to make sure the math is right?** Then click the **[Arrow]** button.	This is a general question to your colleagues. When the **[Arrow]** button is click the comment is posted.
6. Save the file.	**[Ctrl S]**.
7. Reselect cell **H2** and click into the comment **Reply** field.	The comment pops up when you hover over the cell.
8. Type in:: **That sounds like a great idea.**	This represents a response from a colleague.
9. Click the **[Arrow]** button to post the reply.	The reply is posted.
10. On the ***Review Tab*** in the **Comments Group**, click the **[Show Comments]** button.	The *Comments* pane opens on the right of the application.
11. Click the first comment in the list.	The comment is expanded to show its' conversation.
12. Click the **[Options]** button of the comment and choose *Delete thread*.	The button is in the upper right corner, it looks like three dots in a row. The entire conversation is removed.

Instructions:	Results/ Comments:
13. On the ***Review Tab,*** click the **[Notes]** button drop-down and choose *Convert to Comments*.	A warning window opens.
14. Click the **[Convert all notes]** button.	All existing notes are converted into comments and added to the *Comments* pane.
15. Save the file.	**[Ctrl S]**.

Inspecting the Document

While in the process of developing workbooks it is good to use both Commenting and Noting tools. They allows groups of work very effectively, passing comments back and forth so everyone is on the same page and the document will be correct before being put into broader use. Once the development phase is complete, all those conversations and note need to be removed from the file before the working public copy is made available.
You are able to go through the entire workbook and remove each item one at a time or you can use the Inspect Document tool.

Inspecting the Document

It is a good idea to save a working copy of the file before removing all the markup.

- Click the ***File Tab***.
- Select the *Info* from the list of categories on the left.
- Click the **[Check for Issues]** button.
- Choose *Inspect Document* from the list.
  - If the file has not been saved you will be prompted to do so.
- The *Document Inspector* dialog opens, click the **[Inspect]** button.
  - If the checkboxes in the list are checked then *Excel* will check for those type of items.
- If *Excel* finds items associated with the category of issue, there will be a **[Remove All]** button for the category.
- Click the **[Remove All]** button next to Comments.
  - Once completed a green check mark is shown next to the category name.
  - You can re-inspect the document to ensure not further issues exist.
- Close the *Document Inspector* dialog and save a new copy of the file. Consider adding the word **Public** or **Clean** to the file name to avoid confusion.

Action 6.8 - Inspecting a Document

Instructions:	Results/ Comments:
1. The **Billing_Template file** should still be open.	If not, open it.
2. Click the ***File Tab***.	The *Backstage* opens.
3. Choose *Info* from the list of categories on the left.	The list of options related to the document information and metadata are displayed.
4. Click the **[Check for Issues]** button and choose *Inspect Document* options.	*Document Inspector* dialog opens.
5. Click the **[Inspect]** button.	If *Excel* finds issues related to the list of categories, a {remove All] button is added to the category.
6. Click the **[Remove All]** button beside the Comments category.	A green check mark is added to the Comments category.
7. Click the [Close] button in the *Document Inspector* dialog.	The *Document Inspector* dialog closes and the Comments pane is now cleared.
8. Close the Comments pane.	
9. Save the file as **Billing_Clean.xlsx**.	**[F12]**.

Templates

A template is a master document which may contain standard formulas, styles, and formats for repeated use. When opened, a copy of the template is opened as a new file, any changes made in the new file will not affect the original template.

Templates help maintain consistency of document structure and content among users and files. Consider developing customized files using range names and macros that run automatically to save time creating similar documents.

Note

You can unlock cells that user are to enter data into and applying sheet protection to the file before saving it as a template.

Creating a Template

- Create a new worksheet including any standard text, styles, formats, and macros or open an existing document that you want to convert to a template.
- Click on the ***File Tab***, choose *Save as*.
- In the *File name* field, type the name for the template.
- From the *Save as* type drop-down list, choose *Excel Template.*
- Click **[Save]**. The file will automatically be saved in the **Custom Office Templates** file folder.

Using a Template

- From the ***File Tab***, choose the *New* category.
- In *Excel*, there are 2 categories to choose from - ***Featured*** and ***Personal***
  - ***Featured***: are a set of pre-built templates from Microsoft that have been used in the past. You can also search for pre-built templates by choosing a category below the Search for online templates: field. When you select a category templates related to your choice are displayed.

    - OR -

  - ***Personal***: these are the templates that you have created.
- Select a Template and then click **[Create]** or simply double-click the Template.
- A new file based on the template is opened

Templates,
continued

Editing a Template

- From the ***File Tab***, select *Open*. **[Ctrl + O]**
- Select the original template from the ***Custom Office Templates*** in the My Documents folder.
- Edit the template.
- Save the file with the original template name to update the template with your changes.

Action 6.9 - Creating a Template

Instructions:	Results/ Comments:
1. The **Billing_Clean** file should still be open.	If not, reopen it.
2. Select cells **A13:E15** and delete their contents.	
3. From the ***File Tab***, choose ***Save As***.	**[F12]**. The *Save As* dialog opens.
4. In the **File name:** field, type **Billing.**	
5. In the **Save as type:** field, select *Excel Template* from the drop down list.	This will create a document that will open as if it is a new document which will require you to give it a new name when saving.
6. Click **[Save]**.	The file will automatically be saved in the **Custom Office Templates** folder. Until you close the file and open it back up, you are working with the original template. Any changes made can be saved to the original.
7. Close the file.	
8. Click the ***File Tab*** and choose *New* from the left side of the BackStage view.	The *Backstage* view is displayed and when New is chosen the template list and search tools are shown.
9. Below the Search bar and Suggested Searches, click the **[Personal]** button.	The templates saved and stored in the **Custom Office Templates** folder are shown.
10. Double-click the **Billing** template.	A new file based on the template is opened.
11. Notice the file name in the Title-bar.	Since this is a new file, it uses the template name with a number. This is just like creating a new blank workbook.
12. Save the file as **Invoice1**	**[Ctrl + S]**. Save it as an *Excel* Workbook.

Action 6.10 - Using a Template

Instructions:	Results/ Comments:
1. Click the ***File Tab*** and choose *New*	The BackStage view is shown.
2. Click on **[Personal]**. Double-click on **Billing**.	A new file based on the template is opened.
Type the following in the cells designated: **F5** **Todays date** **F6** **12-25-33** **B5** **YYZ** **B6** **Limelight Rd.** **B7** **Columbus, OH 43215** **A11** **15157** **A12** **15159** **B11** **Shrubbery** **B12** **Nii** **C11** **F** **C12** **B** **D11** **42** **D12** **6** **E11** **500** **E12** **7**	Use the [Ctrl + ;} keyboard shortcut. Formatted as the comment states. The totals are calculated.
3. From the ***File Tab***, choose *Save As* or *Save*.	The *Save As* dialog is displayed.
4. Click **[Save]** to accept **Billing1** as the file name.	You can accept the default name given by *Excel* or rename it. You can save it to the default folder (**My Documents**) or another folder of your choosing.
5. Close all open files.	**[Ctrl + W]** as needed to close all files or use the **[Close All]** button in the QAT.

TCW BOOK CODES

Excel Level 1	L-1
Excel Level 2	L-2
Excel Level 3	L-3
Excel Formulas	FM
Excel Data Analysis	DA
Excel Charts	CH
Excel PivotTables	PT
Excel Data Analysis with PowerPivot	PPT

MICROSOFT OFFICE EXCEL ASSOCIATE EXAM MO-200

Import data into workbooks	
Import data from .txt file	DA
Import data from .csv files	DA

Navigate within workbooks	
Search for data within a workbook	L-1
Navigate to named cells, ranges, or workbook elements	L-2
Insert and remove hyperlinks	L-3

Format worksheets and workbooks	
Modify page setup	L-1
Adjust row height and column width	L-1
Customize headers and footers	L-1

Customize options and views	
Customize the Quick Access toolbar	L-1
Display and modify workbook content in different views	L-2
Freeze worksheet rows and columns	L-2
Change window views	L-2
Modify basic workbook properties	L-2
Display formulas	L-1

Configure content for collaboration	
Set a print area	L-1
Save workbooks in alternative file formats	L-1
Configure print settings	L-1
Inspect workbooks for issues	L-1

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Manipulate data in worksheets	
Paste data by using special paste options	L-1
Fill cells by using Auto Fill	L-1
Insert and delete multiple columns or rows	L-1
Insert and delete cells	L-1

Format cells and ranges	
Merge and unmerge cells	L-1
Modify cell alignment, orientation, and indentation	L-1
Format cells by using Format Painter	L-1
Wrap text within cells	L-1
Apply number formats	L-1
Apply cell formats from the Format Cells dialog box	L-1
Apply cell styles	L-1
Clear cell formatting	L-1

Define and reference named ranges	
Define a named range	L-2 / FM
Name a table	DA

Summarize data visually	
Insert Sparklines	L-2
Apply built-in conditional formatting	L-2
Remove conditional formatting	L-2

Create and format tables	
Create Excel tables from cell ranges	L-2
Apply table styles	L-2
Convert tables to cell ranges	L-2

Modify tables	
Add or remove table rows and columns	L-2
Configure table style options	L-2
Insert and configure total rows	L-2

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Filter and sort table data	
Filter records	L-2
Sort data by multiple columns	L-2

Insert references	
Insert relative, absolute, and mixed references	L-1
Reference named ranges and named tables in formulas	L-2

Calculate and transform datas	
Perform calculations by using the AVERAGE(), MAX(), MIN(), and SUM() functions	L-1
Count cells by using the COUNT(), COUNTA(), and COUNTBLANK() functions	DA
Perform conditional operations by using the IF() function	FM

Format and modify text	
Format text by using RIGHT(), LEFT(), and MID() functions	DA
Format text by using UPPER(), LOWER(), and LEN() functions	DA
Format text by using the CONCAT() and TEXTJOIN() functions	DA

Create charts	
Create charts	L-2 / CH
Create chart sheets	L-2 / CH

Modify charts	
Add data series to charts	L-2 / CH
Switch between rows and columns in source data	L-2 / CH
Add and modify chart elements	L-2 / CH

TCW BOOK CODES

Excel Level 1	L-1
Excel Level 2	L-2
Excel Level 3	L-3
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MICROSOFT OFFICE EXCEL EXPERT EXAM MO-201

Manage workbooks	
Copy macros between workbooks	L-3
Reference data in other workbooks	L-3
Enable macros in a workbook	L-3
Manage workbook versions	L-2

Prepare workbooks for collaboration	
Restrict editing	L-2
Protect worksheets and cell ranges	L-2
Protect workbook structure	L-2
Configure formula calculation options	FM
Manage comments	L-2

Use and configure language options	
Configure editing and display languages	L-1
Use language-specific features	L-1

Fill cells based on existing data	
Fill cells by using Flash Fill	L-1
Fill cells by using advanced Fill Series options	L-2

Format and validate data	
Create custom number formats	L-1
Configure data validation	L-3 / FM
Group and ungroup data	L-3
Calculate data by inserting subtotals and totals	L-3
Remove duplicate records	DA

TCW BOOK CODES

Excel Level 1	L-1
Excel Level 2	L-2
Excel Level 3	L-3
Excel Formulas	FM
Excel Data Analysis	DA
Excel Charts	CH
Excel PivotTables	PT
Excel Data Analysis with PowerPivot	PPT

Apply advanced conditional formatting and filtering	
Create custom conditional formatting rules	L-2
Create conditional formatting rules that use formulas	L-2
Manage conditional formatting rules	L-2

Perform logical operations in formulas	
Perform logical operations by using nested functions including the IF(), IFS(), SWITCH(),	FM
SUMIF(), AVERAGEIF(), COUNTIF(), SUMIFS(), AVERAGEIFS(), COUNTIFS(), MAXIFS(),	FM
MINIFS(), AND(), OR(), and NOT() functions	FM

Look up data by using functions	
Look up data by using the VLOOKUP(), HLOOKUP(), MATCH(), and INDEX() functions	FM

Use advanced date and time functions	
Reference date and time by using the NOW() and TODAY() functions	FM
Calculate dates by using the WEEKDAY() and WORKDAY() functions	FM

Perform data analysis	
Summarize data from multiple ranges by using the Consolidate feature	L-3
Perform what-if analysis by using Goal Seek and Scenario Manager	L-3
Forecast data by using the AND(), IF(), and NPER() functions	FM
Calculate financial data by using the PMT() function	FM

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Troubleshoot formulas	
Trace precedence and dependence	FM
Monitor cells and formulas by using the Watch Window	FM
Validate formulas by using error checking rules	FM
Evaluate formulas	FM

Create and modify simple macros	
Record simple macros	L-3
Name simple macros	L-3
Edit simple macros	L-3

Create and modify advanced charts	
Create and modify dual axis charts	CH
Create and modify charts including Box & Whisker, Combo, Funnel, Histogram, Map, Sunburst, and Waterfall charts	CH

Create and modify PivotTables	
Create PivotTables	PT
Modify field selections and options	PT
Create slicers	PT
Group PivotTable data	PT
Add calculated fields	PT
Format data	PT

Create and modify PivotCharts	
Create PivotCharts	PT
Manipulate options in existing PivotCharts	PT
Apply styles to PivotCharts	PT
Drill down into PivotChart details	PPT