EXCEL 2019

Introduction:

Microsoft Excel 2019 is a spreadsheet program that is used to manage, analyze, and present data .it includes many powerful tools that can be used to organize and manipulate large amounts of data, perform complex calculations, create professional-looking charts, enhance the appearance

Of worksheets, and more. this handout provides an overview of the excel 2019 user interface and covers how to perform basic tasks such as starting and exiting the program, creating, saving, opening, and closing workbooks, selecting cells, entering and editing data, formatting text and numbers, positioning cell contents, applying cell styles, and getting help.

Starting Excel:

You can start Excel 2019 from the start menu or by double

Clicking an existing Excel file. When you start the program without opening

A specific file, the start screen appears, prompting you to open an existing workbook or create a new workbook.

To start Excel 2019 from the start menu:

1- Click the **start** menu, click Microsoft Office 2019,
And then click Excel 2019. The start screen appears (see figure 1).
2- In the right pane. Click **blank workbook** opens in the program window.

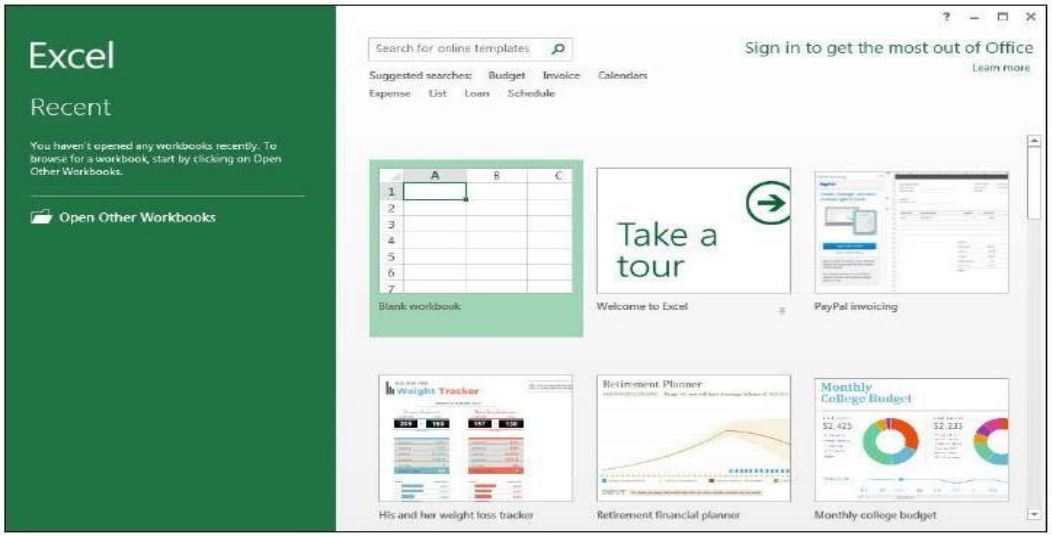


Figure 1- excel 2019 Start Screen

Overview of the user interface:

All the Microsoft Office 2019 programs share a common user interface so you can apply basic techniques that you learn in one program to other program. The Excel 2019 program window is easy to navigate and simple to use (see figure2 and table1).

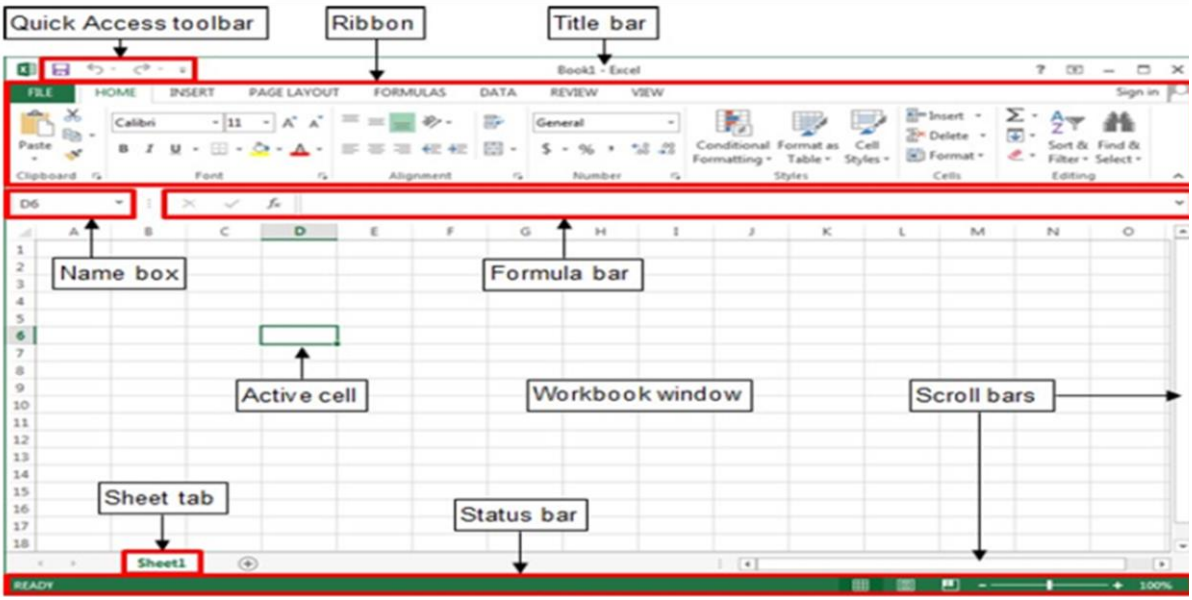


Figure 2: Excel program window

Table 1-Eexcel Program Window

Name	Description
Title bar	Appears at the top of the program window and displays the name of the workbook and the program. The buttons on the right side of the Title bar are used to get help; change the display of the Ribbon; and minimize, restore, maximize, and close the program window.
Quick Access toolbar	Appears on the left side of the Title bar and contains frequently used commands that are independent of the tab displayed on the Ribbon.
Ribbon	Extends across the top of the program window, directly below the Title bar, and consists of a set of tabs, each of which contains groups of related commands.
Formula bar	Appears below the Ribbon and displays the data or formula stored in the active cell. It can also be used to enter or edit cell contents.
Name box	Appears on the left side of the Formula bar and displays the active cell address or the name of the selected cell, range, or object.
Workbook window	Appears below the Formula bar and displays a portion of the active worksheet.
Sheet tab	Each worksheet has a tab that appears below the workbook window and displays the name of the worksheet.
Scroll bars	Appear along the right side and bottom of the workbook window and enable you to scroll through the worksheet.
Status bar	Appears at the bottom of the program window and displays the status of Excel (such as *Ready*). The tools on the right side of the Status bar can be used to display the worksheet in a variety of views and to change the zoom level.

Ribbon:

The Ribbon designed to help you quickly find the commands that you need to complete atske.it consist of asset of task-specific tabs. Clicking a tab displays asset of related commands that are organized into logical group.

A dialog box launcher  appears in the lower-right corner of most groups on the ribbon. Clicking it opens a related dialog box or task pane that offers additional options. (See figure3-table2)

You can collapse the Ribbon by clicking the Collapse the Ribbon button  on the right side of the Ribbon or by double- clicking the current tab. When the Ribbon is collapsed, only the names are visible. You can expand the Ribbon by double-clicking any tab.

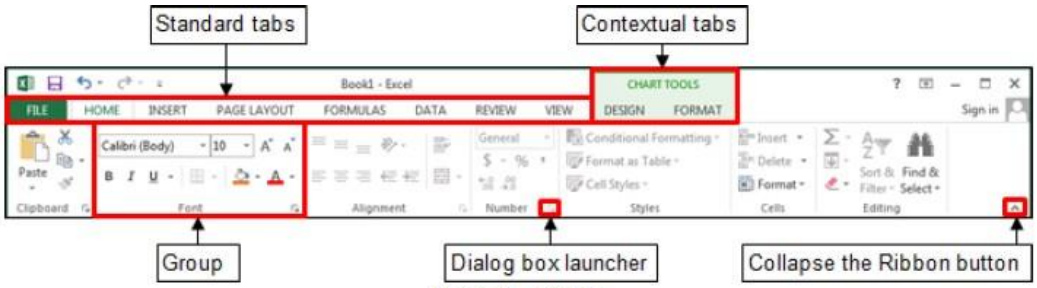


Figure 3 – Ribbon

Table 2 – Ribbon Tabs

Name	Description
File	Displays the Backstage view which contains commands related to managing files and customizing the program.
Home	Contains the most frequently used commands. The Home tab is active by default.
Insert	Contains commands related to all the items that you can insert into a worksheet.
Page Layout	Contains commands that affect the overall appearance and layout of a worksheet.
Formulas	Contains commands used to insert formulas, define names, and audit formulas.
Data	Contains commands used to manage data and import or connect to external data.
Review	Contains commands used to check spelling, track changes, add comments, and protect worksheets.
View	Contains commands related to changing the view and other aspects of the display.

Backstage view:

The file tab (the first tab on the Ribbon) is used to display the **Backstage.** View which contains all the commands related to managing files and customizing the program. It provides an easy way to create, open, save,print…. .

To display the Backstage view:

1. Click the File tab on the Ribbon (see figure 8)

Figure 8 – File Tab

To exit the backstage view:

1. Click the back button in the upper-left corner of the backstage view or press Esc key. (see figure 9)

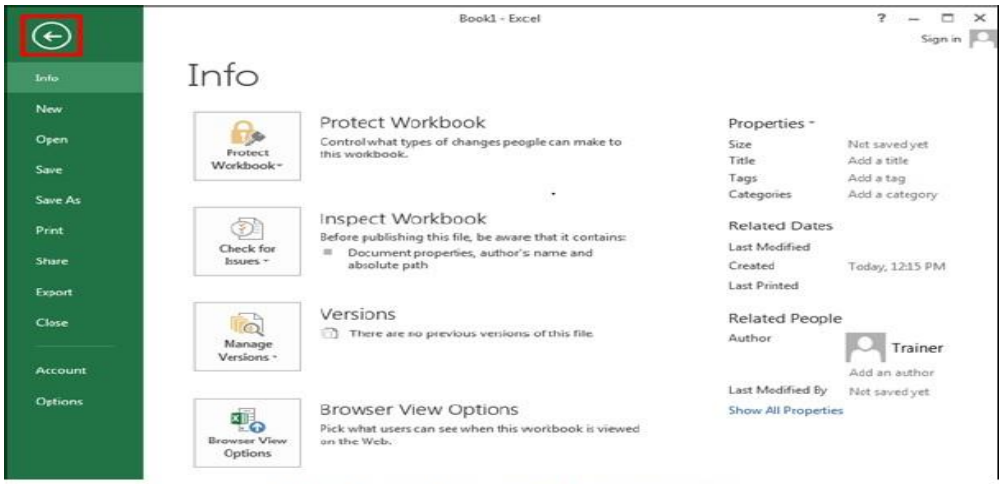


Figure 9 – Info Page of the Backstage View

Opening Workbooks

You can locate and open an existing workbook from the Start screen when Excel 2013 starts or from the Open page of the Backstage view. The Start screen and the Open page also display a list of recently used workbooks which you can quickly open by clicking them. Each workbook opens in its own window, making it easier to work on two workbooks at once.

To open a workbook:

1. Click the **File** tab, and then click **Open**. Or, press **Ctrl+O**. The **Open** page of the **Backstage** view opens, displaying a list of recently used workbooks in the right pane.

Saving Workbooks

After creating a workbook, you can save it on your computer. Use the *Save As* command when you save a workbook for the first time or if you want to save a copy of a workbook in a different location, with a different file name, or in a different file format. Use the *Save* command to save changes to an existing workbook.

Closing Workbooks

When you finish working on a workbook, you can close it, but keep the program window open to work on more workbooks. If the workbook contains any unsaved changes, you will be prompted to save the changes before closing it.

To close a workbook without exiting Excel:

1. Click the **File** tab, and then click **Close**. Or, press **Ctrl+W**.

Formula Bar:

The Formula bar displays the content of the active cell and can be used to enter or edit cell contents. The Formula bar contains three buttons (see figure 10). The **insert button** is always available. But the other two buttons are active only while you entering or editing data in a cell. Clicking cancels button cancels the changes you make in the cell which is the same as Esc key. Clicking the Enter Button completes the changes you make in the cell. Clicking Insert Function button open a dialog box that helps you construct formulas.

Figure 10 – Formula Bar

Overview of Workbooks:

An Excel file is called a workbook. Each new workbook contains one blank work sheet (see figure 11). You can add additional worksheet or delete existing worksheet as needed. By default, a new work book is named Book1 and the worksheet it contains is named sheet 1. Each work sheet consists of 1,048,576 (numbered) rows and 16,384 columns (labeled A through XFD). The box formed by intersection of row and column is called a cell. The active cell has greenborder around it and its name appears in the name bar. To know the number of rows: ctrl + ↓.
To know the number of columns: write 1 in A1 cell, click ctrl + shift + ←, press F2 then click ctrl + enter.

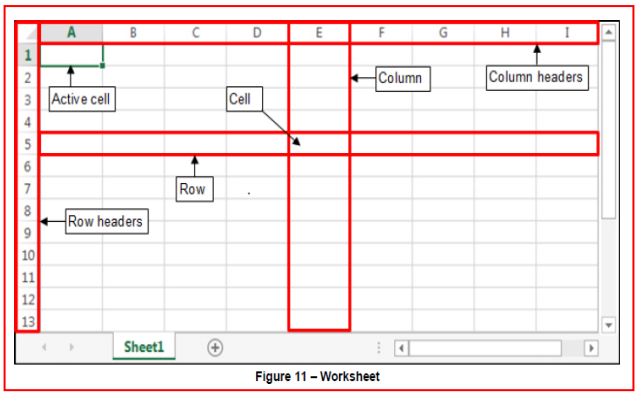


Figure 11 – Worksheet

Creating workbooks

To create a new workbook:

1. Click the File tab, and click New.
2. In the right pane, click Blank workbook.
   Note: You can also create a new workbook by pressing Ctrl+N.

Moving Around in a Worksheet:

To type in a cell, you must make it the active cell, either by clicking it or by using one of the keyboard methods of moving the cell selector. Table 10.1 summarizes the keyboard methods.

NOTE: Scrolling with the mouse does not change the location of the active cell. To change the active cell, you must click a new cell after scrolling.

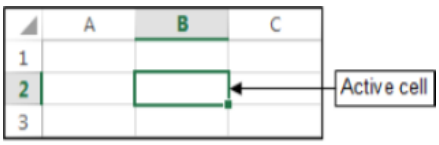
Table 3 – Navigation Keyboard Shortcuts

Key	Action
Down arrow or Enter	Moves the active cell one cell down.
Up arrow or Shift+Enter	Moves the active cell one cell up.
Right arrow or Tab	Moves the active cell one cell to the right.
Left arrow or Shift+Tab	Moves the active cell one cell to the left.
Page Down	Moves the active cell down one page.
Page Up	Moves the active cell up one page.
Alt+Page Down	Moves the active cell right one page.
Alt+Page Up	Moves the active cell left one page.
Ctrl+Home	Moves the active cell to cell A1.
Ctrl+End	Moves the active cell to the last used cell in the worksheet.

Selecting Cells, Rows, and Columns:

In order to work with cell, you must first select it.

1-To select a single cell: Click the desired cell



2-To select a range of cells: click the first cell that you want to include in the range, hold down the **Shift** key, and then click the last cell in the range or drag from the first cell in the range to the last cell.

3-To select nonadjacent cells or range:

Select the first cell or range, hold down the Ctrl key, and then select the other cell or range.

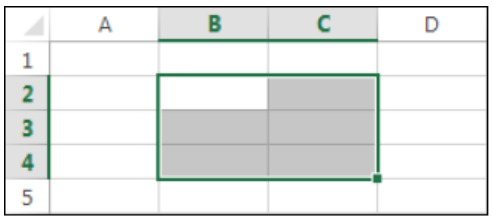


Figure 19 – Selected Range

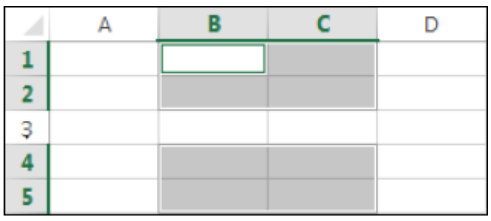


Figure 20 – Selected Nonadjacent Ranges

To select a single row or column:

1- Click the header of the row or column that you want to select (see figure 21 and figure 22).

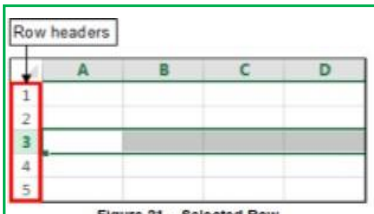


Figure 21 – Selected Row

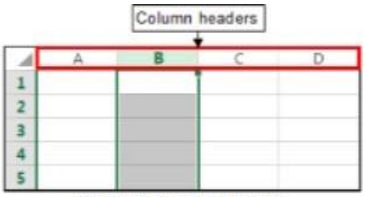


Figure 22 – Selected Column

To select all cells in a worksheet:

Click the **Select ALL** button in the upper-left corner of worksheet (see figure 23) or press CTRL+A.

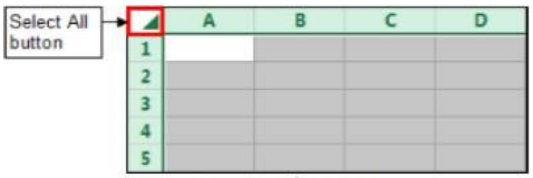


Figure 23 – Select All Button

Entering data:

You can add data by entering it directly in the cell or by using formula bar. A cell contains maximum of 32.767 characters and can hold any ofthree basic types of data: text, numbers, or formulas.

Entering Text:

Left-click a cell to select it. Each rectangle in the worksheet is called a cell. As you select a cell, the cell address appears in the Name Box. Enter text into the cell using your keyboard. The text appears in the cell and in the formula bar then press the **Enter** key**. (See** figure 24, figure 25)

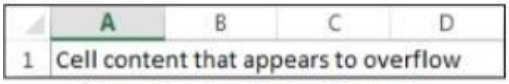


Figure 24 – Overflowing Text Entry

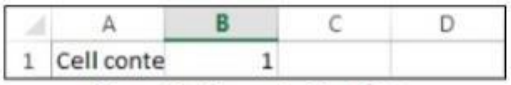
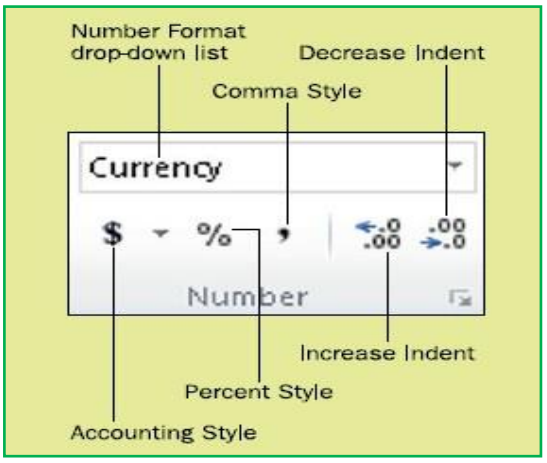


Figure 25 – Truncated Text Entry

Formating Numbers:



Modifying a Number Format Use these steps to select and then modify a cell's number format:
1. Select the cell(s) to affect.
2. On the Home tab, open the Number Format drop-down list (in the Number group) and select a format, or click the Accounting, Percent Style, or Comma Style button.
3. If you want to change the number of decimal places, click the Increase Decimal or Decrease Decimal button in the Number group.
4. (Optional) if you want to make other changes to the number format, click the dialog box launcher in the Number Group to open the Format Cells dialog box (see Figure).
5. Make any additional number formatting selections as needed.
6. Click OK.

NOTE: Formatting does not change the actual value stored in a cell.

The actual value is used in calculation and is displayed in the Formula bar when the cell is selected.

Entering Date and times:

To enter Dates:

1. Select the cell in which you want to enter the date.
2. Type the month, day, and year, with each number separated by a forward slash (/) or a hyphen (-), and then press the **Enter** key.

To enter a Time:

1. Select the cell in which you want to enter the time.
2. Type the hour, a colon (:) , and the minutes , press the **Spacebar** ,type **a** for **A.M.** or **P** for **P.M** and then press the **Enter** key

Editing Data:

To edit data

1. Double- click the cell that contains the data you want to edit. The cursor appears in the cell in the location that you double-clicked.
2. To insert characters, click where you want to make changes, and then type the new characters.
3. To delete characters, click where you want to make changes, and then press the **Backspace** or **Delete** key.
4. When you are finished, press the **Enter** key.
5. IF you are editing data and decide not to keep your edits, press the **ESC** key to return the cell to its previous state.

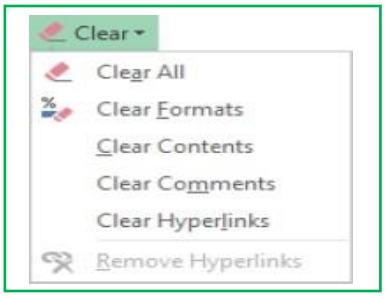
Clearing Cells:

You can clear a cell to remove its contents, formats, or comment.

To clear a cell:

1- Select the cell that you want to clear.

2- On **Home** tab, in **Editing** group click the **clear** button and select the desired option from menu.



Positioing Cell Contents:

You can change the alignment, indentation and orientation of cell content within a cell and merge cell from the Alignment group on home tab of the Ribbon contains.

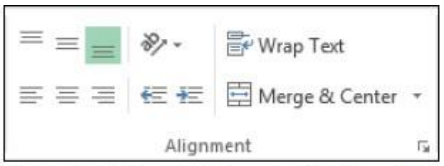


Figure 40 – Alignment Group on the Home Tab

Aligning Data

By default, Excel 2013 aligns numbers to the right and text to the left, and all cells use bottom alignment. The *Alignment* group on the *Home* tab of the *Ribbon* includes six alignment buttons that can be used to change the horizontal and vertical alignment of cell contents.

- The **Align Left** button aligns the cell contents with the left edge of the cell.
- The **Center** button centers the cell contents horizontally within the cell.
- The **Align Right** button aligns the cell contents with the right edge of the cell.
- The **Top Align** button aligns the cell contents with the top edge of the cell.
- The **Middle Align** button centers the cell contents vertically within the cell.
- The **Bottom Align** button aligns the cell contents with the bottom edge of the cell.

Rotating Data

You can rotate data clockwise, counterclockwise, or vertically within a cell. This is often used to label narrow columns or to add visual impact to a worksheet.

To rotate data:

1. Select the cell that contains the data you want to rotate.
2. On the **Home** tab, in the **Alignment** group, click the **Orientation** button and select the desired option from the menu (see Figure 42). The row height automatically adjusts to fit the rotated data (see Figure 43).

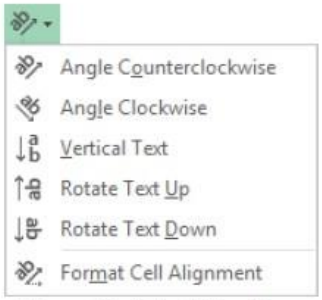


Figure 42 – Orientation Menu

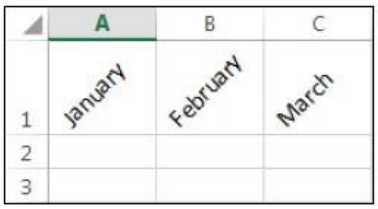


Figure 43 – Rotated Data

Wrapping Data

Wrapping displays data on multiple lines within a cell. The number of wrapped lines depends on the width of the column and the length of the data.

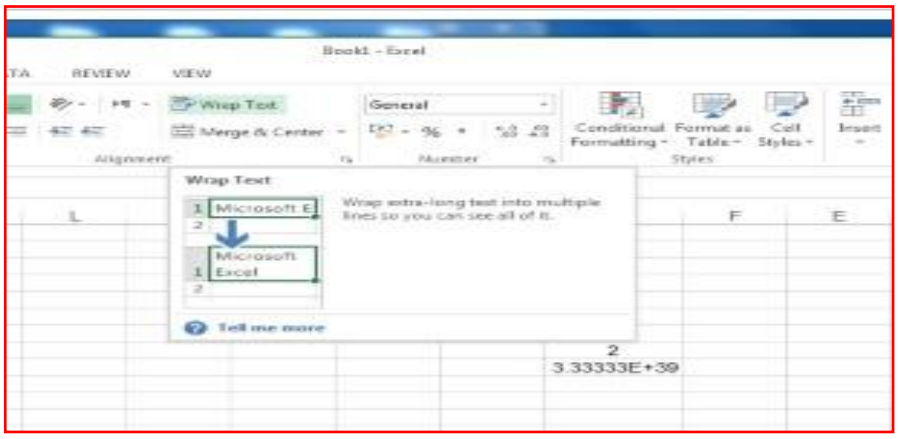
To wrap data:

1. Select the cell that contains the data you want to wrap.
2. On the **Home** tab, in the **Alignment** group, click the **Wrap Text** button  . The row height automatically adjusts to fit the wrapped data (see Figure 44).

   NOTE: You can restore the data to its original format by clicking the **Wrap Text** button again.

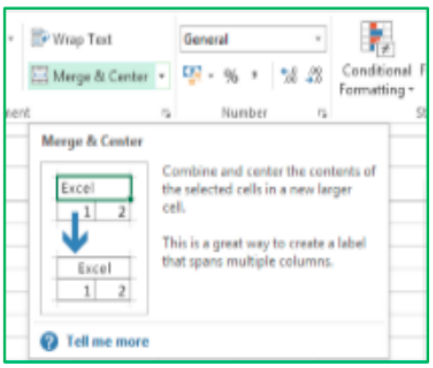
	A	B	C
	January	February	March
1	2014	2014	2014
2			
3			

Figure 44 – Wrapped Data



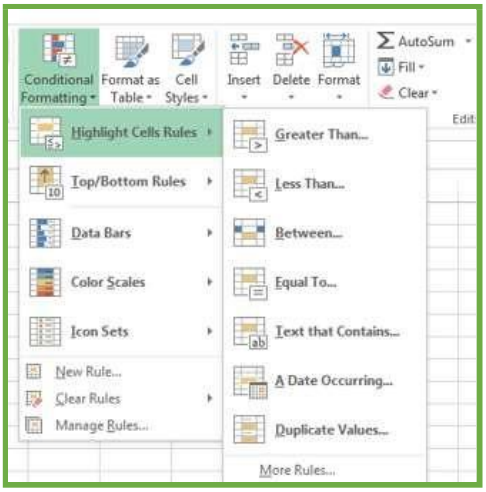
Merge and center:

Combine and center the content of the selected cell in new larger cell.



Conditional Formatting:

Easily spot trends and patterns in your data using bars, colors, and icons to visually highlight important values.



Working with Row and Columns:

Although the number of ROW and Columns is fixed, you can still insert rows and column if you need to make room for additional data, or delete rows or column or hide them, from Home tab, cell group there is commands can be used.

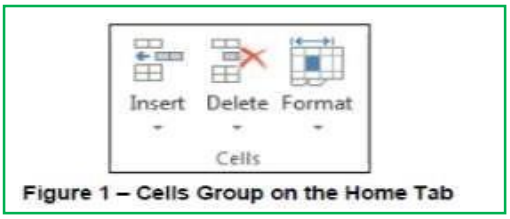


Figure 1 – Cells Group on the Home Tab

Inserting Row and Column

To insert Row:

1. Select the row below where you want the new row to appear.
2. Click the **Insert** command in the **Cells** group on the **Home** tab. The row will appear.

To insert Column:

1. Select the column to the right of where you want the column to appear.
2. Click the **Insert** command in the **Cells** group on the **Home** tab. The column will appear.

Deleting Rows and Columns

To delete Row:

1. Select the row that you want to delete.

2. From Home tab **Insert** command in the **Cells** group click delete sheet rows.

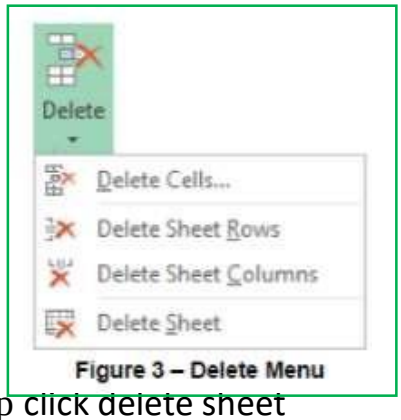


Figure 3 – Delete Menu

3. You can also delete row by right - clicking the row header.

To delete column:

1. Select the Column that you want to delete

2. From Home tab **Insert** command in the **Cells** group click delete sheet Column.

3. You can also delete Column by right - clicking the row header.

Modifying Columns, Rows and Cells

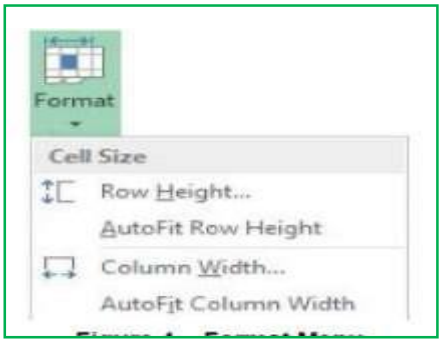
To change the Column Width:

1. Position the cursor over the column line in the column heading and a double arrow will appear

2. Left-click the mouse and drag the cursor to the right to increase the column width or to the left to decrease the column width.
3. Release the mouse button.

OR

1. Left-click the column heading of a column you'd like to modify. The entire column will appear highlighted.
2. Click the Format command in the **Cells** group on the **Home** tab. A menu will appear.



3. Select **AutoFit Column Width** to adjust the column so all the text will fit.

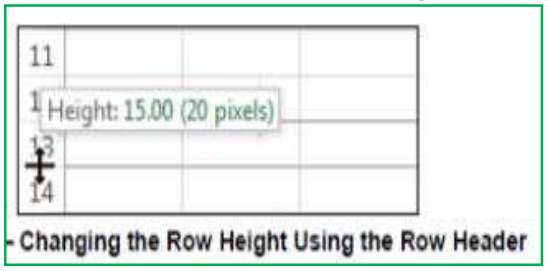
To change the Row Height:

1. Position the cursor over the row line you want to modify and a double arrow will appear.
2. Left-click the mouse and drag the cursor upward to decrease the row height or downward to Increase the row height.

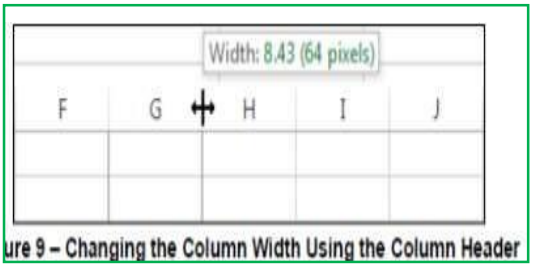
3. Release the mouse button.

OR

a. Click the **Format** command in the **Cells** group on the **Home** tab. A menu will appear.
b. Select **AutoFit Row Height** to adjust the row so all the text will fit.



- Changing the Row Height Using the Row Header



ure 9 – Changing the Column Width Using the Column Header

Hiding and Unhiding Rows and Columns:

You can hide rows and columns within a worksheet. Hidden rows and column do notappear in a printout.

To hide a row or column:

1- **Select** the row or column you want to hide.
2- On the **home** tab, in the **Cell** group, click format button, point to **Hide&Unhide**.
3- You can hide row & hide column by **right –clicking**.

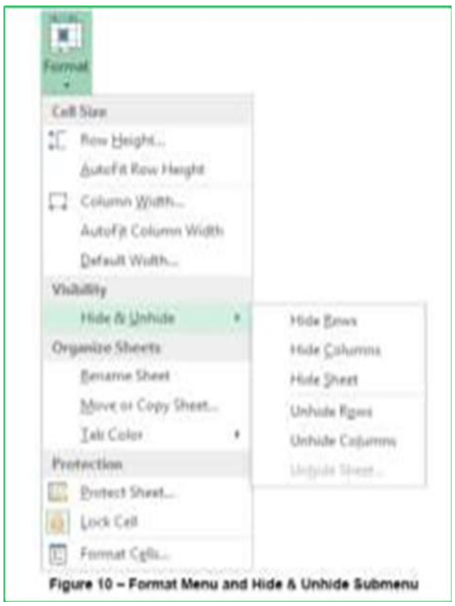


Figure 10 – Format Menu and Hide & Unhide Submenu

Working with Worksheets

A *worksheet*, also known as a *sheet*, is where you enter data in Excel. A workbook can contain one or more worksheets. Each worksheet has a tab located at the bottom of the workbook window. The active worksheet is the one that is currently displayed (see Figure 11).

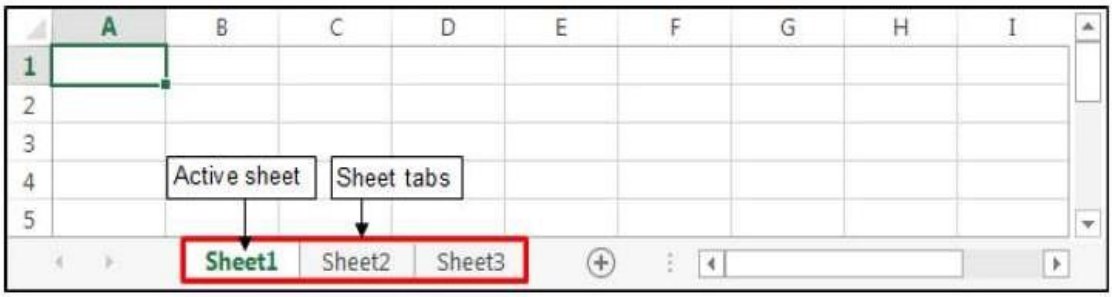


Figure 11 – Sheet Tabs

Renaming Worksheets: To rename a work sheet:

1- Double –click the tab of the worksheet that you want to rename,or right click the sheet tab and then click rename.
2- Type a new name, and press enter key.
3- Worksheet name cannot exceed 31 characters and cannot be blank, each worksheet name in a workbook must be unique.

Inserting Worksheets: By default, each new workbook contains one worksheet. You can insert additional worksheets as needed.

To insert a worksheet:

1- Click the tab of the work sheet to the left of which you want to insert a new work sheet.
2- On **Home** tab, in the **cells** group, click the insert arrow, and then click **Insert Sheet** (see figure 16).

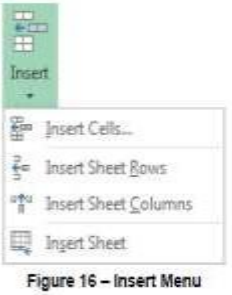


Figure 16 – Insert Menu

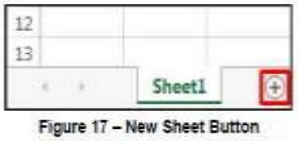


Figure 17 – New Sheet Button

Deleting Worksheets:

If you no longer need a worksheet, you can delete it from workbook. Deleting a worksheet cannot be undone.

To delete a worksheet:

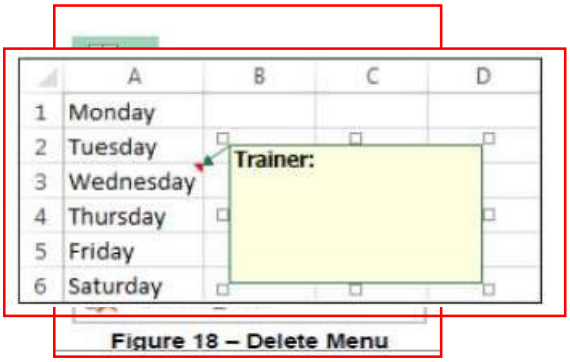


Figure 18 – Delete Menu

1- Click the tab of the worksheet that you want to delete
2- On the Home tab, in the Cell group, click Delete arrow, and then click sheet. (see figure 18)
3- If the work sheet contains data, a dialog box opens asking you to confirm. Click delete.
4- You can also delete worksheet by right click.

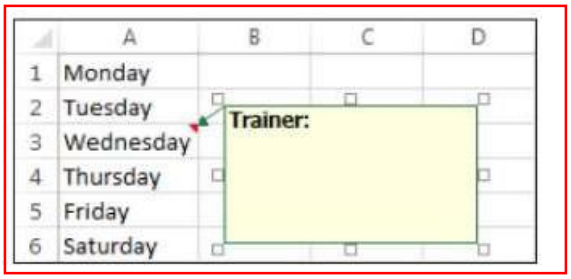
Adding Comments

You can add a comment to any cell in a work sheet. Excel label each new comment by using a name that is specified in the Excel options dialog box.

To add a comment:

1- Select the cell to which you want to add a comment.

2- On the **Review** tab, in the **Comment** group, click the **new Comment** button  . Or right click the cell, and then click **Insert Comment** on the shortcut menu.



3- Type the comment in the comment box.
4- When finished, click any cell in the worksheet to hide the comment. A red triangle appears in the upper-right corner of the cell to indicate that it contains a comment.

To edit comment:

1- Select the cell that you want to edit comment from.
2- On review tab, in the comment group, click edit comment button  or, right –click the cell, and then click Edit Comment on the shortcut menu.
3- Edit the comment in the comment box.
4- When finished, click any cell in the worksheet to hide the comment

Deleting Comments

To delete comment that you are no longer needed:

1. Select the cell that you want to delete comment from.
2. On the Review tab, in the Comment group, click Delete button  .

NOTE: You can also delete a comment by right-clicking the cell, and then clicking **Delete Comment** on the shortcut menu.

Relative, Absolute and Mixed Cell References in Excel

A worksheet in Excel is made up of cells. These cells can be referenced by specifying the row value and the column value.

For example, A1 would refer to the first row (specified as 1) and the first column (specified as A). Similarly, B3 would be the third row and second column. The power of Excel lies in the fact that you can use these cell references in other cells when creating formulas.

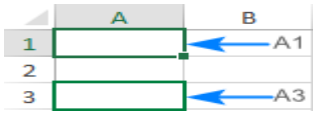
Now there are three kinds of cell references that you can use in Excel:

- Relative Cell References
- Absolute Cell References
- Mixed Cell References

Understanding these different types of cell references will help you work with formulas and save time (especially when copy-pasting formulas).

A **cell reference** or **cell address** is a combination of a column letter and a row number that identifies a cell on a worksheet.

For example, A1 refers to the cell at the intersection of column A and row 1; A3 refers to the column A and row 3, and so on.



When used in a formula, cell references help Excel find the values the formula should calculate.

For instance, to pull the value of A1 to another cell, you use this simple formula:

= A1

To add up the values in cells A1 and A2, you use this one:

= A1+A2

Relative cell reference

A relative reference is the one without the $ sign in the row and column coordinates, like A1 or A1:B10. By default, all cell addresses in Excel are relative.

When moved or copied across multiple cells, relative references change based on the relative position of rows and columns. So, if you want to repeat the same calculation across several columns or rows, you need to use relative cell references.

For example, to multiply numbers in column A by 5, you enter this formula in B2:

=A2*5

When copied from row 2 to row 3, the formula will change to:

=A3*5

	A	B	C
1	**Data**	**Result**	**Formula**
2	1	5	=A2*5
3	2	10	=A3*5
4	3	15	=A4*5

Absolute cell reference

An **absolute reference** is the one with the dollar sign ($) in the row or column coordinates, like $A$1 or $A$1:$B$10.

An absolute cell reference remains unchanged when filling other cells with the same formula. Absolute addresses are especially useful when you want to perform multiple calculations with a value in a specific cell or when you need to copy a formula to other cells without changing references.

For example, to multiply the numbers in column A by the number in B2, you input the following formula in row 2, and then copy the formula down the column by dragging the fill handle:

=A2*$B$2

The relative reference (A2) will change based on a relative position of a row where the formula is copied, while the absolute reference

($B$2) will always be locked on the same cell:

	A	B	C	D
1	**Number**	**Multiply by**	**Result**	**Formula**
2	10	10	100	=A2*$B$2
3	20		200	=A3*$B$2
4	30		300	=A3*$B$2

Mixed cell reference

A **mixed reference** contains one relative and one absolute coordinate, like $A1 or A$1.

There may be many situations when only one coordinate, column or row, should be fixed.

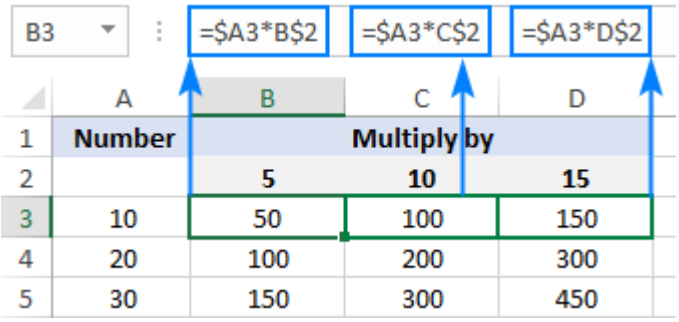
For example, to multiply a column of numbers (column A) by 3 different numbers (B2, C2 and D2), you put the following formula in B3, and then copy it down and to the right:

=$A3*B$2

In $A3, you lock the column coordinate because the formula should always multiply the original numbers in column A. The row coordinate is relative since it needs to change for other rows.

In B$2, you lock the row coordinate to tell Excel always to pick the multiplier in row 2. The column coordinate is relative because the multipliers are in 3 different columns and the formula should adjust accordingly.

As the result, all the calculations are performed with a single formula, which changes properly for each row and column where it is copied:



	A	B	C	D
1	**Number**	**Multiply by**		
2		**5**	**10**	**15**
3	10	50	100	150
4	20	100	200	300
5	30	150	300	450

Working with Views:

Excel provides several ways in which you can view worksheets.

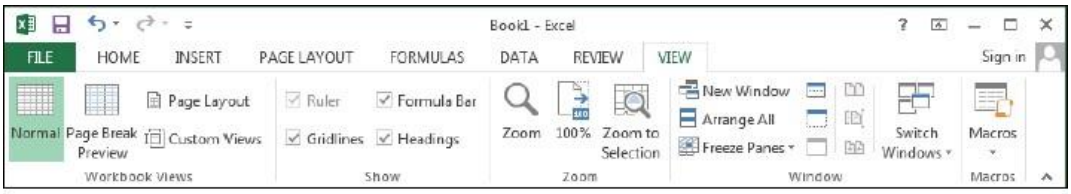


Figure 28 – View Tab of the Ribbon

Switching Views:

Excel offers a variety of viewing that change how a worksheet is displayed on the screen. (See table 1)

Table 1 – Workbook Views

Name	Description
Normal	This is the default view. If you switch to another view and return to Normal view, Excel displays page breaks.
Page Break Preview	Displays a preview of where pages will break when the worksheet is printed. Use this view to easily adjust page breaks.
Page Layout	Displays the worksheet as it will appear when printed. Use this view to see where pages begin and end, and to add headers and footers.
Custom Views	Allows you to save the current display and print settings as a custom view that you can quickly apply in the future.

To switch Views:

1-On the **View** tab, in the **Workbook Views** group, click the desired view button (see figure 29).

2- Or click the desired view button on View Shortcuts toolbar located on the right side of the Statues bar (see figure 30).

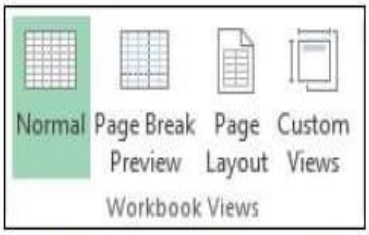


Figure 29 – Workbook Views Group on the View Tab

Figure 30 – View Shortcuts Toolbar

Freezing Panes:

Freezing Panes is a useful technique for keeping an area of a worksheet

Visible while you scroll to another area of the worksheet. You can freeze only rows at the top and column on the left side of the worksheet, you cannot freeze rows and columns in the middle of the worksheet. Excel displays dark gray lines to indicate frozen row and column (see figure).

To freeze panes:

1-Select the cell below the row and to the right of the column that you want to freeze.

2- On the View tab, in the Window group, click the Freeze panes button, and then click Freeze Pane.

3- When any row or column are frozen, the Freeze Panes option changes to Unfreeze Pane.

Figure 35 – Freeze Panes Menu

Viewing Multiple Workbooks

You can have more than one workbook open at a time and switch between them as you work. You can also arrange two or more workbooks on the screen at the same time.

To switch between open workbooks:

1. On the **View** tab, in the **Window** group, click the **Switch Windows** button and select the workbook that you want to display (see Figure 37).

   NOTE: A check mark is displayed to the left of the active workbook.

Figure 37 – Switch Windows Menu

To display two workbooks side by side:

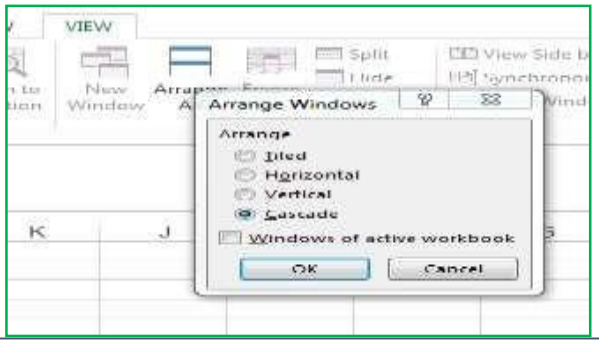
1. On the **View** tab, in the **Window** group, click the **View Side by Side** button.

   NOTE: If only two workbooks are open, they immediately appear side by side. If more than two workbooks are open, the **Compare Side by Side** dialog box opens so you can select the second workbook you want to display (see Figure 38).

Figure 38 – Compare Side by Side Dialog Box

To display all open workbooks:

1. On the **View** tab, in the **Window** group, click the **Arrange All** button.
2. In the **Arrange Windows** dialog box, select the desired arrangement option, and then click the **OK** button (see Figure 39).



NOTE: When multiple workbooks are displayed on the screen, you can activate a particular workbook by clicking its window. You can control individual windows by clicking the **Minimize** button, **Maximize** button, or **Close** button in the upper-right corner of each window.

Changing the page Layout

The commands used to define the layout of a printed page are available on the Page Layout tab of the Ribbon.

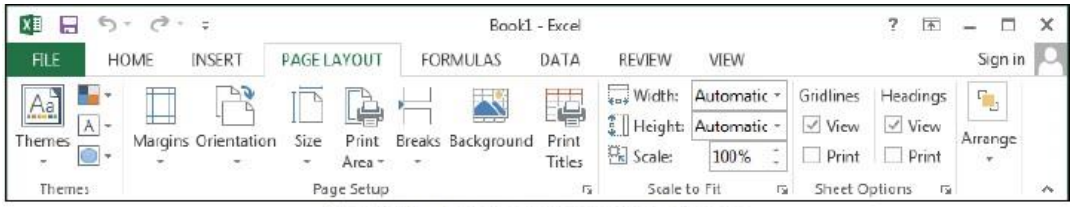


Figure 40 – Page Layout Tab of the Ribbon

NOTE: You can also adjust page layout settings using the *Print* page of the *Backstage* view. This allows you to immediately see the results in the preview pane.

Changing the page margins:

To change the page margins:

1-Select the work sheet for which you want to change the margins.

2- On the page layout tab, in the page setup group, click the Margins button and select the desired margin setting from the menu.

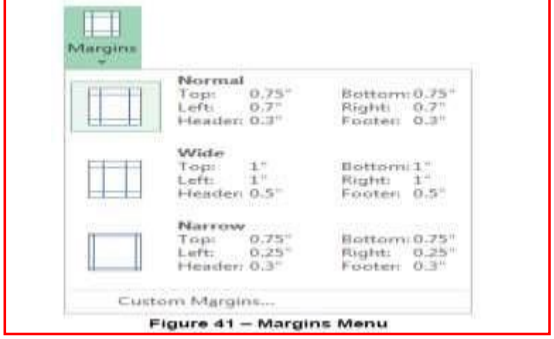


Figure 41 – Margins Menu

To set custom margins:

1. Select the worksheet for which you want to set custom margins.
2. On the **Page Layout** tab, in the **Page Setup** group, click the **Margins** button, and then click **Custom Margins** at the bottom of the **Margins** menu (see Figure 41).
3. In the **Page Setup** dialog box, on the **Margins** tab, enter the desired values in the **Top**, **Bottom**, **Left**, and **Right** boxes, and then click the **OK** button (see Figure 42).

Changing the Page Orientation:

In Excel, you can print a worksheet in either **portrait** or **landscape** orientation.

To change the page orientation:

1-Select the work sheet for which you want to change the orientation.

2- On the **page layout** tab, in the **page setup** group, click the Margins orientation button and then select the click either **portrait** or **landscape**.

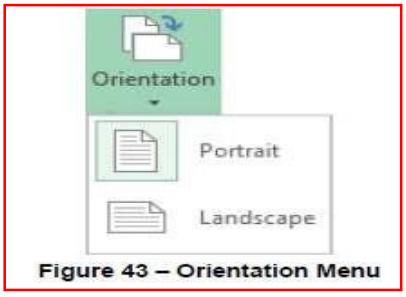


Figure 43 – Orientation Menu

Setting a print Area:

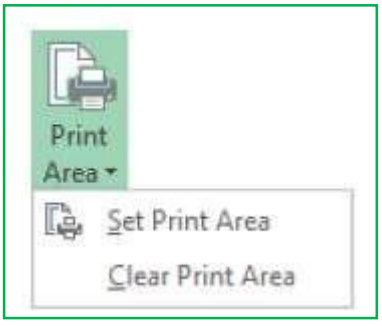
By default, Excel print the entire worksheet. If you frequently print a specific section of worksheet. You can set a print area that includes just that section. That way, when you print the worksheet, only that section will print.

To set a print area:

1-Select the cells that you want to define as the print area.

2- On the **page layout** tab, in the **page setup** group, click the print Area button and then click set **print Area**.

3-You can clear the print area by clicking the **Print Area** button, and then clicking Clear **Print Area**.



Printing Gridlines:

Gridlines are the light gray lines that appear around cells in a worksheet. By default, gridline is displayed on the screen, but they are not printed. You can choose to print a worksheet with gridlines that make the data easier to red on a printed page.

To print gridlines:

1- Select the worksheet that you want to print with gridlines.
2- On the **page layout** tab, in the **sheet options** group, under gridlines, select the print check box.

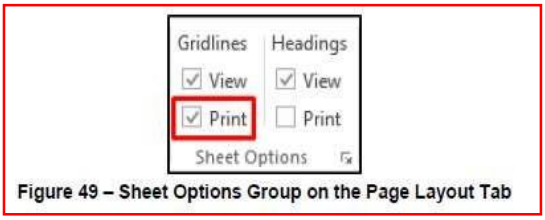
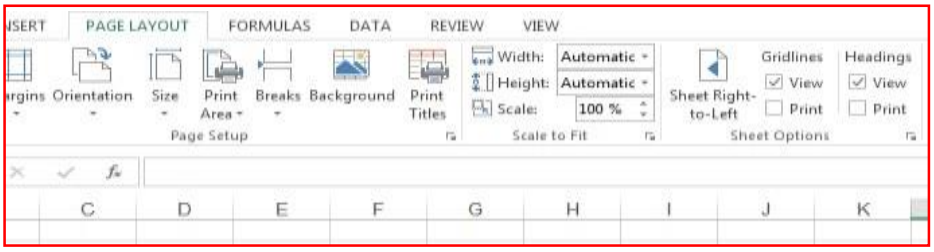


Figure 49 – Sheet Options Group on the Page Layout Tab

Sheet direction:

Normally, the worksheet direction is Left-to-Right in Excel, but in order to satisfy certain language writing habits from right to left, Excel can switch direction of the worksheet which place the row and column heading on right as following screenshots shown. From **Page Layout** tab, **sheet option** click **sheet Right to left**.



Previewing and print worksheets:

Before printing a worksheet, you can preview it to see how each page

Will look when printed. The print page of backstage view allows you to preview a worksheet.

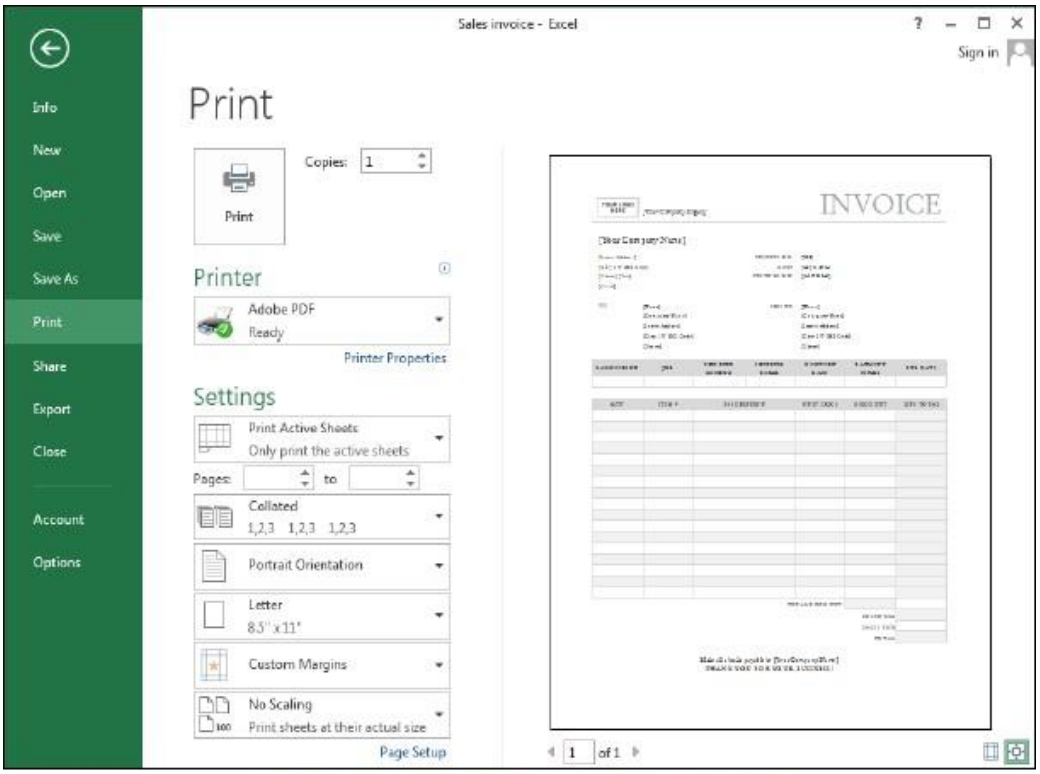


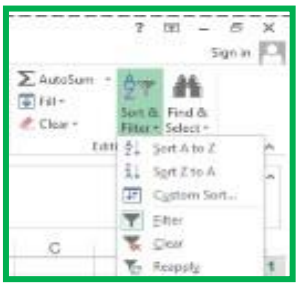
Figure 50 – Print Page of the Backstage View

To preview and print a worksheet:

1- Select the worksheet that you want to preview and print.

2- Click the **File** tab, and then click **Print**, or press **CTRL+P** the print page of the **Backstage** view opens, displaying print setting in the center pane and preview of the worksheet in the right pane.

Sorting data by a Single Column:

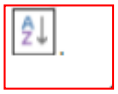


To sort the data in wok sheet by a single column.

1- Select a cell in the column that you want to sort by.

2- On the **Data** tab, in the **Sort& Filter** group, do one of the following:

a-To sort in ascending order, click the **Ascending** button .



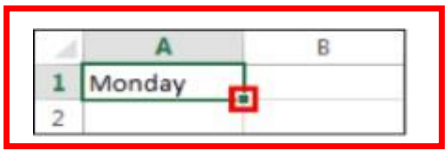
b- To sort descending order, click the Descending button. 

Entering data using Auto Fill

The Auto Fill feature automatically fills in data based on the data in adjacent cells. You can use it to enter data in a series (such as months, days of the week, and quarters). Or copy values to formulas to adjacent cell. To enter data using auto fill:

1- Select the cell that contain the first value of a series you want to extend or the data you want to copy.

2- Point to the Fill handle (the green square) in the lower-right corner of the selected cell. The mouse pointer changes to a black plus sign 



3- Drag the **Fill** handle over the cell that you want to fill. As you drag, screen tip appears showing the data that will be entered in each cell.

4- Release the mouse button. Excel fills the cells based on the contents of the first cell, the **Auto Fill option** button appears in the lower- right corner of the last cell.

NOTE: You can change how the selection is filled by clicking the **AutoFill Options** button and selecting the desired option from the menu (see Figure 13). The options that are available on the **AutoFill Options** menu depend on the type of content in the cells and on the format of the data.

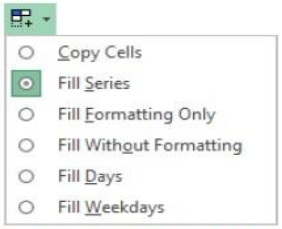


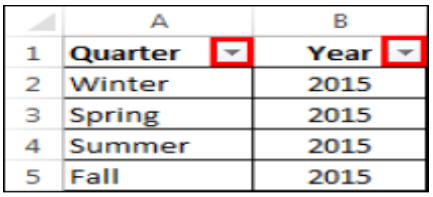
Figure 13 – AutoFill Options Menu

Filtering Cells

Filtering or temporarily hiding data in a spreadsheet very easy. This allows you to focus on specific spreadsheet entries To Filter Data:

1. Select a cell within the range that you want to filter
2. On the **data** tab, in the **Sort& Filter** group, click filter button (see figure3). Filter arrows appear to each column heading (see figure4).

Figure 3 – Sort & Filter Group on the Data Tab



	A	B
1	Quarter	Year
2	Winter	2015
3	Spring	2015
4	Summer	2015
5	Fall	2015

Figure 4 – Filter Arrows

3.deselect the (select All) check box at the top of the list and then select check box next to the value you want.

To Clear One Filter:

1. Select one of the drop-down arrows next to a filtered column.
2. Choose **Clear** Filter From...
3. To remove all filters, click the **Filter** command.

Working with charts:

A chart is a graphical representation of numerical data. You use chart to make it easier to spot trends, highlight important changes, or compare individual figures. A chart is composed of many element, some of these element are displayed by default, others can be added as needed. You can also remove chart element that you do not want to display. Not all elements appear in every chart type.

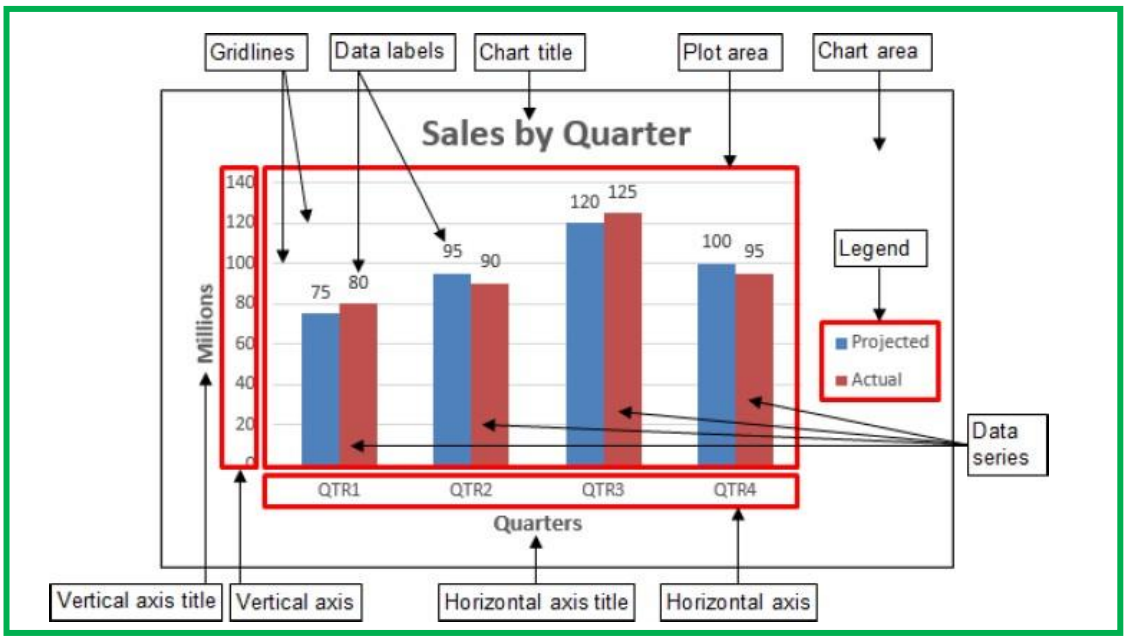


Table 1 – Chart Elements

Element	Description
Chart area	Consists of the chart border, the background, and all the fonts.
Plot area	Consists of the data series and gridlines.
Chart title	Text that describes the chart.
Axes	The horizontal axis (x-axis) contains the categories being plotted. The vertical axis (y-axis) contains the values being plotted.
Axis titles	The horizontal axis title describes the chart categories. The vertical axis title describes the chart values.
Gridlines	Horizontal or vertical lines in the plot area that make the data easier to read.
Data points	Individual values that are plotted in the chart. Data points are represented by bars, lines, slices, dots, or other markers.
Data labels	Text that displays the exact value represented by each data point.
Data series	A collection of related data points. Each data series in a chart has a unique color or pattern.
Legend	A key that identifies the colors or patterns associated with each data series.

When a chat is selected, the chart tools contextual tabs (**Design and Format)** become available on the Ribbon. You can use the commands on these tabs to change the design, and appearance of the chart.

Figure 15 – Chart Tools Design Tab

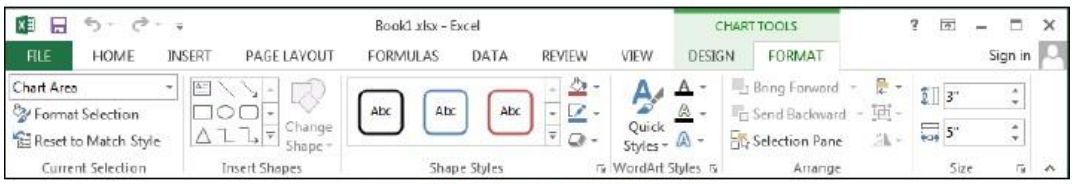


Figure 16 – Chart Tools Format Tab

When a chart is selected, three buttons appear in the upper-right corner of the chart. These Buttons provide quick access to the most common and useful chart customization features.

- The **Chart Elements** button allows you to add, remove, or change chart elements.
- The **Chart Styles** button allows you to change the style or color of the chart.
- The **Chart Filters** button allows you to show or hide data in the chart.

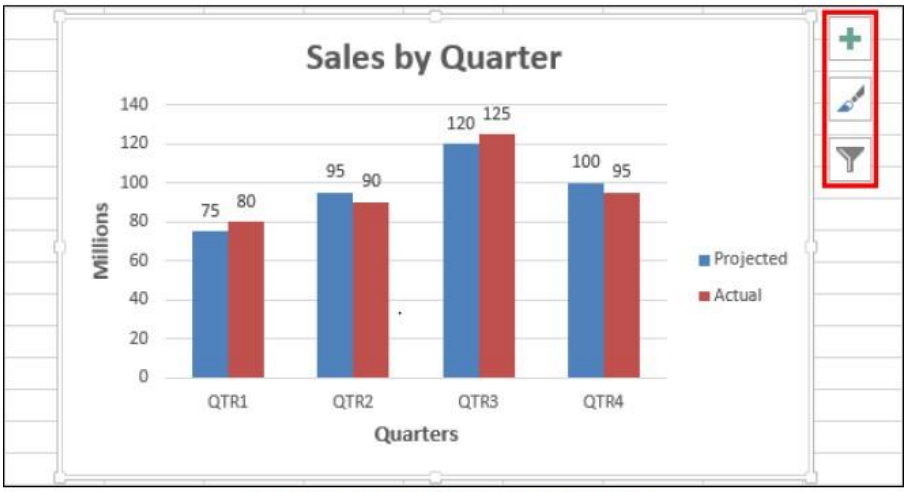


Figure 17 – Selected Chart with Chart Buttons

- Click the **Chart Elements** button  next to the chart, and then select an element's check box to add it to the chart or deselect it to remove it.

Chart Elements

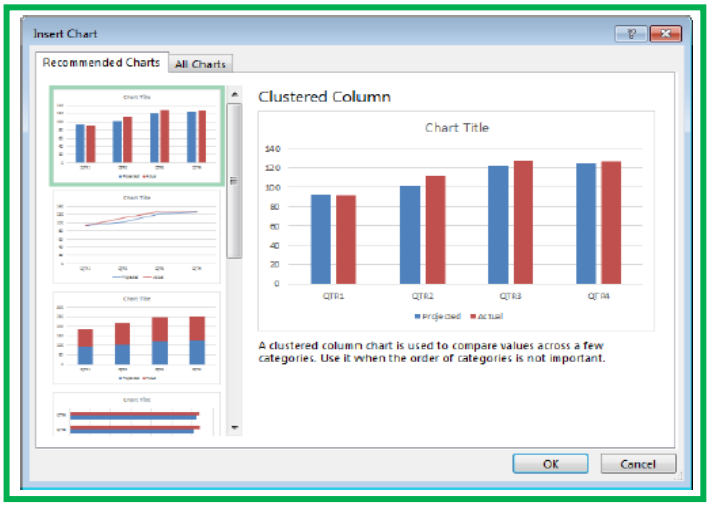
- Click the **Chart Styles** button  next to the chart, and then click the desired style on the **Style** tab of the **Chart Styles** gallery.

Chart Styles

To create a chart:

1- Select the cells that contain the data you want to include in the chart.
2- On the **insert** tab, in the **Charts** group, click the chart type that you want to use, and then click the desired chart subtype. The chart appears in the worksheet.

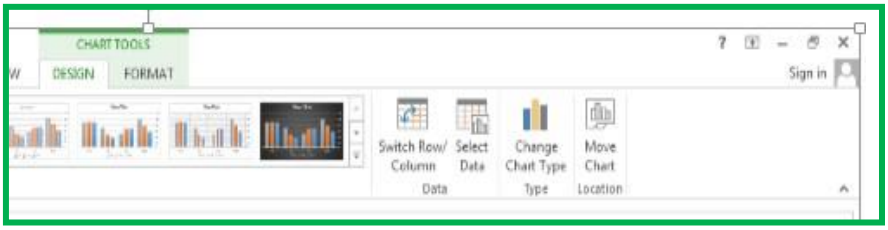
To create a recommended chart:



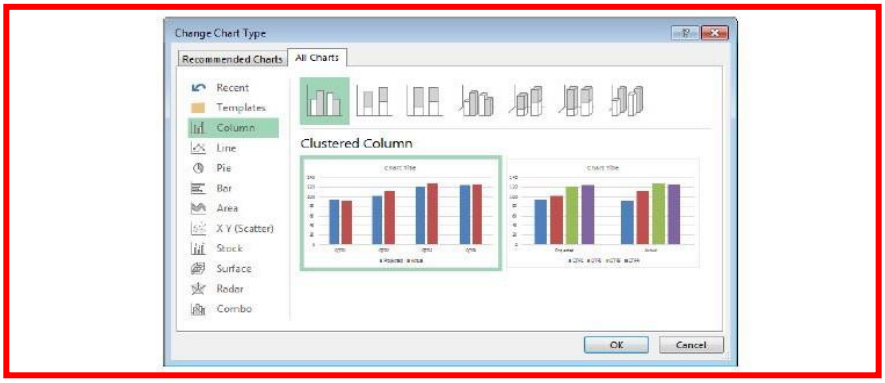
1- Select the cells that contain the data you want include in the chart.
2- On the **Insert** tab, in the **chart** group, click the recommended Charts button  .
3- In the **insert chart** dialog box, on the **Recommended Charts** tab. Select one of the recommended chart in the left pane, and then click the **OK** button.

Change the chart type:

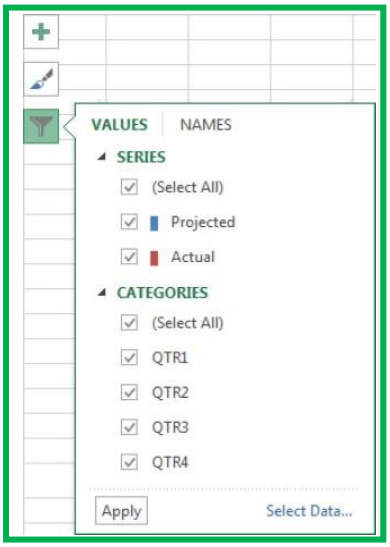
1- Select the chart you want to change.
2- Under chart tool, on the **Design** tab, in the Type group, click the **change chart** type button  .



3- In the change chart type, Select the desired chart in the left pane, select the desired chart subtype in the right pane, and then click OK button.



filter a chart :



To filter a chart

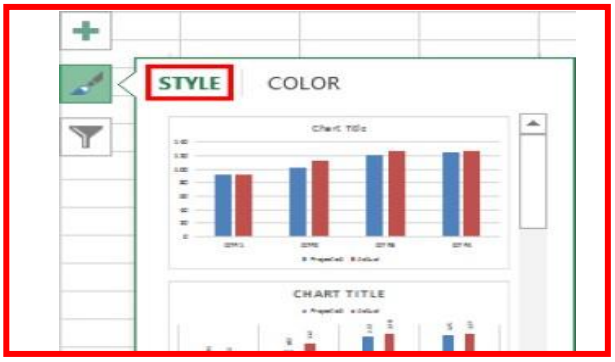
1- Select the chart that you want to filter.

2- Click the chart Filter button next to the chart, deselect the check boxes next to series or categories that you want to hid, and then click the Apply button.

Format chart style

1. Select the chart you want to format.
2. do one of the following:
   - Under the **Chart** Tool, on the **Design** tab, in the **Chart style** group, and then click the desierd style.

   - Click the **Chart style** button next to chart, and then click the desired style on the **Style** tab of the **Chart styles** gallery



Deleting Chart: If you no longer need a chart, you can delete it from the work book by select the chart you want to delete and press Delete key.

To delete the chart sheet Right click on sheet tab and click delete.

Using Formulas and Functinos:

Formulas are used to perform calculation in work sheet. All Formulas must begin with an equal sign(=). Formulas can consist of the following elements:

1. Constsnt values (such as 5 or 100)
2. Cell references (such as A1 or A1:A3)
3. Operations (such as+ for addition or* for muliplication)
4. Functions (such as SUM or AVERAGE).

Using Operator in Formulas:

Operators are symbols that represent specific mathematical operation excel formulas support a variety of operations (see table below).

Operator	Description	Example	Result
+	Addition	=1+1	2
-	Subtraction	=1-1	0
*	Multiplication	=2*2	4
/	Division	=4/2	2
%	Percentage	=20%	0.2
^	Exponentiation	=2^3	8
=	Equal to	=1=2	FALSE
>	Greater than	=1>2	FALSE
<	Less than	=1<2	TRUE
>=	Greater than or equal to	=1>=1	TRUE
<=	Less than or equal to	=1<=1	TRUE
<>	Not equal to	=1<>1	FALSE

Entering Simple Formulas:

To enter a formula

1. Select the cell in which you want to enter the formula.
2. Type an equal sign (=).
3. Enter the first value or cell reference.
4. Enter the desired operation.
5. Enter the next value or cell reference.
6. Repeat steps 4 and 5 as needed to complete the formula.
7. When finished, press the Enter key. The result of formula appears in the cell.

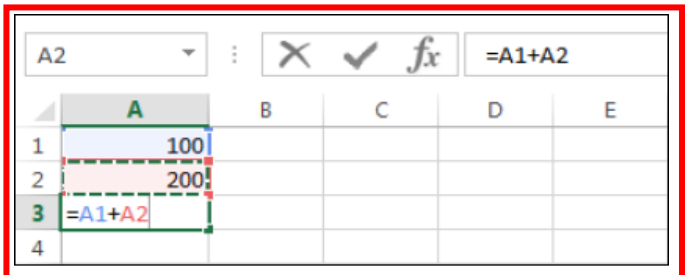


Figure 35 – Cell While Entering a Formula

Using Functions in Formulas

Functions are predefined formulas that can be used to perform complex calculations. Excel includes hundreds of functions that you can use alone or in combination with other formulas or functions (see Table 5).

Table 5 – Commonly Used Excel Functions

Function	Description	Example
SUM	Adds the values in the selected range.	=SUM(A1:A5)
AVERAGE	Averages the values in the selected range.	=AVERAGE(A1:A5)
COUNT	Returns the number of cells containing numbers.	=COUNT(A1:A5)
MAX	Returns the largest value in the selected range.	=MAX(A1:A5)
MIN	Returns the smallest value in the selected range.	=MIN(A1:A5)

Using the Auto Sum Button:

The Auto Sum button provides quick access to the most commonly used functions. To sum number using the Auto Sum button:

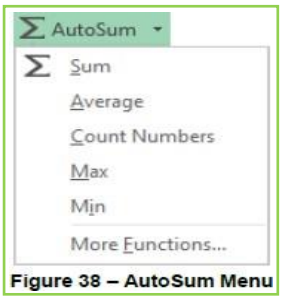


Figure 38 – AutoSum Menu

1. **Select** a cell next to the number that you want to sum.

2. On **Home** tab, in the **editing** group, click the **Auto Sum** button (see figure 39)

3. Do one of the following:

a. If the suggested range is correct, press the enter key to display the result.

b. if the suggested range is incorrect, select the correct range, and then press **Enter** key to display the result.

Figure 39 – Editing Group on the Home Tab

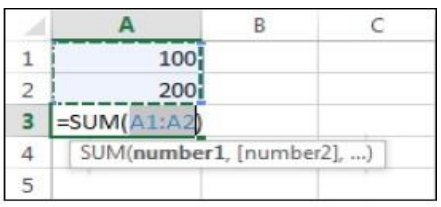


Figure 40 – Cell with SUM Function

Insert Function:

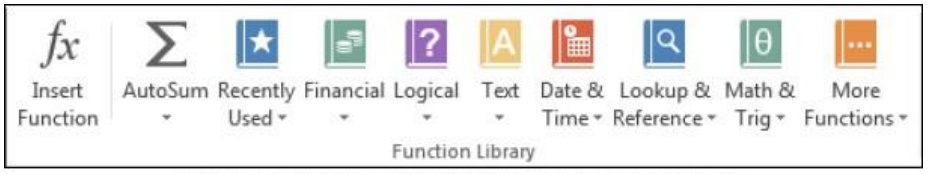


Figure 41 – Function Library Group on the Formulas Tab

To insert a function:

1. Select the cell in which you want to enter the formula.

2. On the **Formula** tab, in the **function library** group, click the **Insert Function** button  .or click the **insert function** button on the **Formula bar.**

3. In the Insert Function dialog box, search for a function or select a category, select the desired function, and then click the OK button

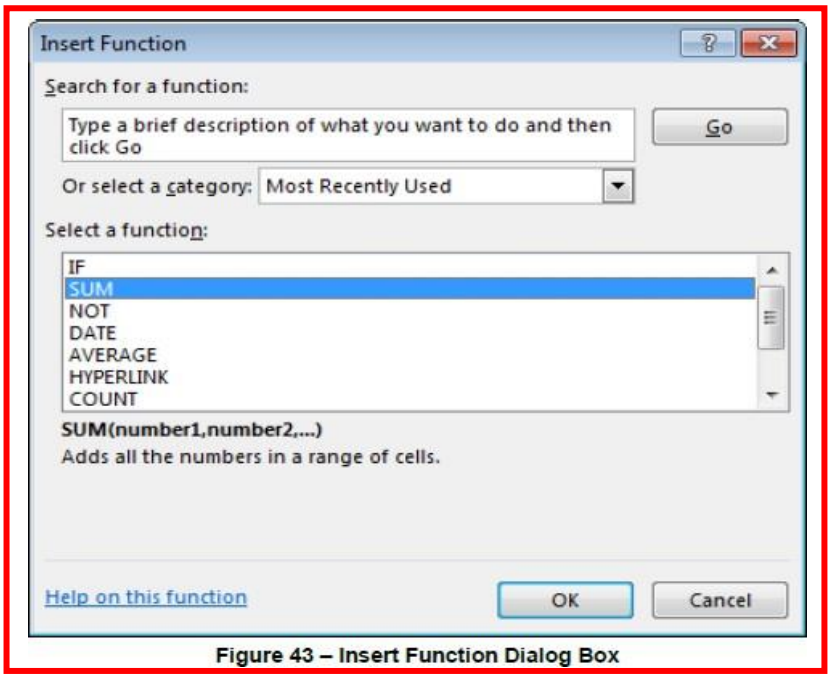


Figure 43 – Insert Function Dialog Box

.

4. In the function arguments dialog box, enter the functions arguments and then click OK button to display the result. (see figure)

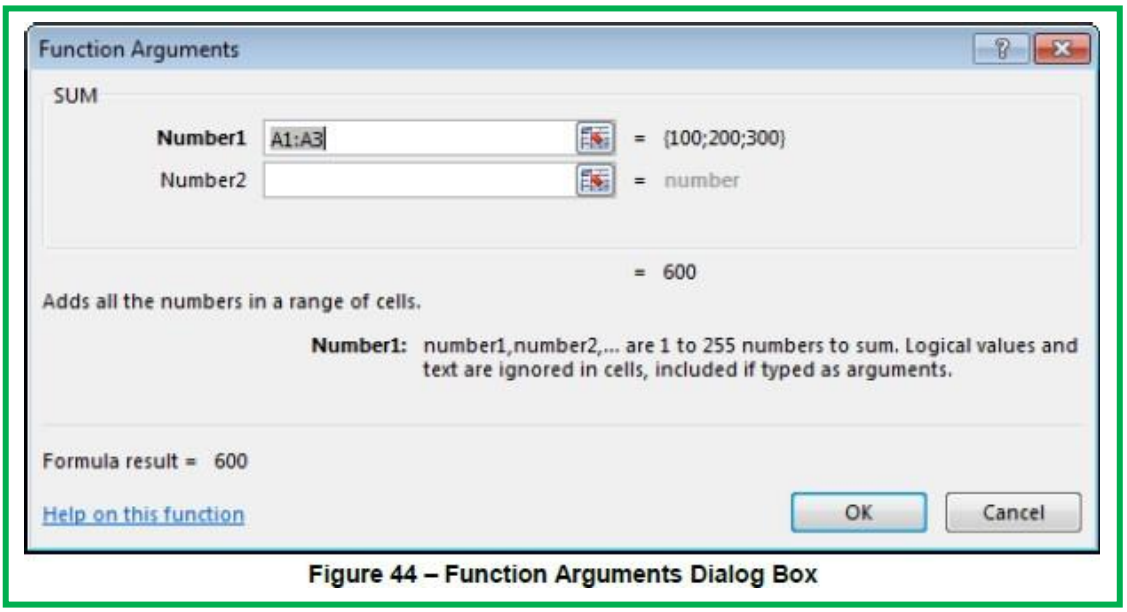
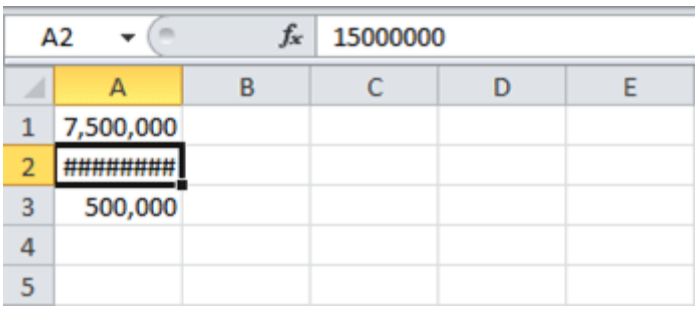


Figure 44 – Function Arguments Dialog Box

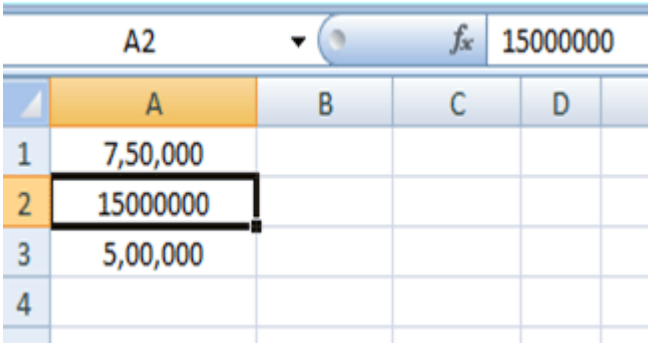
Most Common Excel Errors and Resolve Them

1. ###### Error (########)

This is one of the most common and easiest to tackle error. Basically, it is not a formula-based error but occurs when the width of column is small. In the example below, the figure 15000000 is too big and the column width is too small and hence it shows a error.

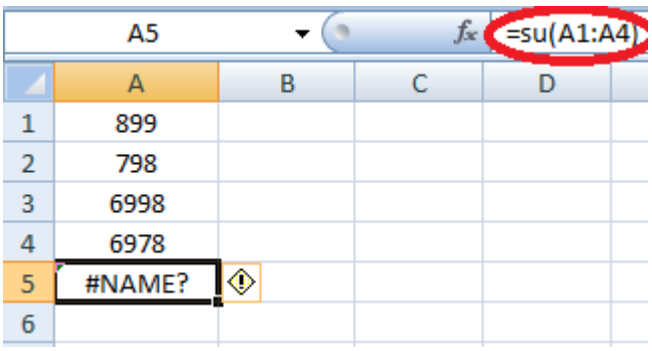


When you increase the width of column A, you will see that the error disappears.

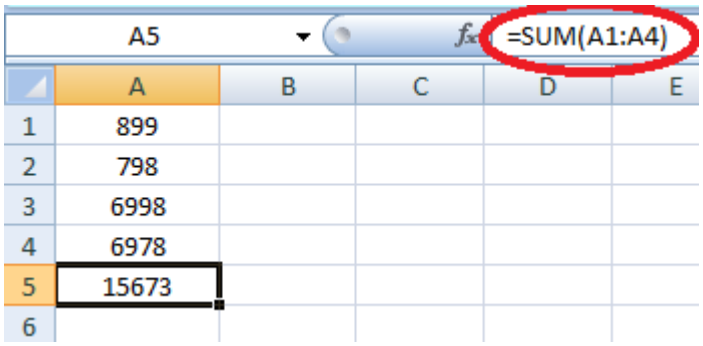


2. Name Error (#NAME?)

This error arises whenever Excel is not able to recognize the text in the formula. Like in the example below, instead of writing SUM we have written su and that is the reason we see the #NAME? in A5.

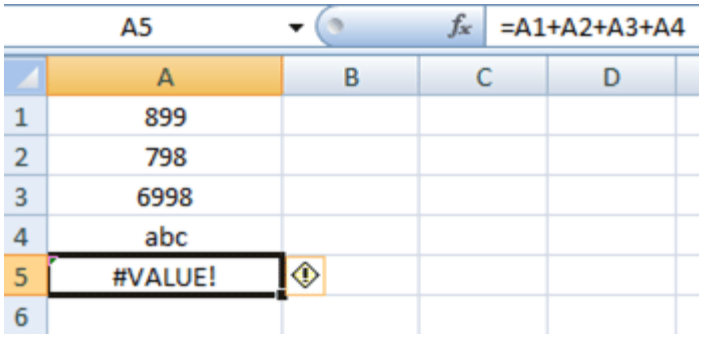


You will see that when you have corrected the formula to =SUM(A1:A4), you get the correct answer.

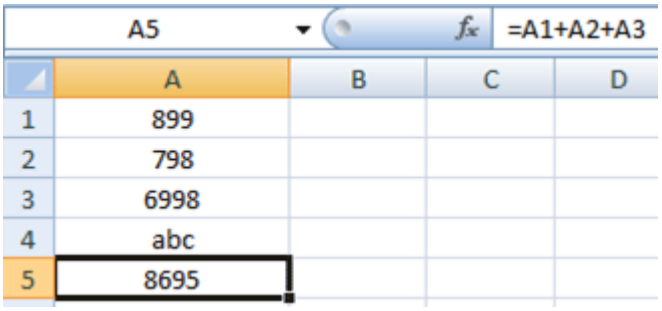


3. Value Error (#VALUE!)

Excel shows a Value error whenever the variable mentioned in the formula is wrong. If you see the image below, you will notice that in the formula cell A4 contains text whereas the other 3 cells contain numerical values and hence there is an #VALUE! Error.

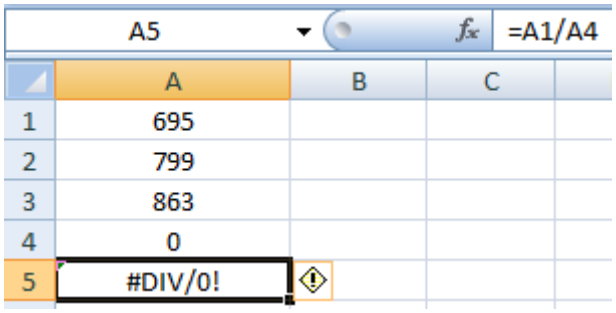


When you change the formula to A1+B1+C1 then you shall receive the correct answer without any errors.

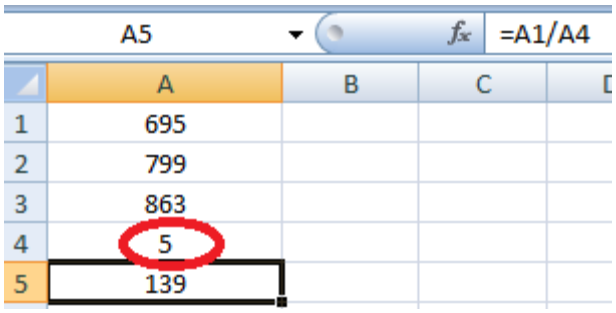


4. Division Error (#DIV?0!)

This is very simple to remember. When you attempt to divide a number by zero, you will come across the #DIV/0! error. In the example below, A4 cell contains a 0 and that is the reason the result for A1/A4 is #DIV/0! Error.

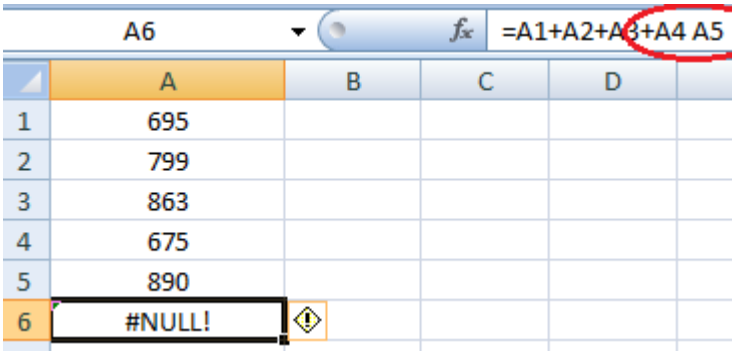


When you replace the zero with any other number (5 in our example), you will see the actual result without any error.

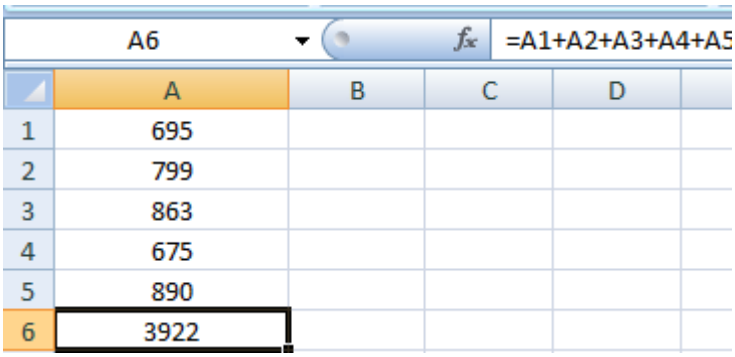


5. Null Error (#NULL!)

This is one of the most common types of error. When you forget to separate the two cell references correctly, then you shall receive this error. In the below mentioned example, there is no command between the cell A4 and A4 and hence, you see the #NULL! Error.

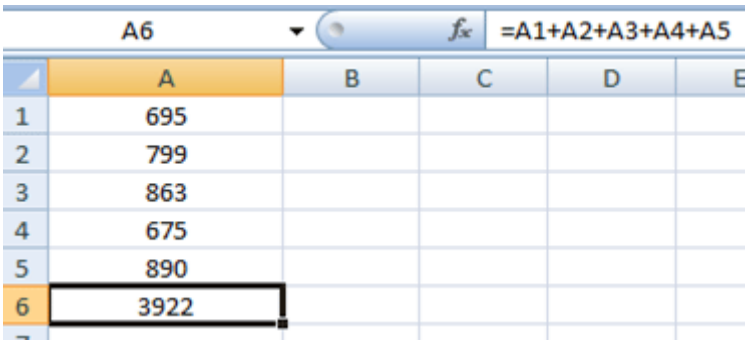


When you add a proper command between the two cell references, then you will get your desired result without any error.



6. Reference Error (#REF!)

When your formula contains some incorrect cell references, then you shall see a Reference Error. This mainly happens when you mistakenly delete any row or column. In the example below, you will see that your data is perfectly filled without any errors.



If by chance I delete the 3rd row, then the reference error shall occur as the original formula contains the value of 3rd row.