Excel 2013

Excel 2013 is a spreadsheet program that allows you to store, organize, and analyze information. While you may think that Excel is only used by certain people to process complicated data, anyone can learn how to take advantage of Excel's powerful features. Whether you're keeping a budget, organizing a training log, or creating an invoice, Excel makes it easy to work with different kinds of data.*

Launching Excel 2013 ***

Excel can be started either by selecting the program from the Windows start menu, or if there is an existing Excel shortcut available on your computer, it can be double-clicked to launch the program.

Open Excel by going through these steps:
1. Click the Start button
2. Select All Programs
3. Select Microsoft Office
4. Click Microsoft Excel 2013

Step (1 :(Click Start button.

*http://www.gcflearnfree.org/excel2013/4
Step (2) : Click All Programs option from the menu.

Step (3) : Search for Microsoft Office from the sub menu and click it.

Step (4) : Search for Microsoft Excel 2013 from the submenu and click it.
This will launch Microsoft Excel 2013 application and you will see the following excel window.

Excel Components
<table>
<thead>
<tr>
<th>Element</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Title bar</td>
<td>Displays the name of the workbook and the program.</td>
</tr>
<tr>
<td>Minimize, Restore Down/Maximize Close buttons</td>
<td>Controls the program window. Use the Minimize button to hide the window. Use the Restore Down/Maximize button to adjust the size of the window. Use the Close button to exit Excel.</td>
</tr>
<tr>
<td>Quick Access</td>
<td>Contains frequently used commands that are independent of the tab displayed on the Ribbon.</td>
</tr>
<tr>
<td>Ribbon</td>
<td>Contains all the commands related to managing workbooks and working with workbook content.</td>
</tr>
<tr>
<td>Formula bar</td>
<td>Displays the data or formula stored in the active cell. It can also be used to enter or edit a formula, a function, or data in a cell.</td>
</tr>
<tr>
<td>Name box</td>
<td>Displays the active cell address or the name of the selected cell, range, or object.</td>
</tr>
<tr>
<td>Workbook window</td>
<td>Displays a portion of the worksheet.</td>
</tr>
<tr>
<td>Sheet tabs</td>
<td>Each tab represents a different worksheet in the workbook. A workbook can have any number of sheets, and each sheet has its name displayed on its sheet tab.</td>
</tr>
<tr>
<td>Scroll bars</td>
<td>Used to move downward through a worksheet.</td>
</tr>
<tr>
<td>Status bar</td>
<td>Displays various messages as well as the status of the Num Lock, Caps Lock, and Scrool Lock keys on the keyboards.</td>
</tr>
<tr>
<td>View Shortcuts toolbar</td>
<td>Used to display the worksheet in a variety of views, each suited to a specific purpose.</td>
</tr>
<tr>
<td>Zoom Level button Zoom slider</td>
<td>Used to change the magnification of the worksheet.</td>
</tr>
</tbody>
</table>

**Note: the selected cell is called Active Cell**

Each cell has its own **name**, or **cell address**, based on its column and row. In this example, the selected cell intersects **column C** and **row 5**, so the cell address is **C5**. The cell address will also appear in the **Name box**. Note that a cell's **column** and **row headings** are **highlighted** when the cell is selected.

![Cell address appears in Name box](image)

Note: -Rows header show the row number, which start with 1 and end at 1,048,576.  
- Columns header shows the column names, which start with the alphabet A and end at XFD.  
A total of 16,384 columns
Range: is a collection of two or more cells.

Sechelt Cells

1. **Click on a cell** to select it. When a cell is selected you will notice that the **borders** of the cell appear **bold** and the **column heading** and **row heading** of the cell are highlighted.

2. Release your mouse. The cell will stay selected until you click on another cell in the worksheet.

To Select Multiple Cells

1. **Click and drag your mouse** until all of the adjoining cells you want are highlighted. Selecting multiple cells - 3 Rows by 3 Columns

2. Release your mouse. The cells will stay selected until you click on another cell in the worksheet.

<table>
<thead>
<tr>
<th>Selecting Cells</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>One cell</td>
<td>Click once in the cell</td>
</tr>
<tr>
<td>All cells left of current cell</td>
<td>SHIFT + left arrow</td>
</tr>
<tr>
<td>All cells right of current cell</td>
<td>SHIFT + right arrow</td>
</tr>
<tr>
<td>Entire column</td>
<td>Click the column label</td>
</tr>
<tr>
<td>Entire row</td>
<td>Click the row label</td>
</tr>
<tr>
<td>Entire worksheet</td>
<td>Click the whole sheet button or CTRL + A</td>
</tr>
<tr>
<td>Cluster of cells</td>
<td>Drag mouse over the cells or hold down the SHIFT key while using the arrow keys</td>
</tr>
<tr>
<td>Non-adjacent cells</td>
<td>Hold down the CTRL key and use the mouse to click on non-adjacent cells</td>
</tr>
</tbody>
</table>

Move around Cells

There are various ways to navigate through a worksheet. Using the mouse or Keyboard, you can move from cell to cell, move up or down a page at a time, or move to first or last used cell in the worksheet.
Cursor Movement

<table>
<thead>
<tr>
<th>Cursor Movement</th>
<th>Instructions</th>
</tr>
</thead>
<tbody>
<tr>
<td>One cell up</td>
<td>Up arrow</td>
</tr>
<tr>
<td>One cell down</td>
<td>Down arrow or Enter</td>
</tr>
<tr>
<td>One cell right</td>
<td>Right arrow or Tab</td>
</tr>
<tr>
<td>One cell left</td>
<td>Left arrow or Shift+Tab</td>
</tr>
<tr>
<td>Top of worksheet cell A1</td>
<td>SHIFT+Tab</td>
</tr>
<tr>
<td>Where the last column with data</td>
<td>CTRL+Home</td>
</tr>
<tr>
<td>intersects with the last row</td>
<td></td>
</tr>
<tr>
<td>with data</td>
<td></td>
</tr>
<tr>
<td>Any cell</td>
<td>CTRL+End</td>
</tr>
<tr>
<td>Move to next worksheet</td>
<td>Enter the cell address in the Cell</td>
</tr>
<tr>
<td></td>
<td>Number Box</td>
</tr>
<tr>
<td></td>
<td>CTRL+PageDown</td>
</tr>
</tbody>
</table>

Cell Contents
Each cell can contain its own text, formatting, comments, formulas, and functions.

- **Text**: Cells can contain letters, numbers, and dates.
- **Formatting attributes**: Cells can contain formatting attributes that change the way letters, numbers, and dates are displayed. For example, dates can be formatted as MM/DD/YYYY or Month/D/YYYY.
- **Formulas and Functions**: Cells can contain formulas and functions that calculate cell values. For example, `SUM(cell 1, cell 2...)` is a formula that can add the values in multiple cells.

To Insert Content:
1. Click on a cell to select it.
2. Enter content into the selected cell using your keyboard. The content appears in the cell and in the formula bar. You also can enter or edit cell content from the formula bar.

Delete Content Within Cells:
1. Select the cells which contain content you want to delete.
2. Click the Clear command on the ribbon. A dialog box will appear.
3. Select Clear Contents.

Note: You can also use your keyboard’s Backspace key to delete content from a single cell or Delete key to delete content from multiple cells.
To Delete Cells:
1. Select the cells that you want to delete.
2. Choose the Delete command from the ribbon.

Note: There is an important difference between deleting the content of a cell and deleting the cell itself. If you delete the cell, by default the cells underneath it will shift up and replace the deleted cell.

To Copy and Paste Cell Content:
1. Select the cells you wish to copy.
2. Click the Copy command. The border of the selected cells will change appearance. Copying selected cells

3. Select the cell or cells where you want to paste the content.
4. Click the Paste command. The copied content will be entered into the highlighted cells.

To Cut and Paste Cell Content:
1. Select the cells you wish to cut.
2. Click the Cut command. The border of the selected cells will change appearance. Cutting selected cells

3. Select the cells where you want to paste the content.
4. Click the Paste command. The cut content will be removed from the original cells and entered into the highlighted cells.
To Access More Paste Options:
There are more Paste options that you can access from the drop-down menu on the Paste command. These options may be convenient to advanced users who are working with cells that contain formulas or formatting.

To Access Formatting Commands by Right-Clicking:
1. Select the cells you want to format.
2. Right-click on the selected cells. A dialog box will appear where you can easily access many commands that are on the ribbon.

To Drag and Drop Cells:
1. Select the cells that you wish to move.
2. Position your mouse on one of the outside edges of the selected cells. The mouse changes from a white cross to a black cross with 4 arrows.
3. Click and drag the cells to the new location.
4. Release your mouse and the cells will be dropped there.
To Use the Fill Handle to Fill Cells:
1. Select the cell or cells containing the content you want to use. You can fill cell content either vertically or horizontally.
2. Position your mouse over the fill handle so that the white cross becomes a black cross.
3. Click and drag the fill handle until all the cells you want to fill are highlighted.
4. Release the mouse and your cells will be filled.

<table>
<thead>
<tr>
<th>Action</th>
<th>Using the Home Ribbon</th>
<th>Using the right mouse button</th>
<th>Using the keyboard</th>
</tr>
</thead>
<tbody>
<tr>
<td>To cut the cell’s content that will be</td>
<td>Click on the Cut icon on the</td>
<td>Right click on the highlighted</td>
<td>Use the keystroke CTRL + X</td>
</tr>
<tr>
<td>moved to another cell, highlight the cell</td>
<td>Home Ribbon.</td>
<td>cell, select Cut from the menu</td>
<td></td>
</tr>
<tr>
<td>and ...</td>
<td></td>
<td>that appears.</td>
<td></td>
</tr>
<tr>
<td>To copy the cell’s content, highlight the</td>
<td>Click on the Copy icon on the</td>
<td>Right click on the highlighted</td>
<td>Use the keystroke CTRL + C</td>
</tr>
<tr>
<td>cell and ...</td>
<td>Home Ribbon.</td>
<td>cell, select Copy from the menu</td>
<td></td>
</tr>
<tr>
<td>Highlight the cell into which you want to</td>
<td>Click on the Paste icon on the</td>
<td>Select Paste from the menu that</td>
<td>Use the keystroke CTRL + V</td>
</tr>
<tr>
<td>paste the cut or copied cell and ...</td>
<td>Home Ribbon.</td>
<td>appears.</td>
<td></td>
</tr>
<tr>
<td>Drag and Drop</td>
<td>Drag the highlighted border of</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>the selected cell to the</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>destination cell with the mouse.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
To modify column width:

1. Position your mouse over the column line in the column heading so the white cross becomes a double arrow.

2. Click and drag the column to the right to increase the column width or to the left to decrease the column width.

3. Release the mouse. The column width will be changed in your spreadsheet.

If you see pound signs (#######) in a cell, it means that the column is not wide enough to display the cell content. Simply increase the column width to show the cell content.

To set column width with a specific measurement:

1. Select the columns you want to modify.
2. Click the Format command on the Home tab. The format drop-down menu appears.
3. Select Column Width.
4. The Column Width dialog box appears. Enter a specific measurement.

*http://www.gcflearnfree.org/excel2010/3/print
5. Click **OK**. The width of each selected column will be changed in your worksheet.

Note: Select **AutoFit Column Width** from the format drop-down menu, and Excel will automatically adjust each selected column so all of the text will fit.

To modify the row height:

1. Position the **cursor** over the **row line** so the **white cross** becomes a **double arrow**.

   ![Image](image1.png)

2. **Click and drag the row** downward to increase the row height or upward decrease the row height.

   ![Image](image2.png)

3. Release the mouse. The height of each selected row will be changed in your worksheet.

   ![Image](image3.png)

To set row height with a specific measurement:

1. Select the rows you want to modify.
2. Click the **Format** command on the **Home** tab. The format drop-down menu appears.

3. Select **Row Height**.

4. The **Row Height** dialog box appears. Enter a specific measurement.

![Row Height dialog box](image)

5. Click **OK**. The selected rows' heights will be changed in your spreadsheet.

Select **AutoFit Row Height** from the format drop-down menu, and Excel will automatically adjust each selected row so all of the text will fit.

To insert rows:

1. Select the **row below** where you want the new row to appear.

![Worksheet with inserted row](image)

2. Click the **Insert** command on the **Home** tab.

![Insert command](image)

3. The new row appears in your worksheet.
When inserting new rows, columns, or cells, you will see the **Insert Options** button by the inserted cells. This button allows you to choose how Excel formats them. By default, Excel formats inserted rows with the same formatting as the cells in the row above them. To access more options, hover your mouse over the Insert Options button and click the drop-down arrow that appears.

To insert columns:

1. Select the **column** to the right of where you want the new column to appear. For example, if you want to insert a column between A and B, select column B.

2. Click the **Insert** command on the **Home** tab.

3. The new column appears in your worksheet.
By default, Excel formats inserted columns with the same formatting as the column to the left of them. To access more options, hover your mouse over the **Insert Options** button and click the drop-down arrow that appears.

When inserting rows and columns, make sure you select the row or column by clicking on its heading so all the cells in that row or column are selected. If you select just a cell in the row or column, then only a new cell will be inserted.

**Wrapping text and merging cells**

If a cell contains more text than can be displayed, you can choose to wrap the text within the cell or merge the cell with empty, adjoining cells. **Wrap text** to make it display on multiple lines of the cell. **Merge cells** to combine adjoining cells into one larger cell.

To wrap text:

1. Select the cells with text that you want to wrap.

2. Select the **Wrap Text** command on the **Home** tab.
3. The text in the selected cells will be wrapped in your worksheet.

If you change your mind, re-click the **Wrap Text** command to unwrap the text.

To merge cells using the Merge & Center command:

1. Select the cells you want to merge together.

2. Select the **Merge & Center** command on the **Home** tab.

3. The selected cells will be merged, and the text will be centered.

If you change your mind, re-click the **Merge & Center** command to unmerge the cells.
To access more merge options:
Click the drop-down arrow next to the Merge & Center command on the Home tab. The merge drop-down menu appears.
- **Merge & Center:** Merges selected cells into one cell and centers the text.
- **Merge Across:** Merges each row of selected cells into larger cells. This command is useful if you are merging content across multiple rows of cells and do not want to create one large cell.
- **Merge Cells:** Merges selected cells into one cell.
- **Unmerge Cells:** Unmerges selected cells.

**Hide Columns or Rows**

To hide a column, execute the following steps.
1. Select a column.
2. Right click, and then click Hide.

Note: to hide a row, select a row, right click, and then click Hide.

**Unhide**

To unhide a column, execute the following steps.
1. Select the columns on either side of the hidden column.
2. Right click, and then click Unhide.

Note: to unhide a row, select the rows on either side of the hidden row, right click, and then click Unhide.
Working with Sheets tabe
A worksheet is a collection of cells where you keep and manipulate the data. By default, each Excel workbook contains three **worksheets**.

Select a Worksheet
When you open **Excel** Excel automatically selects Sheet1 for you. The name of the worksheet appears on its sheet tab at the bottom of the document window.

To select one of the other two worksheets, simply click on the sheet tab of Sheet2 or Sheet3.

Rename a Worksheet
By default, the worksheets are named Sheet1, Sheet2 and Sheet3. To give a worksheet a more specific name, execute the following steps:

1. Right click on the sheet tab of Sheet1.
2. Choose Rename.
3. For example, type Sales 2013

Insert a Worksheet
You can insert as many worksheets as you want. To quickly insert a new **worksheet** click the Insert Worksheet tab at the bottom of the document window.
Result:

**Move a Worksheet**
To move a worksheet, click on the sheet tab of the worksheet you want to move and drag it into the new position. For example, click on the sheet tab of Sheet4 and drag it before Sheet2.

**Delete a Worksheet**
To delete a worksheet, right click on a sheet tab and choose Delete. For example, delete Sheet4, Sheet2 and Sheet3.

**Copy a Worksheet**
Imagine, you have got the sales for 2013 ready and want to create the exact same sheet for 2011, but with different data. You can recreate the worksheet, but this is time-consuming. It's a lot easier to copy the entire worksheet and only change the numbers.
1. Right click on the sheet tab of Sales 2013.
2. Choose Move or Copy...
The 'Move or Copy' dialog box appears.
3. Select (move to end) and check Create a copy.
4. Click OK.

Result:

Note: you can even copy a worksheet to another Excel workbook by selecting the specific workbook from the drop-down list (see the dialog box shown earlier.

Formatting Cells
While using the Home Ribbon, click on one cell of highlight multiple cells to be formatted. You can use the icons and shortcuts on the Home Ribbon to change the Font (e.g. color of the font, fill of the background, underline/outline of the selected cells), Alignment or the way the data inside the cells is displayed.

Formatting numbers and dates

One of the most useful features of Excel is its ability to format numbers and dates in a variety of ways. For example, you might need to format numbers with decimal places, currency symbols ($), or percent symbols (%).

To format numbers and dates:

1. Select the cells you want to modify.
2. Click the drop-down arrow next to the Number Format command on the Home tab.
3. Select the number format you want. For some number formats, you can then use the Increase Decimal and Decrease Decimal commands (below the Number Format command) to change the number of decimal places that are displayed.

Click the buttons in the interactive below to learn about the different number formats.
General is the default format for any cell, when you enter a number into chart excel, excel will guess the number format that is most appropriate for example, if you enter "1-5", the cell will display the number as a short date, "1/5/2013.

Number formats numbers with decimal places; for example, if you enter "4" into the cell, the cell will display the number as "4.00".

Currency formats numbers as currency with a currency symbol. For example, if you enter "5" into the cell, the cell will display the number as "$5.00".

Sorting Data
With more than 17 billion cells in a single worksheet, Excel 2013 gives you the ability to work with an enormous amount of data. Arranging your data alphabetically, from smallest to largest, or using other criteria can help you find the information you're looking for more quickly.

Basic sorting
Sorting is a common task that allows you to change or customize the order of your spreadsheet data. For example, you could organize an office birthday list by employee, birthdate, or department, making it easier to find what you're looking for. Custom sorting takes it a step further, giving you the ability to sort multiple levels, such as department first, then birthdate, to group birthdays by department.

To sort in alphabetical order:
1. Select a cell in the column you want to sort by. In this example, we will sort by Last Name.
2. Select the Data tab, then locate the Sort and Filter group.
3. Click the ascending command to Sort A to Z or the descending command to Sort Z to A.
4. The data in the spreadsheet will be organized alphabetically.

Note: Sorting options can also be found on the Home tab, condensed into the Sort & Filter command. You can also Sort & Filter command
To sort in the order of your choosing:
You can use a **Custom List** to identify your own sorting order, such as days of the week, or in this example, T-shirt sizes from smallest to largest (Small, Medium, Large, and X-Large).

1. From the **Data** tab, click the **Sort** command to open the **Sort** dialog box.
2. Identify the column you want to **Sort by** by clicking the drop-down arrow in the **Column** field. In this example, we will choose T-Shirt Size.
3. Make sure **Values** is selected in the **Sort On** field.
4. Click the drop-down arrow in the **Order** field, then choose **Custom List**...
5. Select **NEW LIST**, and enter how you want your data sorted in the **List entries** box. We will sort T-shirt sizes from smallest to largest.
6. Click **Add** to save the list, then click **OK**.
7. Click **OK** to close the **Sort** dialog box and sort your data.
8. The spreadsheet will be sorted in order of Small, Medium, Large, and X-Large.
**Formulas and Functions**

*The Fill Handle*

**Copying Information**
An alternative to using Copy and Paste when you wish to copy information or formulas to adjacent cells is to take advantage of the AutoFill feature. If you want to copy the contents of a cell to the cells below it, position the cursor over the small black box in the lower right corner of the cell. As the large white plus sign cursor changes to a thin black one, click and drag it downward to fill the desired cells.

**Extending a Series**
The Fill Handle can also be used to extend a recognizable pattern such as those in a sequence of numbers, names of days, or names of months. In most cases, if the first couple of cells are filled and selected, this will be enough to establish a pattern that Excel can recognize and continue.

In this example, we selected the first two cells of an intended pattern where the number “1” was in the first cell and “2” was in the second cell. Highlighting these and dragging the fill handle downward shows the number “3” intended to be placed in the next cell. Dragging down farther will continue the pattern in additional cells such as in these examples.

**Formulas and Functions**
Excel allows the use of formulas and functions in worksheets. These can contain specific numbers or cell references. Whenever the contents of a cell will be treated as a formula or function, the expression entered will always begin with an equals sign (=). By default, formulas referencing cells containing numbers will automatically update the calculated value if the numbers in the cells are changed.

Creating simple formulas
Excel uses standard operators for equations, such as a **plus sign** for addition (+), **minus sign** for subtraction (-), **asterisk** for multiplication (*), **forward slash** for division (/), and **caret** (^) for exponents.

The key thing to remember when writing formulas for Excel is that all formulas must begin with an **equals sign** (=). This is because the cell contains, or is equal to, the formula and its value.

To create a simple formula in Excel:

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1. Select the cell where the answer will appear (B4, for example.)

2. Type the **equals sign ( = )**
3. Type in the formula you want Excel to calculate. For example, "75/250 ."
4. Press **Enter**. The formula will be calculated, and the value will be displayed in the cell.

**Creating formulas with cell references**

When a formula contains a cell address, it is called a **cell reference**. Creating a formula with cell references is useful because you can update data in your worksheet without having to rewrite the values in the formula.

To create a formula using cell references:

1. Select the cell where the answer will appear (B3, for example).
2. Type the **equals sign ( = )**
3. Type the cell address that contains the first number in the equation (B1, for example)
4. Type the operator you need for your formula. For example, type the **addition sign**.(+)
5. Type the cell address that contains the second number in the equation (B2, for example)

6. Press **Enter**. The formula will be calculated, and the value will be displayed in the cell.

If you change a value in either B1 or B2, the total will automatically recalculate.

To create a formula using the point-and-click method:

1. Select the cell where the answer will appear (B4, for example).

2. Type the **equals sign**.(=)

3. Click on the **first cell** to be included in the formula (A3, for example).
4. Type the operator you need for your formula. For example, type the multiplication sign (*)

5. Click on the next cell in the formula (B3, for example).

6. Press Enter. The formula will be calculated, and the value will be displayed in the cell.

To edit a formula:
1. Click on the cell you want to edit.
2. Insert the cursor in the formula bar and edit the formula as desired. You can also double-click the cell to view and edit the formula directly from the cell.
3. When finished, press Enter or select the Enter command.

4. The new value will be displayed in the cell.

Note: If you change your mind, use the Cancel command in the formula bar to avoid accidentally making changes to your formula.
Working with basic functions

Figuring out formulas for calculations you want to make in Excel can be tedious and complicated. Fortunately, Excel has an entire library of functions or predefined formulas that you can take advantage of. You may be familiar with common functions like sum, average, product, or count, but there are hundreds of functions in Excel, even for things like formatting text, referencing cells, calculating financial rates, and analyzing statistics.

Basic functions

A function is a predefined formula that performs calculations using specific values in a particular order. One of the key benefits of functions is that they can save you time since you do not have to write the formula yourself. Excel has hundreds of different functions to assist with your calculations.

In order to use these functions correctly, you need to understand the different parts of a function and how to create arguments in functions to calculate values and cell references.

The parts of a function

The order in which you insert a function is important. Each function has a specific order, called syntax, which must be followed for the function to work correctly. The basic syntax to create a formula with a function is to insert an equals sign (=) a function name (SUM, for example, is the function name for addition), and an argument. Arguments contain the information you want the formula to calculate, such as a range of cell references.

Working with arguments

Arguments must be enclosed in parentheses. Individual values or cell references inside the parentheses are separated by either colons or commas.

- **Colons** create a reference to a range of cells.

  For example, `=AVERAGE(E19:E23)` (would calculate the average of the cell range E19 through E23).

- **Commas** separate individual values, cell references, and cell ranges in the parentheses. If there is more than one argument, you must separate each argument by a comma.
To create a basic function in Excel:
1. Select the cell where the answer will appear (F15, for example).
2. Type the equals sign (=) then enter the function name (SUM, for example)
3. Enter the cells for the argument inside the parentheses.
4. Press Enter and the result will appear. 

To insert a function from the Function Library:
1. Select the cell where the answer will appear (I6, for example).
2. Click on the Formulas tab.
3. From the Function Library group, select the function category you desire. In this example, we will choose Date & Time.
4. Select the desired function from the Date & Time drop-down menu

The Insert Function command
The Insert Function command is convenient because it allows you to search for a function by typing a description of what you are looking for or by selecting a category to peruse. The Insert Function command can also be used to easily enter or select more than one argument for a function.

Using the Insert Function command:
In this example, we want to find a function that will count the total number of supplies listed in the Office Supply Order Log. The basic COUNT function only counts cells with numbers; we want to count the cells in the Office Supply column, which uses text. Therefore, we will need to find a formula that counts cells with text.
1. Select the cell where the answer will appear (A27, for example).
2. Click on the Formulas tab, then select the Insert Function command.
3. The Insert Function dialog box will appear.
4. Type a description of the function you are searching for and click Go. For our example, we will type "Count cells with text". You may also search by selecting a category.

5. Review the results to find the function you desire. We will use COUNTA. Then click OK.

6. The Function Arguments dialog box will appear. Insert the cursor in the first field, then enter or select the cell(s) you desire (A6:A14, for example).
7. Insert the cursor in the next field then enter or select the cell(s) you desire (A19:A23, for example). (You may continue to add additional arguments if needed).

8. Click OK and the result will appear. Our results show that 14 Total Supplies were ordered from our log.

Using AutoSum to select common functions:

The AutoSum command allows you to automatically return the results for a range of cells for common functions like SUM and AVERAGE.
1. Select the cell where the answer will appear (E24, for example).
2. Click on the Home tab.
3. In the Editing group, click on the AutoSum drop-down arrow and select the function you want (Average, for example).
4. A formula will appear in the selected cell E24. If logically placed, AutoSum will select your cells for you. Otherwise, you will need to click on the cells to choose the argument you desire.
5. Press Enter and the result will appear.

$11.24

The AutoSum command can also be accessed from the Formulas tab.

Basic Description*

The Excel MAX function returns the largest value from a supplied set of numerical values.

* http://www.excelfunctions.net/MaxFunction.html
The following example shows the Max function used to retrieve the largest value from the set of values in cells A1 - A5.

The format of the function is shown in the spreadsheet on the left and the resulting value is shown in the spreadsheet on the right.

**Formulas:**

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>4</td>
<td>=MAX(A1:A5)</td>
</tr>
<tr>
<td>2</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>2</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>

The Excel MIN function returns the smallest value from a supplied set of numerical values.

The following example shows the Min function used to retrieve the smallest value from the set of values in cells A1 - A5.

The format of the function is shown in the spreadsheet on the left and the resulting value is shown in the spreadsheet on the right.

**Formulas:**

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>4</td>
<td>=MIN(A1:A5)</td>
</tr>
<tr>
<td>2</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>

The Excel Count function returns the number of numeric values in a supplied set of cells or values. This count includes both numbers and dates.

The following spreadsheet shows several examples of the Excel Count function, with the values supplied to the function as one or more ranges of cells.

The spreadsheet on the left shows the formulas and the spreadsheet on the right shows the results.

**Formulas:**

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>text</td>
<td>=COUNT(A1:B5)</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>FALSE</td>
<td>=COUNT(A1:A5, B1)</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>01/01/2010</td>
<td>=COUNT(A1:A5, A1:B1)</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>#N/A</td>
<td>10</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>text</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>FALSE</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>01/01/2010</td>
<td>#N/A</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>#N/A</td>
<td>10</td>
<td></td>
</tr>
</tbody>
</table>

The Excel AVERAGE function returns the arithmetic mean of a list of supplied numbers.

**Excel Average Function Examples**

The following spreadsheet shows the Excel Average function used to calculate the arithmetic mean of the set of values in cells A1-A5. Although the same 5 values are provided to each of the functions in cells B1-B4, in each case, the values are provided to the function in different ways.

**Formulas:**

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>8</td>
<td>=AVERAGE(A1:A5)</td>
</tr>
<tr>
<td>2</td>
<td>7</td>
<td>=AVERAGE(8, 7, 9, 8, 10)</td>
</tr>
<tr>
<td>3</td>
<td>9</td>
<td>=AVERAGE(A1, A2, A3, A4, A5)</td>
</tr>
<tr>
<td>4</td>
<td>6</td>
<td>=AVERAGE(A1:A3, (5, 10))</td>
</tr>
<tr>
<td>5</td>
<td>10</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>2</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>3</td>
<td>9</td>
<td>8</td>
</tr>
<tr>
<td>4</td>
<td>6</td>
<td>8</td>
</tr>
<tr>
<td>5</td>
<td>10</td>
<td></td>
</tr>
</tbody>
</table>
The Excel IF function tests a user-defined condition and returns one result if the condition is true and another result if the condition is false.

The syntax of the function is:

\[
\text{IF( logical_test, value_if_true, value_if_false )}
\]

where the arguments are as follows:

<table>
<thead>
<tr>
<th>Logical Test</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Logical Test</td>
<td>The user-defined condition that is to be tested and evaluated as either TRUE or FALSE</td>
</tr>
<tr>
<td>Value If True</td>
<td>The result that is to be returned from the function if the supplied logical_test evaluates to TRUE</td>
</tr>
<tr>
<td>Value If False</td>
<td>The result that is to be returned from the function if the supplied logical_test evaluates to FALSE</td>
</tr>
</tbody>
</table>

**Excel If Function Examples**

**If Function Example 1**

The following example shows the Excel If function applied to two sets of numbers. In this example, the logical_test checks whether the corresponding value in column B is equal to 0, and the function returns:

- The text string "div by zero" if the value in column B is equal to 0 or
- The value in column A divided by the value in column B if the value in column B is not equal to zero

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>5</td>
<td>4 =IF( B1=0, &quot;div by zero&quot;, A1/B1  )</td>
<td>- returns the value 1.25</td>
</tr>
<tr>
<td>2</td>
<td>5</td>
<td>0 =IF( B2=0, &quot;div by zero&quot;, A2/B2  )</td>
<td>- returns the text string &quot;div by zero&quot;</td>
</tr>
</tbody>
</table>

**If Function Example 2**

The logical_test within the Excel If function can be any type of expression that returns a TRUE or FALSE result. The following example shows some more examples of the function, using different types of logical_test.

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>5</td>
<td>=IF( A1&gt;=0, A1, -A1 )</td>
<td>- returns the value 5</td>
</tr>
<tr>
<td>2</td>
<td>-5</td>
<td>=IF( A2&gt;=0, A2, -A2 )</td>
<td>- returns the value 5</td>
</tr>
<tr>
<td>3</td>
<td>0</td>
<td>=IF( ISERROR( 1/A3 ), 1, A3 )</td>
<td>- returns the value 1</td>
</tr>
<tr>
<td>4</td>
<td>test</td>
<td>=IF( LEN(A4)&gt;=0, 0, 1 )</td>
<td>- returns the value 1</td>
</tr>
</tbody>
</table>

**If Function Example 3**

The following example shows nesting of the Excel If function. The outer function has the same logical_test as in Example 1 above. However, in the example, the value_if_true argument is a further If function. Therefore:

- If the value in column B is equal to 0, a further call to 'If' is made, to test the value in column C
- If the value in column B is not equal to zero, the function returns the value in column A divided by the value in column B
A chart is a tool you can use in Excel to communicate your data graphically. Charts allow your audience to see the meaning behind the numbers, and they make showing comparisons and trends a lot easier. In this lesson, you will learn how to insert charts and modify them so they communicate information effectively.

Charts
Excel workbooks can contain a lot of data, and that data can often be difficult to interpret. For example, where are the highest and lowest values? Are the numbers increasing or decreasing? The answers to questions like these can become much clearer when the data is represented as a chart. Excel has many different types of charts, so you can choose one that most effectively represents the data.

Types of charts
Click the arrows in the slideshow below to view examples of some of the types of charts available in Excel.

Excel has a variety of chart types, each with its own advantages.
Column charts use vertical bars to represent data. They can work with many different types of data, but they're most frequently used for comparing information.

Line charts are ideal for showing trends. The data points are connected with lines, making it easy to see whether values are increasing or decreasing over time.

Pie charts make it easy to compare proportions. Each value is shown as a slice of the pie, so it's easy to see which values make up the percentage of a whole.

Bar charts work just like Column charts, but they use horizontal bars instead of vertical bars.
Part of Chart

- **Chart area**: The entire chart, including all the labels and extras: everything in the chart frame
- **Plot area**: The part of the chart that contains the data bars/area/pie/points
- **Legend**: The key that shows what each color represents
- **Wall**: The background of the plot area, if any
- **Floor**: On certain types of 3-D charts, the bottom of the plot area
- **Data series**: All the data points in the same data series (represented by a single color or legend key item)
- **Data point**: A single numeric value represented on the chart (for example, a single bar or point)
- **Chart title**: A text label that describes the entire chart
- **Axis**: A line on which data is plotted

To create a chart:

1. Select the **cells** you want to chart, including the **column titles** and **row labels**. These cells will be the **source data** for the chart.

2. Click the **Insert** tab.
3. In the **Charts** group, select the desired **chart category** (Column, for example).

![Excel Charts](image)

4. Select the desired **chart type** from the drop-down menu (Clustered Column, for example).

![Clustered Column](image)

5. The chart will appear in the worksheet.

![Chart in Worksheet](image)

**Chart tools**

Once you insert a chart, a set of **Chart Tools** arranged into three tabs will appear on the Ribbon. These are only visible when the chart is selected. You can use these three tabs to **modify** your chart.
To change the chart type:

1. From the **Design** tab, click the **Change Chart Type** command. A dialog box appears.

2. Select the desired **chart type** and then click **OK**.

To switch row and column data:

Sometimes when you create a chart, the data may not be grouped the way you want it to be. In the **clustered column chart** below, the Book Sales statistics are grouped by **Fiction/Non-Fiction** with a column for each year. However, you can also **switch the row and column data** so the chart will group the statistics by **year** with columns for Fiction and Non-Fiction. In both cases, the chart contains the **same data**; it's just organized differently.

**Book Sales**
1. Select the **chart**.
2. From the **Design** tab, select the **Switch Row/Column** command.

3. The chart will then readjust.

To change the chart layout:
1. Select the **Design** tab.
2. Click the **More** drop-down arrow in the **Chart Layouts** group to see all of the available layouts.

3. Select the desired layout.
4. The chart will update to reflect the new layout.

**Book Sales**

<table>
<thead>
<tr>
<th>Year</th>
<th>Fiction</th>
<th>Non-Fiction</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>$329,826.00</td>
<td>$178,218.00</td>
</tr>
<tr>
<td>2007</td>
<td>$328,130.00</td>
<td>$226,026.00</td>
</tr>
<tr>
<td>2008</td>
<td>$357,518.00</td>
<td>$151,053.00</td>
</tr>
<tr>
<td>2009</td>
<td>$347,118.00</td>
<td>$226,026.00</td>
</tr>
<tr>
<td>2010</td>
<td>$395,208.00</td>
<td>$283,584.00</td>
</tr>
</tbody>
</table>

Some layouts include **chart titles**, **axes** or **legend labels**. To change them, just place the **insertion point** in the text and begin typing.

change the chart style:
1. Select the **Design** tab.
2. Click the **More** drop-down arrow in the **Chart Styles** group to see all of the available styles.
3. Select the desired style.
4. The chart will update to reflect the new style.

**Book Sales**

<table>
<thead>
<tr>
<th>Year</th>
<th>Fiction</th>
<th>Non-Fiction</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>$329,826.00</td>
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</tr>
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<td>2007</td>
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</tr>
<tr>
<td>2009</td>
<td>$347,118.00</td>
<td>$226,026.00</td>
</tr>
<tr>
<td>2010</td>
<td>$395,208.00</td>
<td>$283,584.00</td>
</tr>
</tbody>
</table>

To move the chart to a different worksheet:
1. Select the **Design** tab.
2. Click the **Move Chart** command. A dialog box appears. The current location of the chart is selected.

![Move Chart dialog box](image)

3. Select the desired location for the chart (i.e., choose an existing worksheet, or select New Sheet and name it).

![Move Chart dialog box with new sheet](image)

4. Click **OK**. The chart will appear in the new location.