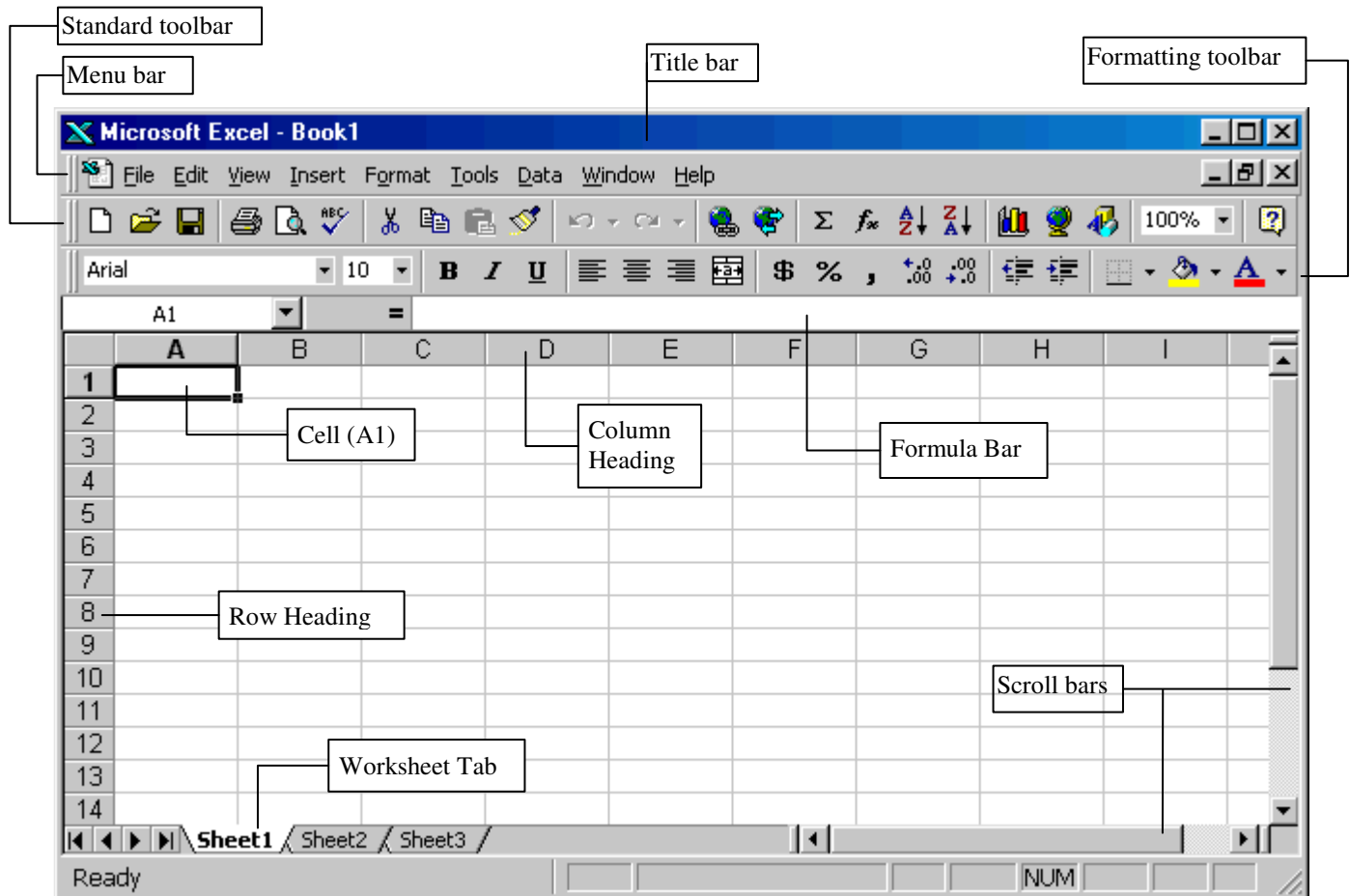


Using Excel





Microsoft Excel is a spreadsheet program. It allows you to store numbers, perform calculations on those numbers, and create graphs and charts based on those numbers. As you can tell, it basically deals with numbers. The main Excel window is shown below:













The Excel Window















The Standard Toolbar

Below are some of the more commonly used buttons on the standard toolbar:

-  **New** - Use this to start with a blank new workbook.
-  **Open** - Use this to open a workbook you already have.
-  **Save** - Use this to save your workbook. If you have not saved it before, Excel will also ask for a name for the workbook.
-  **Print** - Use this to print the current worksheet in the workbook. If you wish to print only a certain selection of the worksheet or print several worksheets in the workbook, you need to choose **File** from the Menu bar and then **Print...**

-  **Print Preview** - Use this to see how your worksheet will look before printing it.
-  **Spelling and Grammar** - This runs a spell-check on your document.
-  **Cut** - Use this to remove a highlighted section from your worksheet. This is like deleting the section, except that the information is kept in the computer's memory in case you need it later.
-  **Copy** - This makes a copy of a highlighted section, and stores the copy in the computer's memory for later use.
-  **Paste** - Use this to put into the worksheet whatever you have cut or copied earlier.
-  **Undo** - Use this to undo the last thing you did, or click on the black down-arrow to choose which of several recent actions you wish to undo.
-  **Redo** - This re-does what you just un-did.
-  **AutoSum** - Use this to easily insert the sum function to add up a group of data.
-  **Paste Function** - Use this to open the Paste Function window where you can easily choose which function you want to put in the worksheet.
-  **Sort Ascending** - This button rearranges the data you select in smallest to largest order alphabetically or numerically.
-  **Sort Descending** - This button rearranges the data you select in largest to smallest order alphabetically or numerically.
-  **Chart Wizard** - This button opens the Chart Wizard which walks you through creating a chart based on your data.

The Formatting Toolbar

-  **Font** - Click the black down-arrow to choose a new font to type with. A font is a type style that determines how the letters will look.
-  **Font Size** - Click the black down-arrow to change the size of the font, or type right in the box to enter a custom size.
-  **Bold** - Click here to begin typing in **bold face**.
-  **Italic** - Click here to begin typing in *italics*.
-  **Underline** - Click here to underline what you type.
-  **Align Left** - This makes the text line up along the left side of the cell.
-  **Center** - This makes the text be centered in the cell.
-  **Align Right** - This makes the text line up along the right side of the cell.
-  **Currency Style** - Use this button to change selected data into a money format.
-  **Percent Style** - Use this button to change selected data into percentages.
-  **Comma Style** - Use this button to change selected data into standard numeric format
-  **Borders** - Add a border line around your selected data or text.

The Worksheet Structure

Each item you put into Excel is stored in a box, called a **cell**. The cells are arranged in a grid made up of **rows** (horizontally) and **columns** (vertically). The **rows** are named with **numbers** starting at “1”. The **columns** are labeled by **letters** starting at “A”. Each cell is named by using the column letter and the row number that intersect at that cell. For example, the first cell in the top left hand corner would be called “A1”.

What You Can Put In The Cells

Basically there are four things you would want to put in a cell: **labels**, **numbers**, **formulas**, and **functions**. The last two will be explained in greater detail further below.

- **Labels** start with a letter or a single quote (‘). Basically they are text as opposed to numbers. No calculations can be done on labels.
- **Numbers** can be entered as whole numbers (234) or with decimals (45.761).

Working With Formulas

Formulas are used to perform calculations on one or more cells. You type in formula by first typing an **equal sign (=)**. You can then type in the formula which can be made up of **numbers**, **operations** (+ for addition, - for subtraction, * for multiplication, / for division, ^ for exponents), **cell references**, **cell ranges**, and **functions**.

Some formula examples are below:

Formula	Action
= 14.8 + 23	Adds the values 14.8 and 23 together
= A3 – 25	Subtracts the value 25 from the contents of cell A3
= B4 + C4	Adds the contents of cell B4 to the contents of cell C4
= D5 - E2 + F6	Subtracts the contents of cell E2 from D5 , and then adds the contents of cell F6
= (G2 + H9) / J1	Add the contents of cells G2 and H9 , and then divides by the contents of cell J1
= K3 * L2	Multiplies of the contents of cells K3 and L2

Keep in mind that Excel follows the mathematical “**order of operations**” you learned many years ago in school:

- 1) First Excel does whatever is inside of **parentheses**: ()
- 2) Next it does any **exponents**: ^
- 3) Next it does **multiplication** and **division**: * /
- 4) Finally it does any **addition** and **subtraction**: + -


Working with functions

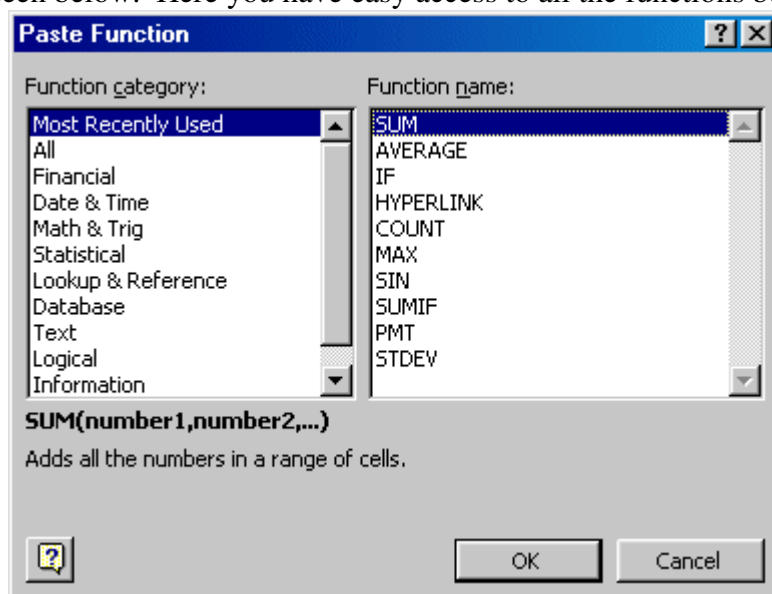
Functions are different than formulas in that they are **shortcuts**, preprogrammed to do most of the work for you. For example instead of taking the time to write a formula to average a list of numbers (which would involve adding all the numbers together and dividing by the amount of numbers), you can just use the **AVERAGE** function to do it for you!


About all you have to do when setting up a function is to tell Excel what cells to perform the function on. There are three main ways to give it these cells:

- 1) **Single values** – Here you just type in a single number or cell to use in the functions
 - a) 56.7 Uses the number **56.7**
 - b) B3 Uses the value in cell **B3**
- 2) **List** – Here you can specify a bunch of different cells throughout the spreadsheet
 - a) A1,B2,C3 Uses the values in cells **A1** and **B2** and **C3**
- 3) **Range** – Here you can specify a block of cells that are touching each other
 - a) E2:E5 Uses the values of the contents of cells **E2,E3,E4**, and **E5**
 - b) B5:E5 Uses the values of the contents of cells **B5,C5,D5**, and **E5**
 - c) C3:F6 Uses the values of the contents of the cells in a rectangular block made up of columns **C** through **F** and rows **3** through **6**

How to enter a function:

- 1) You can enter a function just like a formula by typing an **equal sign (=)**, followed by the function and the cells it is to work with.
- 2) Or you can click on the **Paste Function button**  in the standard toolbar. This will open up the **Paste Function window** seen below. Here you have easy access to all the functions built into Excel.



- 3) If you wish to use the **SUM function** you can just click on its button  in the formatting toolbar. Since it is such a common function it has its own shortcut.

Examples of functions:

Function	Result
=SUM(A1:A4)	Add up the values in cells A1,A2,A3 , and A4
=AVERAGE(B3:D3)	Gets the average of the values in cells B3,C3 , and D3
=MAX(C5,D6,E1)	Finds the largest value in the list of cells C5,D6 , and E1

NOTE: If you want to **edit a formula or function** later on, you need to click on its cell and then make the changes in the **formula bar** at the top of the worksheet. You can not make changes to the cell itself, as it only shows you the results of the formula or function.

Inserting and Deleting Rows and Columns

As organized and careful as you are, you may find that sometimes you need to add in an extra row or column, or even get rid of some that you have. As always, there are many ways to do things, but I will share with you what I find to be easiest.

Right-click on the row or column headings

To insert or delete a row or column:

- 1) **Right-click** on the row or column heading. These are the boxes at the top and left of the worksheet. The columns are labeled with letters and the rows are labeled with numbers.
- 2) When you right-click on the heading you will get a pop-up menu.
- 3) Choose **Insert** if you wish to insert a new row or column.
- 4) Choose **Delete** if you wish to delete the highlighted row or column.

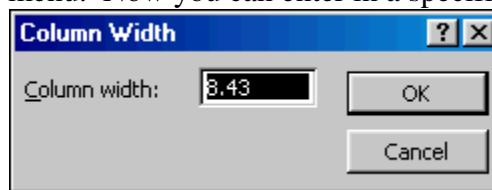
Click on Insert or Delete

	A	B
1	Colors	Data
2	Red	12.6
3	Yellow	4.5
4	Blue	13.1
5	Green	8.9
6	Purple	3.7
7	White	6.6
8		
9		
10		
11		
12		
13		
14		
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18		
19		
20		
21		

Resizing Columns and Rows

Many times you will find that the data you enter into the worksheet is too big or too small to comfortably fit into the rows and columns Excel has provided. You can easily adjust the column width and the row height to better suite your needs. Below are several options for doing this:


- 1) Position the mouse pointer right **between** two column headings or row **headings**. When you do this the **pointer will change shape** to an up-and-down arrow (↓) or a right-to-left arrow (↔). Now just **click and hold down** the left mouse button and move the mouse side to side or up and down to adjust the width or height to its new size.
- 2) Another option is to **right-click** on the column or row heading and choose “**Row Height...**” or “**Column Width...**” from the pop-up menu. Now you can enter in a specific size for the row or column.



- 3) Finally, you can allow Excel to make the column or row just the right size to fit your data. Just position the mouse pointer **between the column or row headings** so it **changes shape** as described above. Next **double-click** on the line between the headings. This will make Excel “**Autofit**” the width or height to the largest data in that row or column.

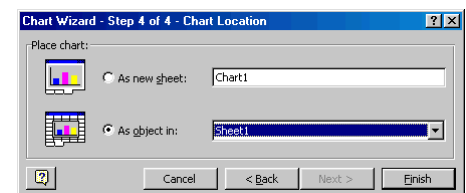
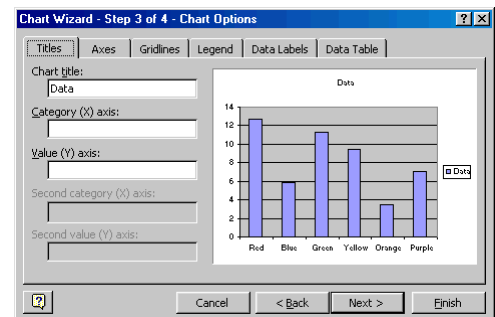
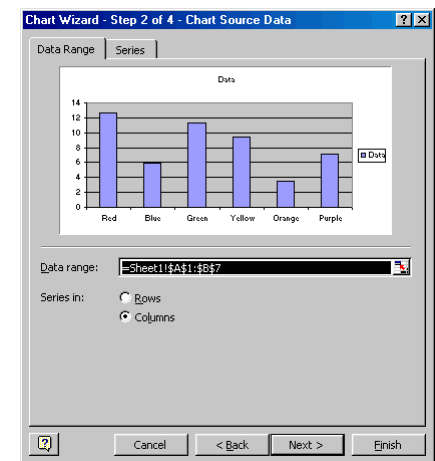
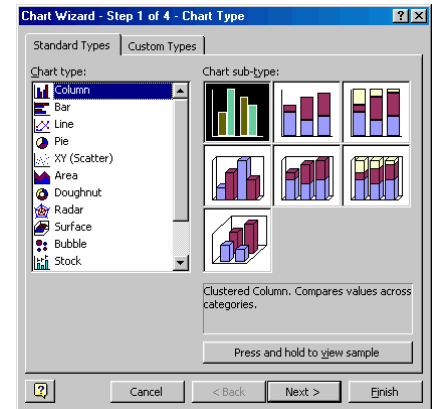
Creating Charts and Graphs

Now that you have all your data in the spreadsheet, there are many things you can do with it. Certainly you can just print out your worksheets, but perhaps you also want to see the data in another way. Excel allows you to easily create charts and graphs based on the data you collect. Here are the steps to doing that:

- 1) **Select the data** you wish to use. Simply use your mouse to click and drag over the data you want to include in your chart. The area you drag over will become highlighted. Feel free to include text you have entered into the spreadsheet to label the data. The chart wizard can put those labels right into the chart.
- 2) Click on the **Chart Wizard**  button on the toolbar.
- 3) **Choose the type of graph** you wish to make. There are many different chart types available. You can also click and hold down on the button marked **“Press and hold to view sample”**. This will let you see what your graph ought to look like. When you are ready click on the **“Next”** button to continue.
- 4) Verify that you have the **correct data selected** and whether the data is **organized in rows or columns**. Click **“Next”** when ready to move on.
- 5) Check through the many **chart options**. Here you can:
 - a) Enter **titles** for the chart and axes.
 - b) Choose to display or not display the **axes**.
 - c) Add or remove **gridlines**.
 - d) Add, remove, and position a **legend**.
 - e) Choose if you want to show **data labels**.

When done with your choices click **“Next”**.

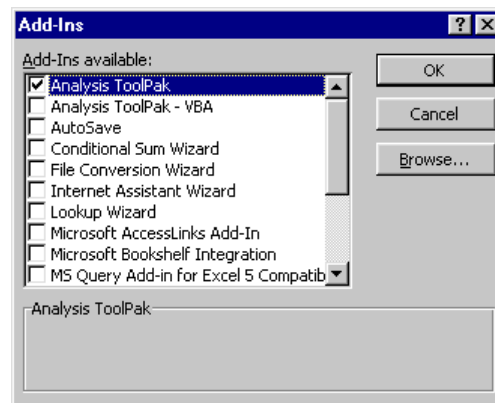
- 6) Next choose if the chart will be placed as an object in the same worksheet as the data it came from, or if you wish to place it in its very own worksheet. Click **“Finish”** when done.
- 7) If you choose to place the chart in the existing worksheet you may now wish to move it around or resize it. You can do this the same way you move and resize any object:
 - a) To **move the chart** place the mouse pointer inside the chart on a blank space, click and hold down the left mouse button, and drag the mouse to move the chart to a new location.
 - b) To **resize the chart** position the mouse pointer over one of the black squares (handles) on the corners and edges of the chart, click and hold down the left mouse button, and drag the mouse to resize the chart.



Creating Histograms

A **histogram** is a special type of chart where you tally up how many data items there are for each possible value or that fall within predetermined ranges. Such a chart would often be used to represent all of the responses to a survey. Unfortunately, making a histogram with Excel is more difficult than the standard charts we just saw:

- 1) First, you need to make sure that the Excel histogram feature has been activated on your computer. If you have never made one before, chances are it is not. To make this option available:
 - a) Click on the **"Tools"** option in the top tool bar
 - b) Click on **"Add-Ins..."** from the drop down menu
 - c) This will bring up the **"Add-Ins"** window. Here you need to check the **"Analysis ToolPak"** option, and then click **"OK"**
 - d) Now the histogram feature (and many more) are enabled

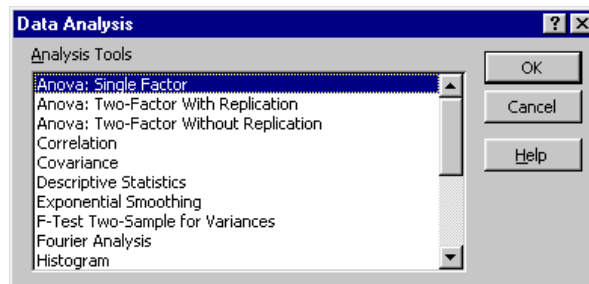


- 2) Now you need to enter your raw data. In your worksheet simply enter all the data (such as survey responses) into a single column.

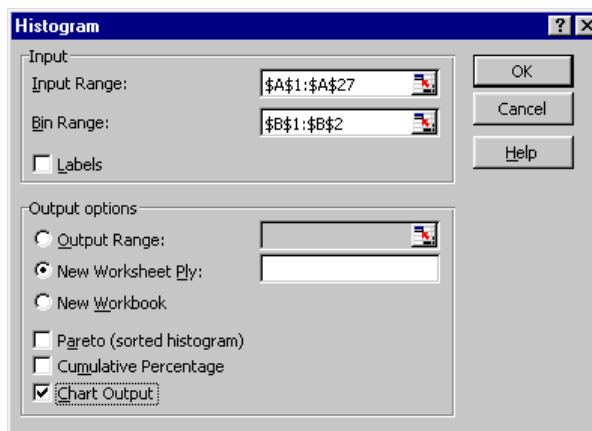
- 3) Now you need to create your data ranges which will specify how you wish to group the data. In another column of the worksheet (which could be right next to your data column if you wish) you need to enter the upper-inclusive limit for each of your ranges (or "bins").

	A	B
Raw data	1	5
	2	10
	3	
	4	
Data ranges	5	
	6	
	7	

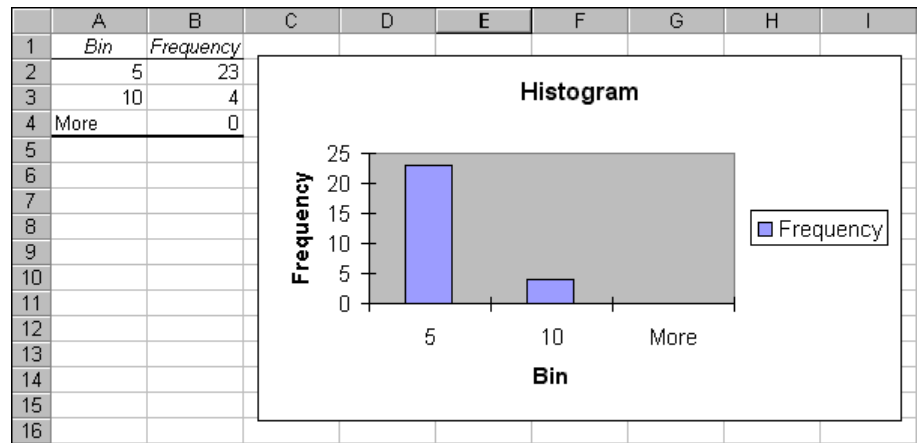
- 4) Next you need to create the histogram
 - a) Click on **"Tools"** in the top menu bar
 - b) Click on **"Data Analysis..."** from the drop down menu
 - c) This will open the **"Data Analysis"** window. Here you need to select **"Histogram"** from the list and click **"OK"**



- 5) This will open the **"Histogram"** window
 - a) Begin by clicking on the select button at the end of the **"Input Range:"** box. Now use your mouse to click and drag over the area of your worksheet that contains your raw data, pressing the enter key when done.
 - b) Repeat this process for the **"Bin Range:"** box, selecting the cells on your worksheet that represents the data ranges.
 - c) Next, check the **"Chart Output"** box to automatically generate the histogram chart.
 - d) Finally click **"OK"**



6) Now you will get a new worksheet created that has a table of your data frequency by group and a corresponding bar graph.



Questions, comments, concerns? Email me at:
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