

Table of Contents

<i>What is a Spreadsheet?</i>	3
<i>What Do I See When I Begin an Excel Workbook?</i>	3
<i>Ribbon Items</i>	4
<i>File Tab</i>	5
<i>The Backstage view from the File Tab</i>	6
<i>Quick Access Toolbar</i>	6
<i>Creating a New Document</i>	6
<i>Using the Dialog Launcher with each group on the Ribbon</i>	7
<i>Dialog launcher on the Home Tab</i>	7
<i>Dialog launcher on the Insert Tab Dialog launcher on the Page Layout Tab/Scale To Fit/Options</i>	8
<i>Dialog launcher on the Page Layout Tab/Scale To Fit/Options</i>	9
<i>Creating a Spreadsheet</i>	9
<i>Understanding Spreadsheet Basics</i>	9
<i>Excel 2010 Keyboard Shortcuts - Ctrl Combination Shortcut Keys</i>	10
<i>Entering Text and Numbers</i>	12
<i>Entering Formulas (Functions)</i>	12
<i>Editing Entries</i>	12
<i>Selecting cells</i>	12
<i>Saving a Worksheet</i>	13
<i>Opening an Existing Worksheet</i>	13
<i>Using Windows to Split A Screen</i>	13
<i>Fill Right and Fill Down Commands</i>	13
<i>Absolute vs Relative Formulas</i>	14
<i>Functions</i>	14
<i>Excel 2010 Functions Listed By Category</i>	14
<i>Excel 2010 Functions Listed Alphabetically</i>	23
<i>Placing a Function in Your Spreadsheet</i>	35
<i>Editing a Worksheet</i>	36
<i>Formatting a Worksheet or Cells</i>	37
<i>Printing a Worksheet</i>	37
<i>Modifying the Quick Access Toolbar</i>	37
<i>Graphing (Charting) a Worksheet</i>	38
<i>Charting Terminology</i>	38
<i>Working with Charts</i>	39
<i>Chart Tools - Design</i>	39
<i>Chart Tools – Layout</i>	41
<i>Customizing Your Chart From the Layout Tab</i>	41
<i>Chart Tools - Format</i>	43
<i>Customizing Your Chart from the Format Tab</i>	43
<i>Sort and Filter Group in the Data Tab</i>	44
<i>Add-Ins that come with Excel</i>	45
<i>Adding the Add-Ins</i>	45
<i>Microsoft Excel Assignments</i>	46
<i>Using Microsoft Excel Class Outline</i>	47

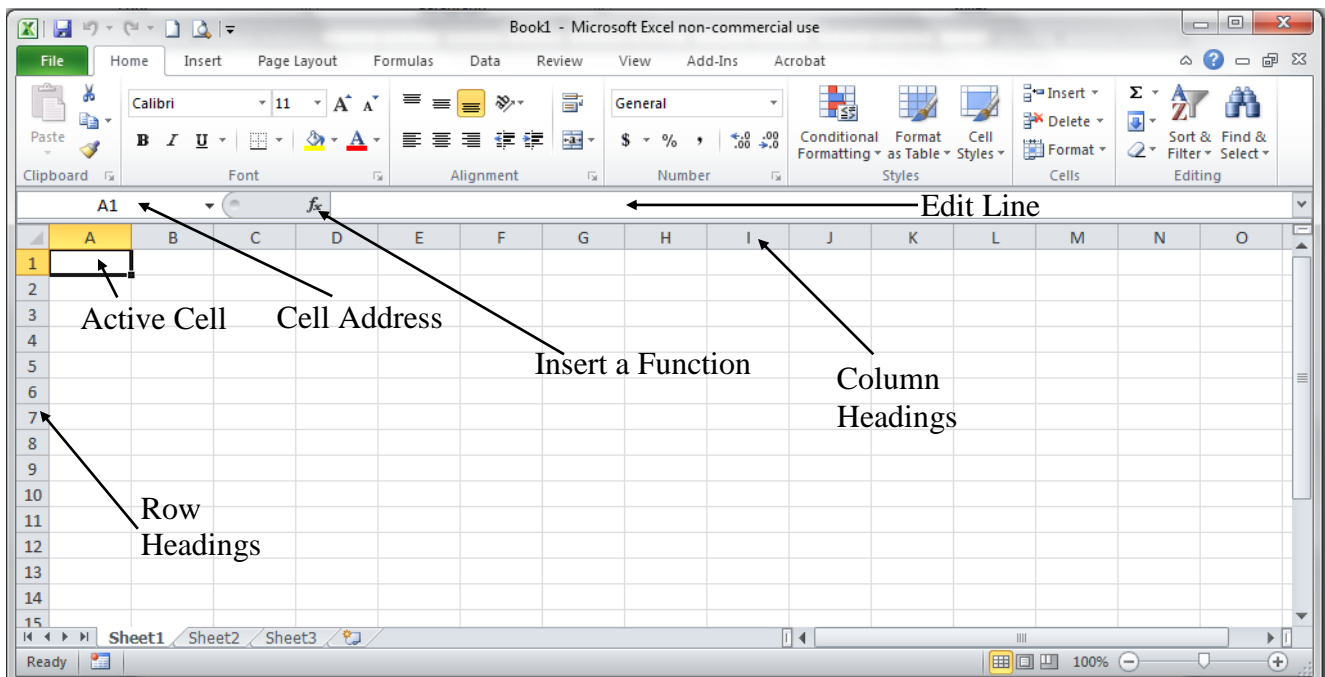
What is a Spreadsheet?

A spreadsheet program is like an electronic version of a bookkeeper's ledger page. A spreadsheet document (*or worksheet*) is a grid composed of numbered rows and lettered columns. You enter data into worksheet cells which are the intersection of rows and columns. The size of an Excel can be changed to anything you would like as long as it will fit into the RAM of your computer. When you open an **Excel Workbook**, it contains by default, *three worksheets or spreadsheets*.

The power of the spreadsheet lies in its calculation capabilities. You can mathematically combine the contents of cells by creating formulas, called *functions*, that add, subtract, divide, or multiply cells by each other or constants. The Excel environment also offers a large number of mathematical, statistical, time, text, financial, and logical functions that enable the user to perform very complex calculations.

The spreadsheet is the ideal environment for data that requires calculations. It is frequently used for accounting, bookkeeping, and record keeping. You can use the charting, *graphing*, capabilities to summarize any portion of your data pictorially. You can also place spreadsheet frames into your word processing documents to have tables of data. Spreadsheets make booking for teachers a breeze.

The intersection of a row and column is called a **cell**. Cells are given an address or reference from the column and row that make them. Three basic things can be entered into a cell: text (*labels*), numbers (*values*), and formulas (*functions*) that refer to cells.



What Do I See When I Begin an Excel Workbook?

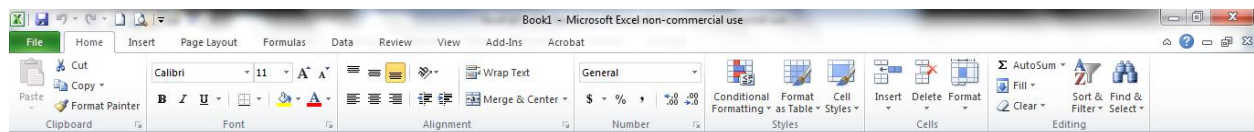
The items you see on the Excel window are labeled on the title page of this handout. More specifics are listed below:

- **Title Bar** – Located at the top of every Excel window, it shows the name of the current file as well as the standard buttons Windows provides on every window such as minimize, restore, and close.

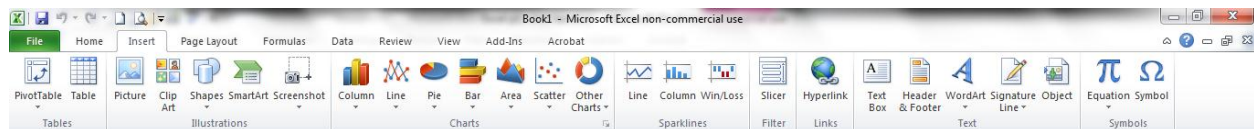
- **Ribbon** – Located below the title bar, this item was added starting with Excel 2007. The ribbon contains all the items you will use with Excel 2010. Think of it as a new way to display the old menu items. The exact appearance of the ribbon will vary depending on what task you are currently doing. It changes when you click on different tabs on top of the ribbon. Each ribbon has groups of related tasks separated by a vertical line. Some groups have a very small box with an arrow pointing down and to the right located at the right bottom. When you click this box, you launch a dialog box related to the group. Not all groups have this dialog box launcher.
- **File Tab**- The file tab replaces the office button used in version 2007. You launch “*Backstage View*” when you click on the file tab. This feature is described later in this handout.
- **Quick Access Toolbar** – Customized by the user, this toolbar can hold commands you most often use.
- **Ruler** – A vertical and horizontal ruler allow you to view the location of objects on the page. For draw objects, you may see their relative size. The ruler is necessary to place tabs in your document.
- **Task Pane** – Some commands you choose to use in Excel open a “*task pane*.” An example is the clipboard. Since you may have multiple items on the clipboard, the task pane allows you to choose what you would like to paste among those listed.
- **Status Bar** – This item allows you to see what spreadsheet you selected in the current workbook.
- **View Buttons** –The five buttons located at the right bottom of the text window allows you to view the spreadsheet in various formats.
- **Zoom Control** – The + and – buttons allow you to zoom in or out while viewing your document. Zooming in makes it easy to view details while using the draw tools in the illustrations group.

Ribbon Items

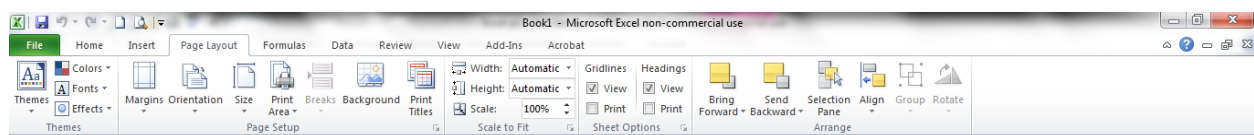
Home Ribbon – The home ribbon is used to create, format, and edit a spreadsheet. It contains the Clipboard, Font, alignment, Number, Styles, Cells, and the Editing groups.



Insert Ribbon – This ribbon is used when adding items to your spreadsheet. Examples include graphics, charts, PivotTables, headers and footers, charts, and hyperlinks. It contains the Tables, Illustrations, Sparklines, Filter, Charts, Text, and Links groups.

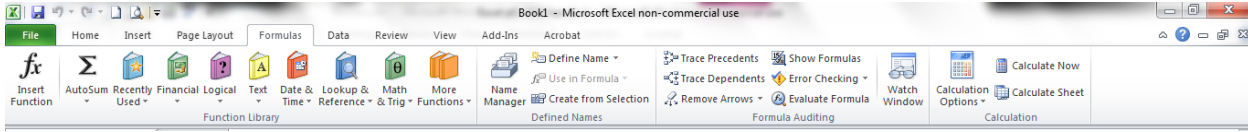


Page Layout Ribbon – This ribbon is used to set up your spreadsheet for printing. The groups in this

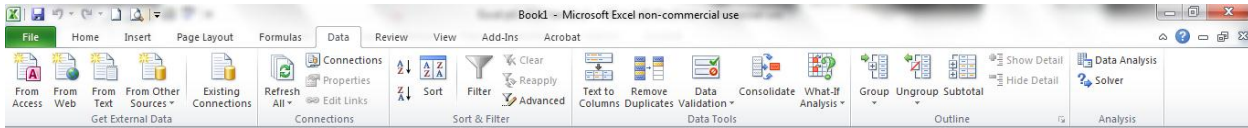


ribbon include Page Setup, Themes, Scale to fit, spreadsheet options, and Arrange.

Formula Ribbon – This ribbon allows you to choose and check for function errors. The groups in this ribbon include Function Library, Defined names, Formula Auditing, and Calculation.



Data Ribbon – This ribbon allows you to import, query, and subtotal data. The group includes Get External Data, Connections, Sort & Filter, Data Tools, and Outline. If add-ins is activated, the Analysis Toolpak and Solver are included.



Review Ribbon – This ribbon allows you to proof, protect, and mark up a spreadsheet. The groups in this ribbon include Proofing, Language, Comment, and Changes.

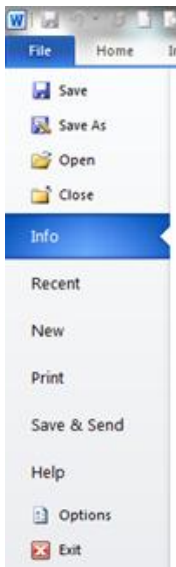


View Ribbon – This ribbon allows you to change the display of the worksheet area and the data in it. The groups in this ribbon include Workbook views, Show, Zoom, Window, and Macro Groups.



Unlike Excel 2007, version 2010 allows you to create your own groups and tabs on the ribbon.

When the user selects specific items on some ribbons, new groups will appear. These items are only used with the current task.



File Tab

The File tab allows the user to review specific information about the document you are currently viewing. The following sections are in the File tab:

- Save** – allows the user to save the current file in the same place used last
- Save As** - allows the user to save the current file in a specific place
- Open** – allows you to open a file which was saved on your computer’s hard drive
- Close** – allows you to close a currently open file
- Info** – Provides information about the file you are currently viewing
- Recent** – shows the files you recently modified, and provide their location
- New** – allows you to create a new blank document, or use a template
- Print** – provides various methods to print your document (including a PDF)

Save & Send – Allows you to send your document as an attachment to an e-mail, a link to your document, attach a PDF file of your document, create an XPS form of your document, or send a fax of your document

Help – All the help you will ever need

Options – Allows you to modify Excel to your preferences

The Backstage view from the File Tab

What you see in the backstage view from the file tab depends on if you have a file open in Excel. A great deal of information is displayed in this mode. Some items displayed using *info* while in the backstage view follows:

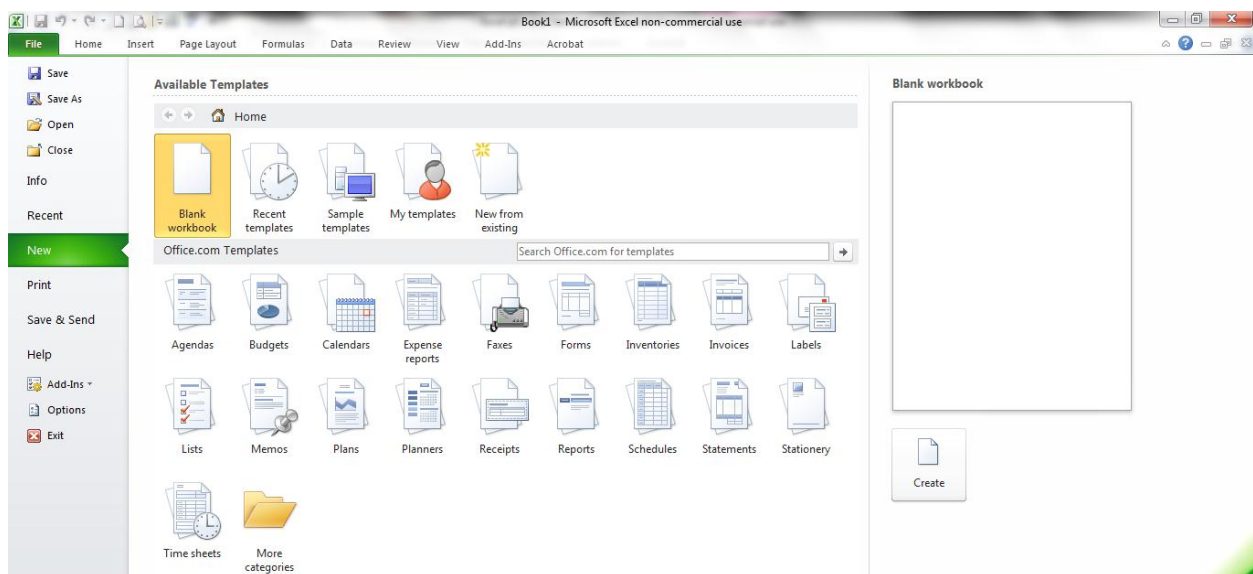
- **Compatibility Mode** – If you have a file created with an earlier version of Excel, a convert button allows you to convert the older versions of Excel to the current version. This makes updating easy. When updating you may lose some formatting in the original document.
- **Permission** – Indicates if the current document is locked or unlocked. You have the ability to set a password for controlling who may view your documents.
- **Prepare for Sharing** – Allows you to check your document for revisions. You may search for specific issues before sharing your document with others.
- **Versions** – If you saved your document multiple times during revisions, you may be able to retrieve older versions.

Quick Access Toolbar

The Quick Access Toolbar provides a place to access the most common commands you will use with Excel 2010. You may customize this toolbar to provide quick access to what items you commonly use.

Creating a New Document

A new document may be created by simply launching Microsoft Excel, pressing Control + N while viewing a spreadsheet, clicking new on the Quick Access Toolbar, or choosing file, New, then clicking the blank Document icon. The backstage view includes a command for a new document. Normally, when you create a new spreadsheet, it looks for a template labeled Normal.dotm.

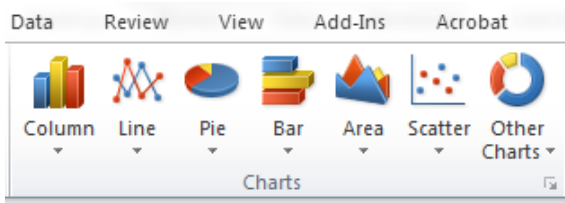


If you choose to create a new spreadsheet from the new page option from the Quick Access Toolbar, you will see several alternatives to creating a simple blank spreadsheet. The choices are:

- **Blank Workbook** – This will create a new spreadsheet just as if you clicked the new button on the quick access toolbar.
- **Recent Templates** – Click this icon to see the recently used templates for your documents.
- **Sample Templates** – Click this icon to view the multitude of templates provided by Microsoft.
- **My Templates** – Click this icon to choose from templates you created.
- **New from Existing** - Click this icon to choose from

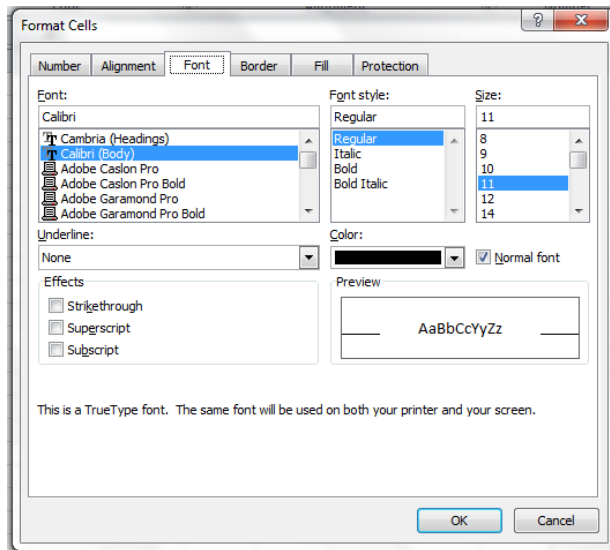
Using the Dialog Launcher with each group on the Ribbon

When you wish to bring up a menu that allows you to make many changes to a particular group on the ribbon, you use the Dialog Launcher. If you look carefully at most groups on the ribbon, you will see a small box in the right bottom corner with a small arrow pointing to the right bottom. These boxes allow you to launch a large menu with several tabs. Examples follow:

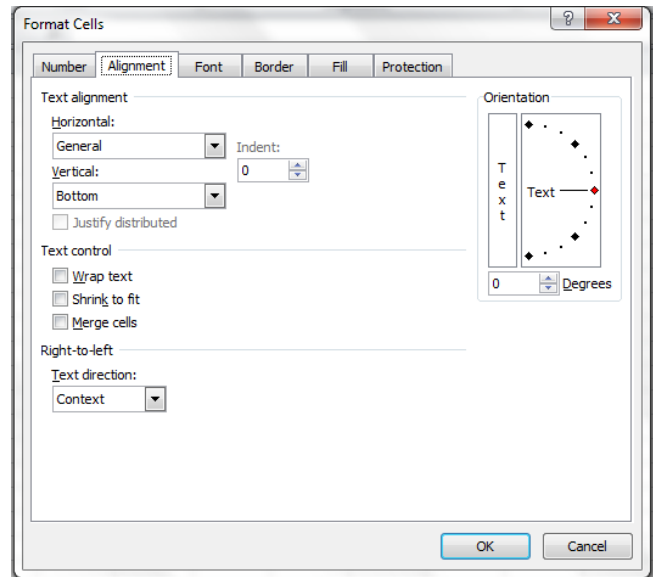


Dialog launcher on the Home Tab

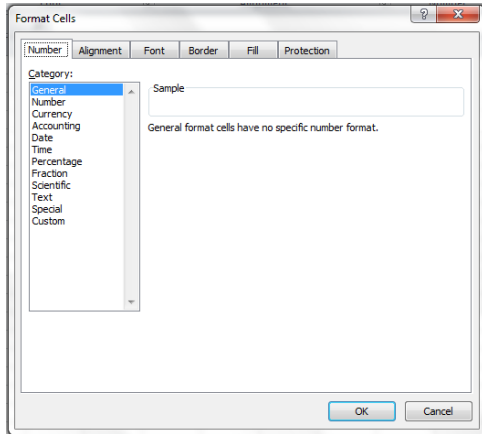
Font



Alignment



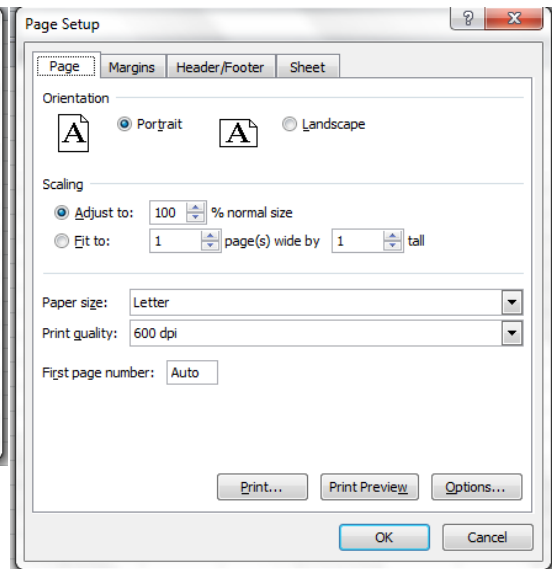
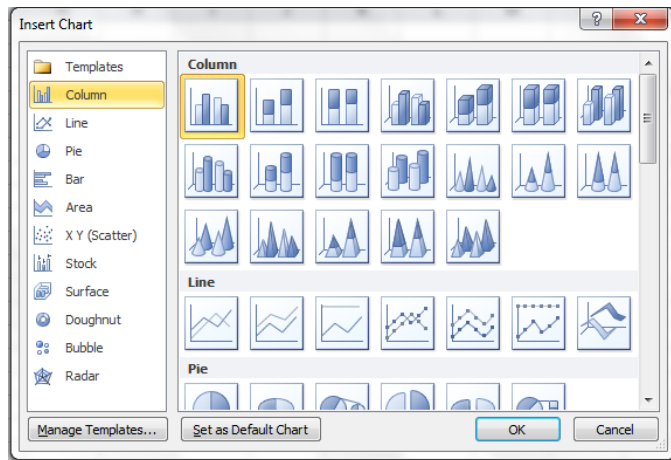
Number



Dialog launcher on the Insert Tab

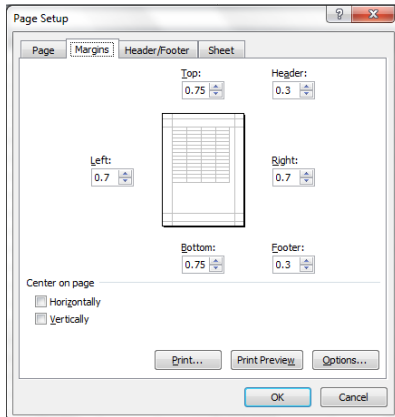
Dialog launcher on the Page Layout Tab/Scale To Fit/Options

Charts

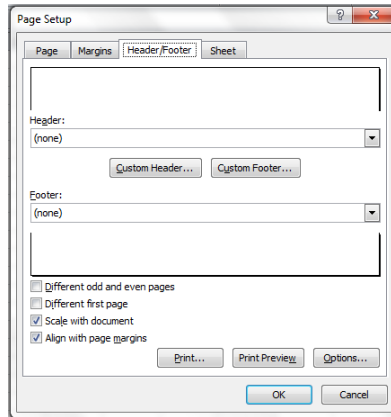


Dialog launcher on the Page Layout Tab/Scale To Fit/Options

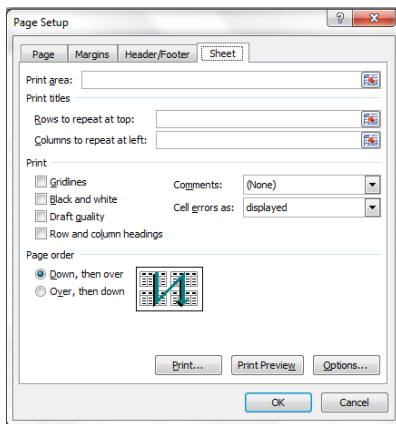
Margins



Header/Footer



Sheet



Creating a Spreadsheet

You can open a workbook that contains three blank spreadsheets by launching the Excel program.

Understanding Spreadsheet Basics

Spreadsheets locations are identified by a letter and number coordinate. The location is called a “cell”. The cell in the upper left hand corner of the spreadsheet has the coordinate of “A1”. The current cell has a double border called the “active” cell. To make a different cell active, you can click another with the mouse or move to a new cell with the cursor keys or combinations of keys listed in this handout.

The letter and number combination for a cell is called the cell address. A cell address identifies every cell on the total spreadsheet. You can use the cell address when writing a formula. To add cells A1 and B1 together and place the answer in C1, you would make C1 active, and type =A1+B1. When you begin typing something with a “=” sign, Excel knows you are entering a formula. Sometimes you will wish to

use the value “=” as a label. To do so, you would type “=” in the edit line. The first = tells the spreadsheet a formula follows, then the “=” tells the program to treat the item(s) in parenthesis as text.

It is possible to combine several cell addresses in a formula such as: =B6*15/S23+f43+2.88. You can also work with a range of cells such as (a4:a20). These ranges may be used in formulas with built in functions such as: SUM(A2:A10). This command would add all the values in the cell addresses from A2 to A10 inclusive. You may use upper or lower case when typing cell addresses. Do not use spaces in a formula.

Excel 2010 Keyboard Shortcuts - Ctrl Combination Shortcut Keys

Key	Description	Key	Description
CTRL+PgUp	Switches between worksheet tabs, from left-to-right.	CTRL+SHIFT+Plus (+)	Displays Insert dialog box to insert blank cells.
CTRL+PgDn	Switches between worksheet tabs, from right-to-left.	CTRL+Minus (-)	Displays Delete dialog box to delete selected cells.
CTRL+SHIFT+(Unhide hidden rows within the selection.	CTRL+;	Enters current date.
CTRL+SHIFT+&	Applies outline border to selected cells.	CTRL+'	Copies a formula from the cell above the active cell into the cell or the Formula Bar.
CTRL+SHIFT_	Removes outline border from selected cells.	CTRL+1	Displays Format Cells dialog box.
CTRL+SHIFT+~	Applies General number format.	CTRL+2	Applies or removes bold formatting.
CTRL+SHIFT+\$	Applies Currency format with two decimal places (negative numbers in parentheses).	CTRL+3	Applies or removes italic formatting.
CTRL+SHIFT+%	Applies Percentage format with no decimal places.	CTRL+4	Applies or removes underlining.
CTRL+SHIFT+^	Applies Scientific number format with two decimal places.	CTRL+5	Applies or removes strikethrough.
CTRL+SHIFT+#	Applies Date format with day, month, and year.	CTRL+6	Alternates between hiding and displaying objects.
CTRL+SHIFT+@	Applies Time format with the hour and minute, and AM or PM.	CTRL+8	Displays or hides the outline symbols.
CTRL+SHIFT+!	Applies Number format with two decimal places, thousands separator, and minus sign (-) for negative values.	CTRL+9	Hides selected rows.
CTRL+SHIFT+*	Selects current region around active cells. In PivotTables, it selects entire PivotTable reports.	CTRL+0	Hides the selected columns.
CTRL+SHIFT+:	Enters the current time.	CTRL+A	Selects entire worksheet.
CTRL+`	Alternates between displaying cell values and displaying formulas.	CTRL+SHIFT+A	Inserts argument names and parentheses when insertion point is to the right of function names in formulas.

CTRL+SHIFT+''	Copies value from cell above an active cell into the cell or the Formula Bar.	CTRL+B	Applies or removes bold formatting.
CTRL+C	Copies selected cells.	CTRL+P	Displays Print tab in Microsoft Office Backstage view.
CTRL+D	Uses Fill Down command to copy the contents and format of the topmost cell of a selected range into the cells below.	CTRL+SHIFT+P	Opens Format Cells dialog box with the Font tab selected.
CTRL+F	Displays Find and Replace dialog box, with the Find tab selected.	CTRL+R	Uses Fill Right command to copy the contents and format of the leftmost cell of a selected range into the cells to the right.
CTRL+SHIFT+F	Opens Format Cells dialog box with the Font tab selected.	CTRL+S	Saves the active file with its current file name, location, and file format.
CTRL+G	Displays Go To dialog box.	CTRL+T	Displays Create Table dialog box.
CTRL+H	Displays Find and Replace dialog box, with Replace tab selected.	CTRL+U	Applies or removes underlining.
CTRL+I	Applies or removes italic formatting.	CTRL+SHIFT+U	Switches between expanding and collapsing of the formula bar.
CTRL+K	Displays Insert Hyperlink dialog box for new hyperlinks or Edit Hyperlink dialog box for selected existing hyperlinks.	CTRL+V	Inserts contents of the Clipboard at the insertion point and replaces any selection. Available only after cutting or copying an object, text, or cell contents.
CTRL+L	Displays Create Table dialog box.	CTRL+ALT+V	Displays Paste Special dialog box. Available only after cutting or copying an object, text, or cell contents on a worksheet or in another program.
CTRL+N	Creates a new, blank workbook.	CTRL+W	Closes selected workbook window.
CTRL+O	Displays Open dialog box to open or find a file.	CTRL+X	Cuts selected cells.
CTRL+SHIFT+O	Selects all cells that contain comments.	CTRL+Y	Repeats last command or action, if possible.
CTRL+Z			Uses Undo command to reverse the last command or to delete the last entry that you typed.

Entering Text and Numbers

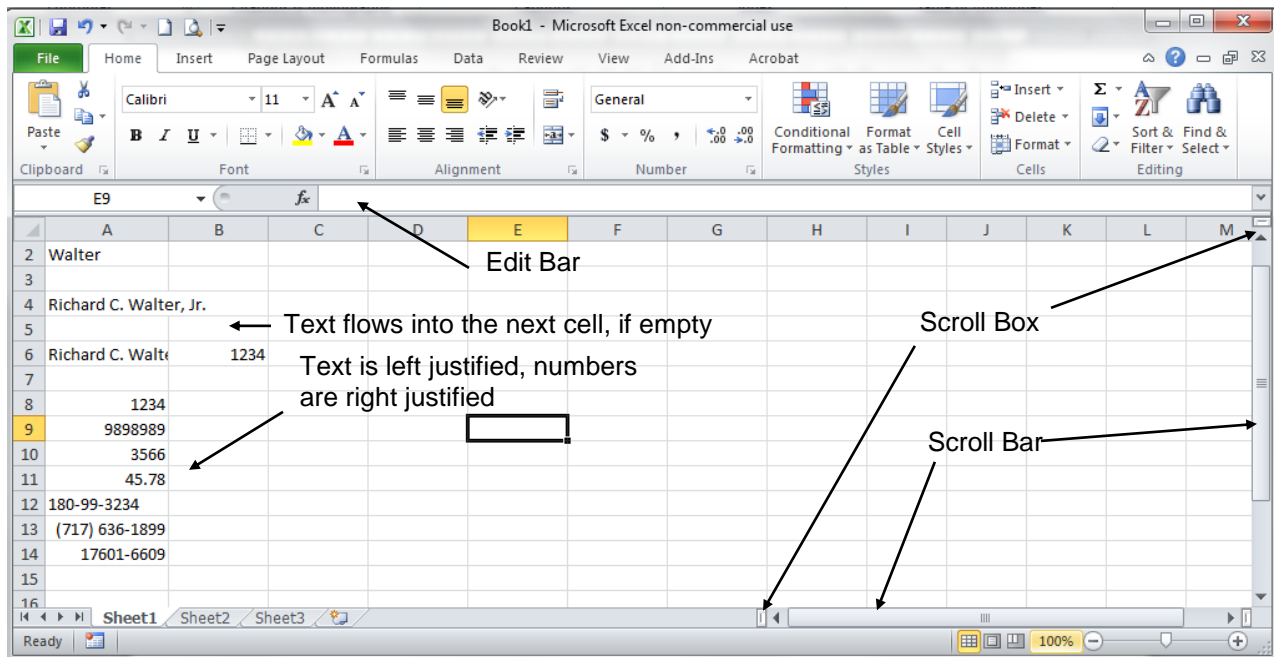
To enter either text (**labels**) or numbers (**values**), move to desired cell and type the text or number and use a movement method listed above or the enter key to complete entry. Text (**labels**) will automatically left align and numbers (**values**) will right align. When entering numbers, it is best to not type formatting symbols such as dollar signs, commas, percent signs, etc. The formatting options in the program will take care of that task for you. The information in a cell can only display the amount of space assigned to that cell. The total value or label is contained in each cell. In the case of a label, it may be truncated until you provide more space in the cell. In the case of a value, you may see ##### symbols indicating the value cannot fit in the space provided.

Entering Formulas (Functions)

To enter a formula on the edit bar, type "=", then the formula you desire. Whenever possible refer to cells, not the actual numbers. By using cell addresses as a reference, you can change the spreadsheet data at anytime and not have to re-write any part of the spreadsheet.

Editing Entries

Entries are usually short, therefore, the easiest way to correct an entry is to move to the cell and re-type it. However, the mouse can be moved into the edit bar and clicked to insert the cursor wherever necessary. The edit features are exactly like those used in the word processor.

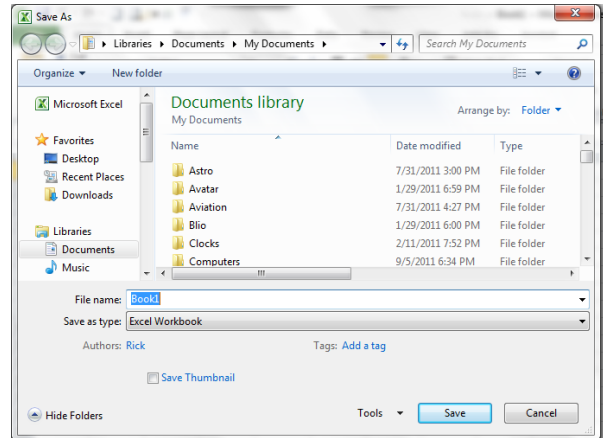


Selecting cells

- A range of cells can be selected by dragging through the desired cells or making the active cell be one of the corner cells and holding down the shift key while clicking the mouse on the opposite corner. This is known as the **shift-click** technique.
- An entire row can be selected by clicking on the **row number** desired. An entire column can be selected by clicking on the **column letter** desired. You can also drag through the column letters or row numbers to select several columns or rows.
- You can select several rows or columns that are not adjacent by using the **control key** as you click the mouse.

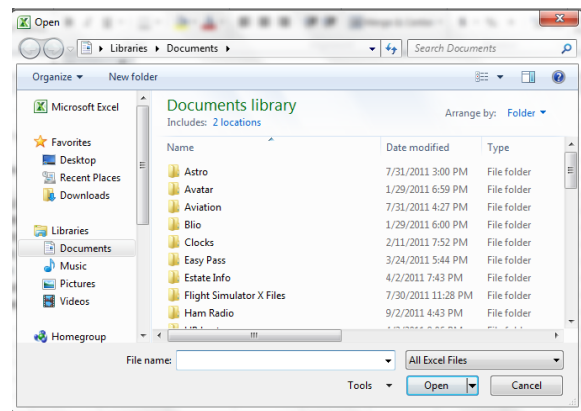
Saving a Worksheet

To save a worksheet, choose Save or Save As in the File Tab. Save will update the worksheet, destroying the old version. Save As will take you to a dialog box, which allows you to change the name or location you wish to save to, before saving. If the name is changed, both the old and new version of the worksheet will be saved. It is always wise to use the “Save as” command so you may decide where the file will actually be saved.



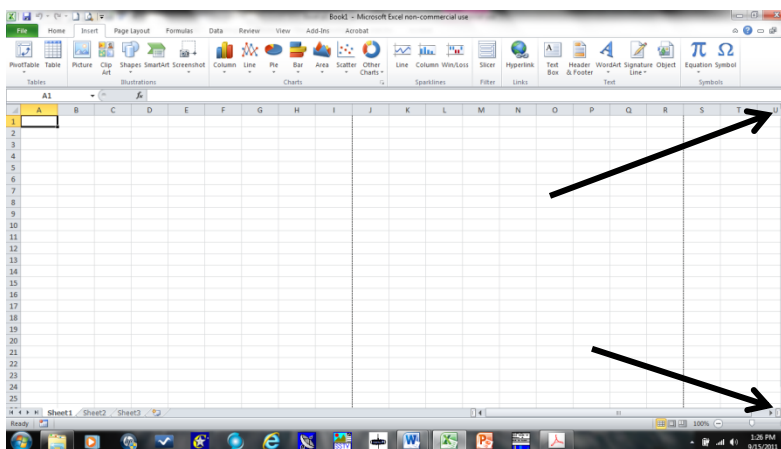
Opening an Existing Worksheet

To open an existing worksheet, choose Open in the File Menu. Use the resulting dialog box to locate and highlight the desired folder location and file name. Click on Open or double click the file name.



Using Windows to Split A Screen

In a larger worksheet it is often necessary to split the screen in order to see two different parts of the worksheet at the same time. The black rectangle at the top of the right scroll bar and at the far left of the bottom scroll bar can be used to do this. Simply place the cursor over the bar and drag it to the place on the spreadsheet you wish to break into two parts. The bars may be used to break the spreadsheet in both horizontal and vertical portions.



Fill Right and Fill Down Commands

Most spreadsheets will have similar formulas moving to the bottom of a columns and some will repeat formulas moving to the right across a row. The **Fill Right** and **Fill Down** commands (Editing Group on the home Tab) automate entering these redundant formulas. The formula can be entered once and filled into the similar cells.

To use these commands, highlight the range of cells where the similar formulas are needed (making sure the top cell highlighted or left most cell highlighted has the formula), and choose either Fill Down or Fill Right in the Edit group on the Home tab. Control D or Control R quick keys help speed up this action.

Absolute vs Relative Formulas

Formulas in Excel are relative by default. When a formula is entered in a spreadsheet and copied down or across a page, the program assumes you wish that formula to apply to other cells on the page. The formula is actually re-written so reference cells apply to the current calculation and give the correct answer. However, there are occasions when the relative nature of formulas will cause formulas that are filled or copied not to work. Formulas can be made absolute. An absolute formula refers to a specific cell and only to a specific cell.

To make a formula or part of a formula be absolute, type the "\$" sign before the column letter and/or row number, such as F\$3. To see an example of an absolute reference in a formula, look at the **mulch guide spreadsheet example**.

Functions

Functions are special mathematical formulas built into Excel. Functions can greatly simplify and shorten formulas you would otherwise have to create. Functions often carry out very sophisticated and complex calculations. All the user needs to know is the function's name and the parts it requires. Examples of common functions are:

- Sum - totals a set of numbers
- Average - averages a set of numbers
- Minimum - gives the lowest number in a set of numbers
- Maximum - gives the highest number in a set of numbers
- Yearly Payment - gives the yearly payment for a loan

Excel 2010 Functions Listed By Category

Database functions

Function	Description
<i>DAVERAGE</i>	Returns the average of selected database entries
<i>DCOUNT</i>	Counts the cells that contain numbers in a database
<i>DCOUNTA</i>	Counts nonblank cells in a database
<i>DGET</i>	Extracts from a database a single record that matches the specified criteria
<i>DMAX</i>	Returns the maximum value from selected database entries
<i>DMIN</i>	Returns the minimum value from selected database entries
<i>DPRODUCT</i>	Multiplies the values in a particular field of records that match the criteria in a database
<i>DSTDEV</i>	Estimates the standard deviation based on a sample of selected database entries
<i>DSTDEVP</i>	Calculates the standard deviation based on the entire population of selected database entries
<i>DSUM</i>	Adds the numbers in the field column of records in the database that match the criteria
<i>DVAR</i>	Estimates variance based on a sample from selected database entries

DVARP Calculates variance based on the entire population of selected database entries

Date and Time functions

Function	Description
DATE	Returns the serial number of a particular date
DATEVALUE	Converts a date in the form of text to a serial number
DAY	Converts a serial number to a day of the month
DAYS360	Calculates the number of days between two dates based on a 360-day year
EDATE	Returns the serial number of the date that is the indicated number of months before or after the start date
EOMONTH	Returns the serial number of the last day of the month before or after a specified number of months
hour	Converts a serial number to an hour
MINUTE	Converts a serial number to a minute
MONTH	Converts a serial number to a month
NETWORKDAYS	Returns the number of whole workdays between two dates
NOW	Returns the serial number of the current date and time
SECOND	Converts a serial number to a second
TIME	Returns the serial number of a particular time
TIMEVALUE	Converts a time in the form of text to a serial number
TODAY	Returns the serial number of today's date
WEEKDAY	Converts a serial number to a day of the week
WEEKNUM	Converts a serial number to a number representing where the week falls numerically with a year
WORKDAY	Returns the serial number of the date before or after a specified number of workdays
YEAR	Converts a serial number to a year
YEARFRAC	Returns the year fraction representing the number of whole days between start date and end date

Engineering functions

Function	Description
BESSELI	Returns the modified Bessel function $I_n(x)$
BESSELJ	Returns the Bessel function $J_n(x)$
BESSELK	Returns the modified Bessel function $K_n(x)$
BESSELY	Returns the Bessel function $Y_n(x)$
BIN2DEC	Converts a binary number to decimal
BIN2HEX	Converts a binary number to hexadecimal
BIN2OCT	Converts a binary number to octal
COMPLEX	Converts real and imaginary coefficients into a complex number
CONVERT	Converts a number from one measurement system to another
DEC2BIN	Converts a decimal number to binary
DEC2HEX	Converts a decimal number to hexadecimal
DEC2OCT	Converts a decimal number to octal
DELTA	Tests whether two values are equal
ERF	Returns the error function
ERFC	Returns the complementary error function
GESTEP	Tests whether a number is greater than a threshold value
HEX2BIN	Converts a hexadecimal number to binary

HEX2DEC	Converts a hexadecimal number to decimal
HEX2OCT	Converts a hexadecimal number to octal
IMABS	Returns the absolute value (modulus) of a complex number
IMAGINARY	Returns the imaginary coefficient of a complex number
IMARGUMENT	Returns the argument theta, an angle expressed in radians
IMCONJUGATE	Returns the complex conjugate of a complex number
IMCOS	Returns the cosine of a complex number
IMDIV	Returns the quotient of two complex numbers
IMEXP	Returns the exponential of a complex number
IMLN	Returns the natural logarithm of a complex number
IMLOG10	Returns the base-10 logarithm of a complex number
IMLOG2	Returns the base-2 logarithm of a complex number
IMPOWER	Returns a complex number raised to an integer power
IMPRODUCT	Returns the product of from 2 to 29 complex numbers
IMREAL	Returns the real coefficient of a complex number
IMSIN	Returns the sine of a complex number
IMSQRT	Returns the square root of a complex number
IMSUB	Returns the difference between two complex numbers
IMSUM	Returns the sum of complex numbers
OCT2BIN	Converts an octal number to binary
OCT2DEC	Converts an octal number to decimal
OCT2HEX	Converts an octal number to hexadecimal

Financial functions

Function	Description
ACCRINT	Returns the accrued interest for a security that pays periodic interest
ACCRINTM	Returns the accrued interest for a security that pays interest at maturity
AMORDEGRC	Returns the depreciation for each accounting period by using a depreciation coefficient
Function	Description
AMORLINC	Returns the depreciation for each accounting period
COUPDAYBS	Returns the number of days from the beginning of the coupon period to the settlement date
COUPDAYS	Returns the number of days in the coupon period that contains the settlement date
COUPDAYSNC	Returns the number of days from the settlement date to the next coupon date
COUPNCD	Returns the next coupon date after the settlement date
COUPNUM	Returns the number of coupons payable between the settlement date and maturity date
COUPPCD	Returns the previous coupon date before the settlement date
CUMIPMT	Returns the cumulative interest paid between two periods
CUMPRINC	Returns the cumulative principal paid on a loan between two periods
DB	Returns the depreciation of an asset for a specified period by using the fixed-declining balance method
DDB	Returns the depreciation of an asset for a specified period by using the double-declining balance method or some other method that you specify
DISC	Returns the discount rate for a security
DOLLARDE	Converts a dollar price, expressed as a fraction, into a dollar price, expressed as a decimal number

DOLLARFR	Converts a dollar price, expressed as a decimal number, into a dollar price, expressed as a fraction
DURATION	Returns the annual duration of a security with periodic interest payments
EFFECT	Returns the effective annual interest rate
FV	Returns the future value of an investment
FVSCHEDULE	Returns the future value of an initial principal after applying a series of compound interest rates
INTRATE	Returns the interest rate for a fully invested security
IPMT	Returns the interest payment for an investment for a given period
IRR	Returns the internal rate of return for a series of cash flows
ISPMT	Calculates the interest paid during a specific period of an investment
MDURATION	Returns the Macauley modified duration for a security with an assumed par value of \$100
MIRR	Returns the internal rate of return where positive and negative cash flows are financed at different rates
NOMINAL	Returns the annual nominal interest rate
NPER	Returns the number of periods for an investment
NPV	Returns the net present value of an investment based on a series of periodic cash flows and a discount rate
ODDFPRICE	Returns the price per \$100 face value of a security with an odd first period
ODDFYIELD	Returns the yield of a security with an odd first period
ODDLPRICE	Returns the price per \$100 face value of a security with an odd last period
ODDLYIELD	Returns the yield of a security with an odd last period
PMT	Returns the periodic payment for an annuity
PPMT	Returns the payment on the principal for an investment for a given period
PRICE	Returns the price per \$100 face value of a security that pays periodic interest
PRICEDISC	Returns the price per \$100 face value of a discounted security
PRICEMAT	Returns the price per \$100 face value of a security that pays interest at maturity
PV	Returns the present value of an investment
RATE	Returns the interest rate per period of an annuity
RECEIVED	Returns the amount received at maturity for a fully invested security
SLN	Returns the straight-line depreciation of an asset for one period
SYD	Returns the sum-of-years' digits depreciation of an asset for a specified period
TBILLEQ	Returns the bond-equivalent yield for a Treasury bill
TBILLPRICE	Returns the price per \$100 face value for a Treasury bill
TBILLYIELD	Returns the yield for a Treasury bill
VDB	Returns the depreciation of an asset for a specified or partial period by using a declining balance method
XIRR	Returns the internal rate of return for a schedule of cash flows that is not necessarily periodic
XNPV	Returns the net present value for a schedule of cash flows that is not necessarily periodic
YIELD	Returns the yield on a security that pays periodic interest
YIELDDISC	Returns the annual yield for a discounted security; for example, a Treasury bill
YIELDMAT	Returns the annual yield of a security that pays interest at maturity

Information functions

Function	Description
CELL	Returns information about the formatting, location, or contents of a cell
ERROR.TYPE	Returns a number corresponding to an error type
INFO	Returns information about the current operating environment
ISBLANK	Returns TRUE if the value is blank
ISERR	Returns TRUE if the value is any error value except #N/A
ISERROR	Returns TRUE if the value is any error value
ISEVEN	Returns TRUE if the number is even
ISLOGICAL	Returns TRUE if the value is a logical value
ISNA	Returns TRUE if the value is the #N/A error value
ISNONTEXT	Returns TRUE if the value is not text
ISNUMBER	Returns TRUE if the value is a number
ISODD	Returns TRUE if the number is odd
ISREF	Returns TRUE if the value is a reference
ISTEXT	Returns TRUE if the value is text
N	Returns a value converted to a number
NA	Returns the error value #N/A
TYPE	Returns a number indicating the data type of a value

Logical functions

Function	Description
AND	Returns TRUE if all of its arguments are TRUE
FALSE	Returns the logical value FALSE
IF	Specifies a logical test to perform
NOT	Reverses the logic of its argument
OR	Returns TRUE if any argument is TRUE
TRUE	Returns the logical value TRUE

Lookup and reference functions

Function	Description
ADDRESS	Returns a reference as text to a single cell in a worksheet
AREAS	Returns the number of areas in a reference
CHOOSE	Chooses a value from a list of values
COLUMN	Returns the column number of a reference
COLUMNS	Returns the number of columns in a reference
GETPIVOTDATA	Returns data stored in a PivotTable
HLOOKUP	Looks in the top row of an array and returns the value of the indicated cell
HYPERLINK	Creates a shortcut or jump that opens a document stored on a network server, an intranet, or the Internet
INDEX	Uses an index to choose a value from a reference or array
INDIRECT	Returns a reference indicated by a text value
LOOKUP	Looks up values in a vector or array
MATCH	Looks up values in a reference or array
OFFSET	Returns a reference offset from a given reference
ROW	Returns the row number of a reference

ROWS	Returns the number of rows in a reference
RTD	Retrieves real-time data from a program that supports COM automation
TRANSPOSE	Returns the transpose of an array
VLOOKUP	Looks in the first column of an array and moves across the row to return the value of a cell

Math and trigonometry functions

Function	Description
ABS	Returns the absolute value of a number
ACOS	Returns the arccosine of a number
ACOSH	Returns the inverse hyperbolic cosine of a number
ASIN	Returns the arcsine of a number
ASINH	Returns the inverse hyperbolic sine of a number
ATAN	Returns the arctangent of a number
ATAN2	Returns the arctangent from x- and y-coordinates
ATANH	Returns the inverse hyperbolic tangent of a number
CEILING	Rounds a number to the nearest integer or to the nearest multiple of significance
COMBIN	Returns the number of combinations for a given number of objects
COS	Returns the cosine of a number
COSH	Returns the hyperbolic cosine of a number
DEGREES	Converts radians to degrees
EVEN	Rounds a number up to the nearest even integer
EXP	Returns e raised to the power of a given number
FACT	Returns the factorial of a number
FACTDOUBLE	Returns the double factorial of a number
FLOOR	Rounds a number down, toward zero
GCD	Returns the greatest common divisor
INT	Rounds a number down to the nearest integer
LCM	Returns the least common multiple
LN	Returns the natural logarithm of a number
LOG	Returns the logarithm of a number to a specified base
LOG10	Returns the base-10 logarithm of a number
MDETERM	Returns the matrix determinant of an array
MINVERSE	Returns the matrix inverse of an array
MMULT	Returns the matrix product of two arrays
MOD	Returns the remainder from division
MROUND	Returns a number rounded to the desired multiple
MULTINOMIAL	Returns the multinomial of a set of numbers
ODD	Rounds a number up to the nearest odd integer
PI	Returns the value of pi
POWER	Returns the result of a number raised to a power
PRODUCT	Multiplies its arguments
QUOTIENT	Returns the integer portion of a division
RADIANS	Converts degrees to radians
RAND	Returns a random number between 0 and 1
RANDBETWEEN	Returns a random number between the numbers you specify
ROMAN	Converts an Arabic numeral to roman, as text
ROUND	Rounds a number to a specified number of digits
ROUNDDOWN	Rounds a number down, toward zero

ROUNDUP	Rounds a number up, away from zero
SERIESSUM	Returns the sum of a power series based on the formula
SIGN	Returns the sign of a number
SIN	Returns the sine of the given angle
SINH	Returns the hyperbolic sine of a number
SQRT	Returns a positive square root
SQRTPI	Returns the square root of (number * pi)
SUBTOTAL	Returns a subtotal in a list or database
SUM	Adds its arguments
SUMIF	Adds the cells specified by a given criteria
SUMPRODUCT	Returns the sum of the products of corresponding array components
SUMSQ	Returns the sum of the squares of the arguments
SUMX2MY2	Returns the sum of the difference of squares of corresponding values in two arrays
SUMX2PY2	Returns the sum of the sum of squares of corresponding values in two arrays
SUMXMY2	Returns the sum of squares of differences of corresponding values in two arrays
TAN	Returns the tangent of a number
TANH	Returns the hyperbolic tangent of a number
TRUNC	Truncates a number to an integer

Statistical functions

Function	Description
AVEDEV	Returns the average of the absolute deviations of data points from their mean
AVERAGE	Returns the average of its arguments
AVERAGEA	Returns the average of its arguments, including numbers, text, and logical values
BETADIST	Returns the beta cumulative distribution function
BETAINV	Returns the inverse of the cumulative distribution function for a specified beta distribution
BINOMDIST	Returns the individual term binomial distribution probability
CHIDIST	Returns the one-tailed probability of the chi-squared distribution
CHIINV	Returns the inverse of the one-tailed probability of the chi-squared distribution
CHITEST	Returns the test for independence
CONFIDENCE	Returns the confidence interval for a population mean
CORREL	Returns the correlation coefficient between two data sets
COUNT	Counts how many numbers are in the list of arguments
COUNTA	Counts how many values are in the list of arguments
COUNTBLANK	Counts the number of blank cells within a range
COUNTIF	Counts the number of nonblank cells within a range that meet the given criteria
COVAR	Returns covariance, the average of the products of paired deviations
CRITBINOM	Returns the smallest value for which the cumulative binomial distribution is less than or equal to a criterion value
DEVSQ	Returns the sum of squares of deviations
EXPONDIST	Returns the exponential distribution
FDIST	Returns the F probability distribution
FINV	Returns the inverse of the F probability distribution
FISHER	Returns the Fisher transformation
FISHERINV	Returns the inverse of the Fisher transformation
FORECAST	Returns a value along a linear trend
FREQUENCY	Returns a frequency distribution as a vertical array

FTEST	Returns the result of an F-test
GAMMADIST	Returns the gamma distribution
GAMMAINV	Returns the inverse of the gamma cumulative distribution
GAMMALN	Returns the natural logarithm of the gamma function, $\Gamma(x)$
GEOMEAN	Returns the geometric mean
GROWTH	Returns values along an exponential trend
HARMEAN	Returns the harmonic mean
HYPGEOMDIST	Returns the hypergeometric distribution
INTERCEPT	Returns the intercept of the linear regression line
KURT	Returns the kurtosis of a data set
LARGE	Returns the k-th largest value in a data set
LINEST	Returns the parameters of a linear trend
LOGEST	Returns the parameters of an exponential trend
LOGINV	Returns the inverse of the lognormal distribution
LOGNORMDIST	Returns the cumulative lognormal distribution
MAX	Returns the maximum value in a list of arguments
MAXA	Returns the maximum value in a list of arguments, including numbers, text, and logical values
MEDIAN	Returns the median of the given numbers
MIN	Returns the minimum value in a list of arguments
MINA	Returns the smallest value in a list of arguments, including numbers, text, and logical values
MODE	Returns the most common value in a data set
NEGBINOMDIST	Returns the negative binomial distribution
NORMDIST	Returns the normal cumulative distribution
NORMINV	Returns the inverse of the normal cumulative distribution
NORMSDIST	Returns the standard normal cumulative distribution
NORMSINV	Returns the inverse of the standard normal cumulative distribution
PEARSON	Returns the Pearson product moment correlation coefficient
PERCENTILE	Returns the k-th percentile of values in a range
PERCENTRANK	Returns the percentage rank of a value in a data set
PERMUT	Returns the number of permutations for a given number of objects
POISSON	Returns the Poisson distribution
PROB	Returns the probability that values in a range are between two limits
QUARTILE	Returns the quartile of a data set
RANK	Returns the rank of a number in a list of numbers
RSQ	Returns the square of the Pearson product moment correlation coefficient
SKEW	Returns the skewness of a distribution
SLOPE	Returns the slope of the linear regression line
SMALL	Returns the k-th smallest value in a data set
STANDARDIZE	Returns a normalized value
STDEV	Estimates standard deviation based on a sample
STDEVA	Estimates standard deviation based on a sample, including numbers, text, and logical values
STDEVP	Calculates standard deviation based on the entire population
STDEVPA	Calculates standard deviation based on the entire population, including numbers, text, and logical values
STEYX	Returns the standard error of the predicted y-value for each x in the regression
TDIST	Returns the Student's t-distribution
TINV	Returns the inverse of the Student's t-distribution
TREND	Returns values along a linear trend

TRIMMEAN	Returns the mean of the interior of a data set
TTEST	Returns the probability associated with a Student's t-test
VAR	Estimates variance based on a sample
VARA	Estimates variance based on a sample, including numbers, text, and logical values
VARP	Calculates variance based on the entire population
VARPA	Calculates variance based on the entire population, including numbers, text, and logical values
WEIBULL	Returns the Weibull distribution
ZTEST	Returns the one-tailed probability-value of a z-test

Text functions

Function	Description
ASC	Changes full-width (double-byte) English letters or katakana within a character string to half-width (single-byte) characters
BAHTTEXT	Converts a number to text, using the ฿ (baht) currency format
CHAR	Returns the character specified by the code number
CLEAN	Removes all nonprintable characters from text
CODE	Returns a numeric code for the first character in a text string
CONCATENATE	Joins several text items into one text item
DOLLAR	Converts a number to text, using the \$ (dollar) currency format
EXACT	Checks to see if two text values are identical
FIND, FINDB	Finds one text value within another (case-sensitive)
FIXED	Formats a number as text with a fixed number of decimals
JIS	Changes half-width (single-byte) English letters or katakana within a character string to full-width (double-byte) characters
LEFT, LEFTB	Returns the leftmost characters from a text value
LEN, LENB	Returns the number of characters in a text string
LOWER	Converts text to lowercase
MID, MIDB	Returns a specific number of characters from a text string starting at the position you specify
PHONETIC	Extracts the phonetic (furigana) characters from a text string
PROPER	Capitalizes the first letter in each word of a text value
REPLACE, REPLACEB	Replaces characters within text
REPT	Repeats text a given number of times
RIGHT, RIGHTB	Returns the rightmost characters from a text value
SEARCH, SEARCHB	Finds one text value within another (not case-sensitive)
SUBSTITUTE	Substitutes new text for old text in a text string
T	Converts its arguments to text
TEXT	Formats a number and converts it to text
TRIM	Removes spaces from text
UPPER	Converts text to uppercase
VALUE	Converts a text argument to a number

External functions

Function	Description
EUROCONVERT	Converts a number to euros, converts a number from euros to a euro member currency, or converts a number from one euro member currency to another by using the euro as an intermediary (triangulation)

SQL.REQUEST Connects with an external data source and runs a query from a worksheet, then returns the result as an array without the need for macro programming

Excel 2010 Functions Listed Alphabetically

Function	Category	Description
ABS	Math and trigonometry	Returns the absolute value of a number
ACCRINT	Financial	Returns the accrued interest for a security that pays periodic interest
ACCRINTM	Financial	Returns the accrued interest for a security that pays interest at maturity
ACOS	Math and trigonometry	Returns the arccosine of a number
ACOSH	Math and trigonometry	Returns the inverse hyperbolic cosine of a number
AGGREGATE	Math and trigonometry	Returns an aggregate in a list or database
ADDRESS	Lookup and reference	Returns a reference as text to a single cell in a worksheet
AMORDEGRC	Financial	Returns the depreciation for each accounting period by using a depreciation coefficient
AMORLINC	Financial	Returns the depreciation for each accounting period
AND	Logical	Returns TRUE if all of its arguments are TRUE
AREAS	Lookup and reference	Returns the number of areas in a reference
ASC	Text	Changes full-width (double-byte) English letters or katakana within a character string to half-width (single-byte) characters
ASIN	Math and trigonometry	Returns the arcsine of a number
ASINH	Math and trigonometry	Returns the inverse hyperbolic sine of a number
ATAN	Math and trigonometry	Returns the arctangent of a number
ATAN2	Math and trigonometry	Returns the arctangent from x- and y-coordinates
ATANH	Math and trigonometry	Returns the inverse hyperbolic tangent of a number
AVEDEV	Statistical	Returns the average of the absolute deviations of data points from their mean
AVERAGE	Statistical	Returns the average of its arguments
AVERAGEA	Statistical	Returns the average of its arguments, including numbers, text, and logical values
AVERAGEIF	Statistical	Returns the average (arithmetic mean) of all the cells in a range that meet a given criteria
AVERAGEIFS	Statistical	Returns the average (arithmetic mean) of all cells that meet multiple criteria.
BAHTTEXT	Text	Converts a number to text, using the ₮ (baht) currency format
BESSELI	Engineering	Returns the modified Bessel function $I_n(x)$
BESSELJ	Engineering	Returns the Bessel function $J_n(x)$
BESSELK	Engineering	Returns the modified Bessel function $K_n(x)$
BESSELY	Engineering	Returns the Bessel function $Y_n(x)$
BETADIST	Compatibility	Returns the beta cumulative distribution function
BETA.DIST	Statistical	Returns the beta cumulative distribution function
BETAINV	Compatibility	Returns the inverse of the cumulative distribution function for a specified beta distribution

BETA.INV	<i>Statistical</i>	Returns the inverse of the cumulative distribution function for a specified beta distribution
BIN2DEC	Engineering	Converts a binary number to decimal
BIN2HEX	Engineering	Converts a binary number to hexadecimal
BIN2OCT	Engineering	Converts a binary number to octal
BINOMDIST	Compatibility	Returns the individual term binomial distribution probability
BINOM.DIST	Statistical	Returns the individual term binomial distribution probability
BINOM.INV	Statistical	Returns the smallest value for which the cumulative binomial distribution is less than or equal to a criterion value
CALL	Add-in and Automation	Calls a procedure in a dynamic link library or code resource
CEILING	Math and trigonometry	Rounds a number to the nearest integer or to the nearest multiple of significance
CEILING.PRECISE	Math and trigonometry	Rounds a number the nearest integer or to the nearest multiple of significance. Regardless of the sign of the number, the number is rounded up.
CELL	Information	Returns information about the formatting, location, or contents of a cell Note, this function is not available in Excel Web App.
CHAR	Text	Returns the character specified by the code number
CHIDIST	Compatibility	Returns the one-tailed probability of the chi-squared distribution
CHIINV	Compatibility	Returns the inverse of the one-tailed probability of the chi-squared distribution
CHITEST	Compatibility	Returns the test for independence
CHISQ.DIST	Statistical	Returns the cumulative beta probability density function
CHISQ.DIST.RT	Statistical	Returns the one-tailed probability of the chi-squared distribution
CHISQ.INV	Statistical	Returns the cumulative beta probability density function
CHISQ.INV.RT	Statistical	Returns the inverse of the one-tailed probability of the chi-squared distribution
CHISQ.TEST	Statistical	Returns the test for independence
CHOOSE	Lookup and reference	Chooses a value from a list of values
CLEAN	Text	Removes all nonprintable characters from text
CODE	Text	Returns a numeric code for the first character in a text string
COLUMN	Lookup and reference	Returns the column number of a reference
COLUMNS	Lookup and reference	Returns the number of columns in a reference
COMBIN	Math and trigonometry	Returns the number of combinations for a given number of objects
COMPLEX	Engineering	Converts real and imaginary coefficients into a complex number
CONCATENATE	Text	Joins several text items into one text item
CONFIDENCE	Compatibility	Returns the confidence interval for a population mean

CONFIDENCE.NORM	Statistical	Returns the confidence interval for a population mean
CONFIDENCE.T	Statistical	Returns the confidence interval for a population mean, using a Student's t distribution
CONVERT	Engineering	Converts a number from one measurement system to another
CORREL	Statistical	Returns the correlation coefficient between two data sets
COS	Math and trigonometry	Returns the cosine of a number
COSH	Math and trigonometry	Returns the hyperbolic cosine of a number
COUNT	Statistical	Counts how many numbers are in the list of arguments
COUNTA	Statistical	Counts how many values are in the list of arguments
COUNTBLANK	Statistical	Counts the number of blank cells within a range
COUNTIF	Statistical	Counts the number of cells within a range that meet the given criteria
COUNTIFS	Statistical	Counts the number of cells within a range that meet multiple criteria
COUPDAYBS	Financial	Returns the number of days from the beginning of the coupon period to the settlement date
COUPDAYS	Financial	Returns the number of days in the coupon period that contains the settlement date
COUPDAYSNC	Financial	Returns the number of days from the settlement date to the next coupon date
COUPNCD	Financial	Returns the next coupon date after the settlement date
COUPNUM	Financial	Returns the number of coupons payable between the settlement date and maturity date
COUPPCD	Financial	Returns the previous coupon date before the settlement date
COVAR	Compatibility	Returns covariance, the average of the products of paired deviations
COVARIANCE.P	Statistical	Returns covariance, the average of the products of paired deviations
COVARIANCE.S	Statistical	Returns the sample covariance, the average of the products deviations for each data point pair in two data sets
CRITBINOM	Compatibility	Returns the smallest value for which the cumulative binomial distribution is less than or equal to a criterion value
CUBEKPIMEMBER	Cube	Returns a key performance indicator (KPI) name, property, and measure, and displays the name and property in the cell. A KPI is a quantifiable measurement, such as monthly gross profit or quarterly employee turnover, used to monitor an organization's performance.
CUBEMEMBER	Cube	Returns a member or tuple in a cube hierarchy. Use to validate that the member or tuple exists in the cube.

<i>CUBEMEMBERPROPERTY</i>	Cube	Returns the value of a member property in the cube. Use to validate that a member name exists within the cube and to return the specified property for this member.
<i>CUBERANKEDMEMBER</i>	Cube	Returns the nth, or ranked, member in a set. Use to return one or more elements in a set, such as the top sales performer or top 10 students.
<i>CUBESET</i>	Cube	Defines a calculated set of members or tuples by sending a set expression to the cube on the server, which creates the set, and then returns that set to Microsoft Office Excel.
<i>CUBESETCOUNT</i>	Cube	Returns the number of items in a set.
<i>CUBEVALUE</i>	Cube	Returns an aggregated value from a cube.
<i>CUMIPMT</i>	Financial	Returns the cumulative interest paid between two periods
<i>CUMPRINC</i>	Financial	Returns the cumulative principal paid on a loan between two periods
<i>DATE</i>	Date and time	Returns the serial number of a particular date
<i>DATEVALUE</i>	Date and time	Converts a date in the form of text to a serial number
<i>DAVERAGE</i>	Database	Returns the average of selected database entries
<i>DAY</i>	Date and time	Converts a serial number to a day of the month
<i>DAYS360</i>	Date and time	Calculates the number of days between two dates based on a 360-day year
<i>DB</i>	Financial	Returns the depreciation of an asset for a specified period by using the fixed-declining balance method
<i>DCOUNT</i>	Database	Counts the cells that contain numbers in a database
<i>DCOUNTA</i>	Database	Counts nonblank cells in a database
<i>DDB</i>	Financial	Returns the depreciation of an asset for a specified period by using the double-declining balance method or some other method that you specify
<i>DEC2BIN</i>	Engineering	Converts a decimal number to binary
<i>DEC2HEX</i>	Engineering	Converts a decimal number to hexadecimal
<i>DEC2OCT</i>	Engineering	Converts a decimal number to octal
<i>DEGREES</i>	Math and trigonometry	Converts radians to degrees
<i>DELTA</i>	Engineering	Tests whether two values are equal
<i>DEVSQ</i>	Statistical	Returns the sum of squares of deviations
<i>DGET</i>	Database	Extracts from a database a single record that matches the specified criteria
<i>DISC</i>	Financial	Returns the discount rate for a security
<i>DMAX</i>	Database	Returns the maximum value from selected database entries
<i>DMIN</i>	Database	Returns the minimum value from selected database entries
<i>DOLLAR</i>	Text	Converts a number to text, using the \$ (dollar) currency format
<i>DOLLARDE</i>	Financial	Converts a dollar price, expressed as a fraction, into a dollar price, expressed as a decimal number
<i>DOLLARFR</i>	Financial	Converts a dollar price, expressed as a decimal number, into a dollar price, expressed as a fraction

<i>DPRODUCT</i>	Database	Multiplies the values in a particular field of records that match the criteria in a database
<i>DSTDEV</i>	Database	Estimates the standard deviation based on a sample of selected database entries
<i>DSTDEVP</i>	Database	Calculates the standard deviation based on the entire population of selected database entries
<i>DSUM</i>	Database	Adds the numbers in the field column of records in the database that match the criteria
<i>DURATION</i>	Financial	Returns the annual duration of a security with periodic interest payments
<i>DVAR</i>	Database	Estimates variance based on a sample from selected database entries
<i>DVARP</i>	Database	Calculates variance based on the entire population of selected database entries
<i>EDATE</i>	Date and time	Returns the serial number of the date that is the indicated number of months before or after the start date
<i>EFFECT</i>	Financial	Returns the effective annual interest rate
<i>EOMONTH</i>	Date and time	Returns the serial number of the last day of the month before or after a specified number of months
<i>ERF</i>	Engineering	Returns the error function
<i>ERF.PRECISE</i>	Engineering	Returns the error function
<i>ERFC</i>	Engineering	Returns the complementary error function
<i>ERFC.PRECISE</i>	Engineering	Returns the complementary ERF function integrated between x and infinity
<i>ERROR.TYPE</i>	Information	Returns a number corresponding to an error type
<i>EUROCONVERT</i>	Add-in and Automation	Converts a number to euros, converts a number from euros to a euro member currency, or converts a number from one euro member currency to another by using the euro as an intermediary (triangulation).
<i>EVEN</i>	Math and trigonometry	Rounds a number up to the nearest even integer
<i>EXACT</i>	Text	Checks to see if two text values are identical
<i>EXP</i>	Math and trigonometry	Returns e raised to the power of a given number
<i>EXPON.DIST</i>	Statistical	Returns the exponential distribution
<i>EXPONDIST</i>	Compatibility	Returns the exponential distribution
<i>FACT</i>	Math and trigonometry	Returns the factorial of a number
<i>FACTDOUBLE</i>	Math and trigonometry	Returns the double factorial of a number
<i>FALSE</i>	Logical	Returns the logical value FALSE
<i>F.DIST</i>	Statistical	Returns the F probability distribution
<i>FDIST</i>	Compatibility	Returns the F probability distribution
<i>F.DIST.RT</i>	Statistical	Returns the F probability distribution
<i>FIND, FINDB</i>	Text	Finds one text value within another (case-sensitive)
<i>F.INV</i>	Statistical	Returns the inverse of the F probability distribution
<i>F.INV.RT</i>	Statistical	Returns the inverse of the F probability distribution
<i>FINV</i>	Statistical	Returns the inverse of the F probability distribution
<i>FISHER</i>	Statistical	Returns the Fisher transformation
<i>FISHERINV</i>	Statistical	Returns the inverse of the Fisher transformation
<i>FIXED</i>	Text	Formats a number as text with a fixed number of decimals
<i>FLOOR</i>	Math and trigonometry	Rounds a number down, toward zero

FLOOR.PRECISE	Math and trigonometry	Rounds a number the nearest integer or to the nearest multiple of significance. Regardless of the sign of the number, the number is rounded up.
FORECAST	Statistical	Returns a value along a linear trend
FREQUENCY	Statistical	Returns a frequency distribution as a vertical array
F.TEST	Statistical	Returns the result of an F-test
FTEST	Compatibility	
FV	Financial	Returns the future value of an investment
FVSCHEDULE	Financial	Returns the future value of an initial principal after applying a series of compound interest rates
GAMMA.DIST	Statistical	Returns the gamma distribution
GAMMADIST	Compatibility	Returns the gamma distribution
GAMMA.INV	Statistical	Returns the inverse of the gamma cumulative distribution
GAMMAINV	Compatibility	Returns the inverse of the gamma cumulative distribution
GAMMALN	Statistical	Returns the natural logarithm of the gamma function, $\Gamma(x)$
GAMMALN.PRECISE	Statistical	Returns the natural logarithm of the gamma function, $\Gamma(x)$
GCD	Math and trigonometry	Returns the greatest common divisor
GEOMEAN	Statistical	Returns the geometric mean
GESTEP	Engineering	Tests whether a number is greater than a threshold value
GETPIVOTDATA	Add-in and Automation	Returns data stored in a PivotTable report
GROWTH	Statistical	Returns values along an exponential trend
HARMEAN	Statistical	Returns the harmonic mean
HEX2BIN	Engineering	Converts a hexadecimal number to binary
HEX2DEC	Engineering	Converts a hexadecimal number to decimal
HEX2OCT	Engineering	Converts a hexadecimal number to octal
HLOOKUP	Lookup and reference	Looks in the top row of an array and returns the value of the indicated cell
HOURL	Date and time	Converts a serial number to an hour
HYPERLINK	Lookup and reference	Creates a shortcut or jump that opens a document stored on a network server, an intranet, or the Internet
HYPGEOM.DIST	Statistical	Returns the hypergeometric distribution
HYPGEOMDIST	Compatibility	Returns the hypergeometric distribution
IF	Logical	Specifies a logical test to perform
IFERROR	Logical	Returns a value you specify if a formula evaluates to an error; otherwise, returns the result of the formula
IMABS	Engineering	Returns the absolute value (modulus) of a complex number
IMAGINARY	Engineering	Returns the imaginary coefficient of a complex number
IMARGUMENT	Engineering	Returns the argument theta, an angle expressed in radians
IMCONJUGATE	Engineering	Returns the complex conjugate of a complex number
IMCOS	Engineering	Returns the cosine of a complex number

IMDIV	Engineering	Returns the quotient of two complex numbers
IMEXP	Engineering	Returns the exponential of a complex number
IMLN	Engineering	Returns the natural logarithm of a complex number
IMLOG10	Engineering	Returns the base-10 logarithm of a complex number
IMLOG2	Engineering	Returns the base-2 logarithm of a complex number
IMPOWER	Engineering	Returns a complex number raised to an integer power
IMPRODUCT	Engineering	Returns the product of complex numbers
IMREAL	Engineering	Returns the real coefficient of a complex number
IMSIN	Engineering	Returns the sine of a complex number
IMSQRT	Engineering	Returns the square root of a complex number
IMSUB	Engineering	Returns the difference between two complex numbers
IMSUM	Engineering	Returns the sum of complex numbers
INDEX	Lookup and reference	Uses an index to choose a value from a reference or array
INDIRECT	Lookup and reference	Returns a reference indicated by a text value
INFO	Information	Returns information about the current operating environment Note: This function is not available in Excel Web App.
INT	Math and trigonometry	Rounds a number down to the nearest integer
INTERCEPT	Statistical	Returns the intercept of the linear regression line
INTRATE	Financial	Returns the interest rate for a fully invested security
IPMT	Financial	Returns the interest payment for an investment for a given period
IRR	Financial	Returns the internal rate of return for a series of cash flows
ISBLANK	Information	Returns TRUE if the value is blank
ISERR	Information	Returns TRUE if the value is any error value except #N/A
ISERROR	Information	Returns TRUE if the value is any error value
ISEVEN	Information	Returns TRUE if the number is even
ISLOGICAL	Information	Returns TRUE if the value is a logical value
ISNA	Information	Returns TRUE if the value is the #N/A error value
ISNONTEXT	Information	Returns TRUE if the value is not text
ISNUMBER	Information	Returns TRUE if the value is a number
ISODD	Information	Returns TRUE if the number is odd
ISREF	Information	Returns TRUE if the value is a reference
ISTEXT	Information	Returns TRUE if the value is text
ISO.CEILING	Math and trigonometry	Returns a number that is rounded up to the nearest integer or to the nearest multiple of significance
ISPMT	Financial	Calculates the interest paid during a specific period of an investment
JIS	Text	Changes half-width (single-byte) English letters or katakana within a character string to full-width (double-byte) characters
KURT	Statistical	Returns the kurtosis of a data set
LARGE	Statistical	Returns the k-th largest value in a data set
LCM	Math and trigonometry	Returns the least common multiple
LEFT, LEFTB functions	Text	Returns the leftmost characters from a text value
LEN, LENB functions	Text	Returns the number of characters in a text string

<i>LINEST</i>	Statistical	Returns the parameters of a linear trend
<i>LN</i>	Math and trigonometry	Returns the natural logarithm of a number
<i>LOG</i>	Math and trigonometry	Returns the logarithm of a number to a specified base
<i>LOG10</i>	Math and trigonometry	Returns the base-10 logarithm of a number
<i>LOGEST</i>	Statistical	Returns the parameters of an exponential trend
<i>LOGINV</i>	Compatibility	Returns the inverse of the lognormal cumulative distribution
<i>LOGNORM.DIST</i>	Statistical	Returns the cumulative lognormal distribution
<i>LOGNORMDIST</i>	Compatibility	Returns the cumulative lognormal distribution
<i>LOGNORM.INV</i>	Statistical	Returns the inverse of the lognormal cumulative distribution
<i>LOOKUP</i>	Lookup and reference	Looks up values in a vector or array
<i>LOWER</i>	Text	Converts text to lowercase
<i>MATCH</i>	Lookup and reference	Looks up values in a reference or array
<i>MAX</i>	Statistical	Returns the maximum value in a list of arguments
<i>MAXA</i>	Statistical	Returns the maximum value in a list of arguments, including numbers, text, and logical values
<i>MDETERM</i>	Math and trigonometry	Returns the matrix determinant of an array
<i>MDURATION</i>	Financial	Returns the Macauley modified duration for a security with an assumed par value of \$100
<i>MEDIAN</i>	Statistical	Returns the median of the given numbers
<i>MID, MIDB functions</i>	Text	Returns a specific number of characters from a text string starting at the position you specify
<i>MIN</i>	Statistical	Returns the minimum value in a list of arguments
<i>MINA</i>	Statistical	Returns the smallest value in a list of arguments, including numbers, text, and logical values
<i>MINUTE</i>	Date and time	Converts a serial number to a minute
<i>MINVERSE</i>	Math and trigonometry	Returns the matrix inverse of an array
<i>MIRR</i>	Financial	Returns the internal rate of return where positive and negative cash flows are financed at different rates
<i>MMULT</i>	Math and trigonometry	Returns the matrix product of two arrays
<i>MOD</i>	Math and trigonometry	Returns the remainder from division
<i>MODE</i>	Compatibility	Returns the most common value in a data set
<i>MODE.MULT</i>	Statistical	Returns a vertical array of the most frequently occurring, or repetitive values in an array or range of data
<i>MODE.SNGL</i>	Statistical	Returns the most common value in a data set
<i>MONTH</i>	Date and time	Converts a serial number to a month
<i>MROUND</i>	Math and trigonometry	Returns a number rounded to the desired multiple
<i>MULTINOMIAL</i>	Math and trigonometry	Returns the multinomial of a set of numbers
<i>N</i>	Information	Returns a value converted to a number
<i>NA</i>	Information	Returns the error value #N/A
<i>NEGBINOM.DIST</i>	Statistical	Returns the negative binomial distribution
<i>NEGBINOMDIST</i>	Compatibility	Returns the negative binomial distribution
<i>NETWORKDAYS</i>	Date and time	Returns the number of whole workdays between two dates
<i>NETWORKDAYS.INTL</i>	Date and time	Returns the number of whole workdays between two dates using parameters to indicate which and how many days are weekend days

NOMINAL	Financial	Returns the annual nominal interest rate
NORM.DIST	Statistical	Returns the normal cumulative distribution
NORMDIST	Compatibility	Returns the normal cumulative distribution
NORM.INV	Statistical	Returns the inverse of the normal cumulative distribution
NORMINV	Compatibility	Returns the inverse of the normal cumulative distribution
NORM.S.DIST	Statistical	Returns the standard normal cumulative distribution
NORMSDIST	Compatibility	Returns the standard normal cumulative distribution
NORM.S.INV	RStatistical	Returns the inverse of the standard normal cumulative distribution
NORMSINV	Compatibility	Returns the inverse of the standard normal cumulative distribution
NOT	Logical	Reverses the logic of its argument
NOW	Date and time	Returns the serial number of the current date and time
NPER	Financial	Returns the number of periods for an investment
NPV	Financial	Returns the net present value of an investment based on a series of periodic cash flows and a discount rate
OCT2BIN	Engineering	Converts an octal number to binary
OCT2DEC	Engineering	Converts an octal number to decimal
OCT2HEX	Engineering	Converts an octal number to hexadecimal
ODD	Math and trigonometry	Rounds a number up to the nearest odd integer
ODDFPRICE	Financial	Returns the price per \$100 face value of a security with an odd first period
ODDFYIELD	Financial	Returns the yield of a security with an odd first period
ODDLPRICE	Financial	Returns the price per \$100 face value of a security with an odd last period
ODDLYIELD	Financial	Returns the yield of a security with an odd last period
OFFSET	Lookup and reference	Returns a reference offset from a given reference
OR	Logical	Returns TRUE if any argument is TRUE
PEARSON	Statistical	Returns the Pearson product moment correlation coefficient
PERCENTILE.EXC	Statistical	Returns the k-th percentile of values in a range, where k is in the range 0..1, exclusive
PERCENTILE.INC	Statistical	Returns the k-th percentile of values in a range
PERCENTILE	Compatibility	Returns the k-th percentile of values in a range
PERCENTRANK.EXC	Statistical	Returns the rank of a value in a data set as a percentage (0..1, exclusive) of the data set
PERCENTRANK.INC	Statistical	Returns the percentage rank of a value in a data set
PERCENTRANK	Compatibility	Returns the percentage rank of a value in a data set
PERMUT	Statistical	Returns the number of permutations for a given number of objects
PHONETIC	Text	Extracts the phonetic (furigana) characters from a text string
PI	Math and trigonometry	Returns the value of pi
PMT	Financial	Returns the periodic payment for an annuity
POISSON.DIST	Statistical	Returns the Poisson distribution

POISSON	Compatibility	Returns the Poisson distribution
POWER	Math and trigonometry	Returns the result of a number raised to a power
PPMT	Financial	Returns the payment on the principal for an investment for a given period
PRICE	Financial	Returns the price per \$100 face value of a security that pays periodic interest
PRICEDISC	Financial	Returns the price per \$100 face value of a discounted security
PRICEMAT	Financial	Returns the price per \$100 face value of a security that pays interest at maturity
PROB	Statistical	Returns the probability that values in a range are between two limits
PRODUCT	Math and trigonometry	Multiplies its arguments
PROPER	Text	Capitalizes the first letter in each word of a text value
PV	Financial	Returns the present value of an investment
QUARTILE	Compatibility	Returns the quartile of a data set
QUARTILE.EXC	Statistical	Returns the quartile of the data set, based on percentile values from 0..1, exclusive
QUARTILE.INC	Statistical	Returns the quartile of a data set
QUOTIENT	Math and trigonometry	Returns the integer portion of a division
RADIANS	Math and trigonometry	Converts degrees to radians
RAND	Math and trigonometry	Returns a random number between 0 and 1
RANDBETWEEN	Math and trigonometry	Returns a random number between the numbers you specify
RANK.AVG	Statistical	Returns the rank of a number in a list of numbers
RANK.EQ	Statistical	Returns the rank of a number in a list of numbers
RANK	Compatibility	Returns the rank of a number in a list of numbers
RATE	Financial	Returns the interest rate per period of an annuity
RECEIVED	Financial	Returns the amount received at maturity for a fully invested security
REGISTER.ID	Add-in and Automation	Returns the register ID of the specified dynamic link library (DLL) or code resource that has been previously registered
REPLACE, REPLACEB	Text	Replaces characters within text
REPT	Text	Repeats text a given number of times
RIGHT, RIGHTB	Text	Returns the rightmost characters from a text value
ROMAN	Math and trigonometry	Converts an Arabic numeral to roman, as text
ROUND	Math and trigonometry	Rounds a number to a specified number of digits
ROUNDDOWN	Math and trigonometry	Rounds a number down, toward zero
ROUNDUP	Math and trigonometry	Rounds a number up, away from zero
ROW	Lookup and reference	Returns the row number of a reference
ROWS	Lookup and reference	Returns the number of rows in a reference
RSQ	Statistical	Returns the square of the Pearson product moment correlation coefficient
RTD	Lookup and reference	Retrieves real-time data from a program that supports COM automation
SEARCH, SEARCHB	Text	Finds one text value within another (not case-sensitive)
SECOND	Date and time	Converts a serial number to a second

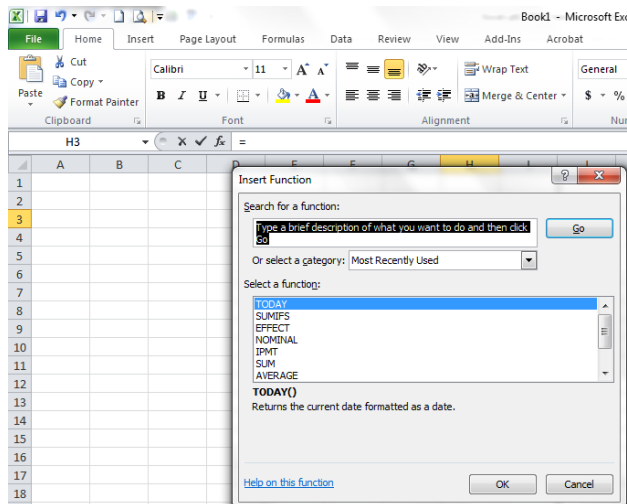
SERIESSUM	Math and trigonometry	Returns the sum of a power series based on the formula
SIGN	Math and trigonometry	Returns the sign of a number
SIN	Math and trigonometry	Returns the sine of the given angle
SINH	Math and trigonometry	Returns the hyperbolic sine of a number
SKEW	Statistical	Returns the skewness of a distribution
SLN	Financial	Returns the straight-line depreciation of an asset for one period
SLOPE	Statistical	Returns the slope of the linear regression line
SMALL	Statistical	Returns the k-th smallest value in a data set
SQL.REQUEST	Add-in and Automation	Connects with an external data source and runs a query from a worksheet, then returns the result as an array without the need for macro programming
SQRT	Math and trigonometry	Returns a positive square root
SQRTPI	Math and trigonometry	Returns the square root of (number * pi)
STANDARDIZE	Statistical	Returns a normalized value
STDEV	Compatibility	Estimates standard deviation based on a sample
STDEV.P	Statistical	Calculates standard deviation based on the entire population
STDEV.S	Statistical	Estimates standard deviation based on a sample
STDEVA	Statistical	Estimates standard deviation based on a sample, including numbers, text, and logical values
STDEVP	Compatibility	Calculates standard deviation based on the entire population
STDEVPA	Statistical	Calculates standard deviation based on the entire population, including numbers, text, and logical values
STEYX	Statistical	Returns the standard error of the predicted y-value for each x in the regression
SUBSTITUTE	Text	Substitutes new text for old text in a text string
SUBTOTAL	Math and trigonometry	Returns a subtotal in a list or database
SUM	Math and trigonometry	Adds its arguments
SUMIF	Math and trigonometry	Adds the cells specified by a given criteria
SUMIFS	Math and trigonometry	Adds the cells in a range that meet multiple criteria
SUMPRODUCT	Math and trigonometry	Returns the sum of the products of corresponding array components
SUMSQ	Math and trigonometry	Returns the sum of the squares of the arguments
SUMX2MY2	Math and trigonometry	Returns the sum of the difference of squares of corresponding values in two arrays
SUMX2PY2	Math and trigonometry	Returns the sum of the sum of squares of corresponding values in two arrays
SUMXMY2	Math and trigonometry	Returns the sum of squares of differences of corresponding values in two arrays
SYD	Financial	Returns the sum-of-years' digits depreciation of an asset for a specified period
T	Text	Converts its arguments to text
TAN	Math and trigonometry	Returns the tangent of a number
TANH	Math and trigonometry	Returns the hyperbolic tangent of a number
TBILLEQ	Financial	Returns the bond-equivalent yield for a Treasury bill

TBILLPRICE	Financial	Returns the price per \$100 face value for a Treasury bill
TBILLYIELD	Financial	Returns the yield for a Treasury bill
T.DIST	Statistical	Returns the Percentage Points (probability) for the Student t-distribution
T.DIST.2T	Statistical	Returns the Percentage Points (probability) for the Student t-distribution
T.DIST.RT	Statistical	Returns the Student's t-distribution
TDIST	Compatibility	Returns the Student's t-distribution
TEXT	Text	Formats a number and converts it to text
TIME	Date and time	Returns the serial number of a particular time
TIMEVALUE	Date and time	Converts a time in the form of text to a serial number
T.INV	Statistical	Returns the t-value of the Student's t-distribution as a function of the probability and the degrees of freedom
T.INV.2T	Statistical	Returns the inverse of the Student's t-distribution
TINV	Compatibility	Returns the inverse of the Student's t-distribution
TODAY	Date and time	Returns the serial number of today's date
TRANSPOSE	Lookup and reference	Returns the transpose of an array
TREND	Statistical	Returns values along a linear trend
TRIM	Text	Removes spaces from text
TRIMMEAN	Statistical	Returns the mean of the interior of a data set
TRUE	Logical	Returns the logical value TRUE
TRUNC	Math and trigonometry	Truncates a number to an integer
T.TEST	Statistical	Returns the probability associated with a Student's t-test
TTEST	Compatibility	Returns the probability associated with a Student's t-test
TYPE	Information	Returns a number indicating the data type of a value
UPPER	Text	Converts text to uppercase
VALUE	Text	Converts a text argument to a number
VAR	Compatibility	Estimates variance based on a sample
VAR.P	Statistical	Calculates variance based on the entire population
VAR.S	Statistical	Estimates variance based on a sample
VARA	Statistical	Estimates variance based on a sample, including numbers, text, and logical values
VARP	Compatibility	Calculates variance based on the entire population
VARPA	Statistical	Calculates variance based on the entire population, including numbers, text, and logical values
VDB	Financial	Returns the depreciation of an asset for a specified or partial period by using a declining balance method
VLOOKUP	Lookup and reference	Looks in the first column of an array and moves across the row to return the value of a cell
WEEKDAY	Date and time	Converts a serial number to a day of the week
WEEKNUM	Date and time	Converts a serial number to a number representing where the week falls numerically with a year
WEIBULL	Compatibility	Calculates variance based on the entire population, including numbers, text, and logical values

<i>WEIBULL.DIST</i>	Statistical	Returns the Weibull distribution
<i>WORKDAY</i>	Date and time	Returns the serial number of the date before or after a specified number of workdays
<i>WORKDAY.INTL</i>	Date and time	Returns the serial number of the date before or after a specified number of workdays using parameters to indicate which and how many days are weekend days
<i>XIRR</i>	Financial	Returns the internal rate of return for a schedule of cash flows that is not necessarily periodic
<i>XNPV</i>	Financial	Returns the net present value for a schedule of cash flows that is not necessarily periodic
<i>YEAR</i>	Date and time	Converts a serial number to a year
<i>YEARFRAC</i>	Date and time	Returns the year fraction representing the number of whole days between start_date and end_date
<i>YIELD</i>	Financial	Returns the yield on a security that pays periodic interest
<i>YIELDDISC</i>	Financial	Returns the annual yield for a discounted security; for example, a Treasury bill
<i>YIELDMAT</i>	Financial	Returns the annual yield of a security that pays interest at maturity
<i>Z.TEST</i>	Statistical	Returns the one-tailed probability-value of a z-test
<i>ZTEST</i>	Compatibility	Returns the one-tailed probability-value of a z-test

Placing a Function in Your Spreadsheet

Excel has hundreds of built-in functions. Functions always consist of 3 parts the equal sign, the function's name (this includes parentheses), and the argument(s).



Functions can be entered in one of three ways typed entirely, using the mouse only with the Function command to the left of the edit bar, or a combination of typing and clicking the mouse. The most common function is the Sum function. Excel has a shortcut button located on the home tab that makes this very easy to enter. To use the shortcut button, select the range to be summed and the cell where the formula should be and click on the Sum shortcut button. To enter a function, move to the correct cell and either type its name starting with an equal sign or click on the function command located to the left of the edit bar. Scroll down through the previously used functions or type the name of the function in the search window of the insert function dialog box. Enter the

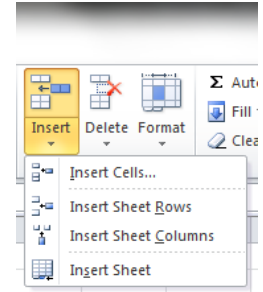
argument(s) between the parentheses. While the argument(s) can be typed, it is safer and more accurate to use the mouse to either point or drag through desired cell(s). A large list of the functions included in Excel is listed above.

Editing a Worksheet

An Excel worksheet can be modified to add or subtract rows, columns, or cells. Ranges of a worksheet can be copied or moved to another location without destroying the formulas already entered. The column width or row height may also be adjusted to accommodate the data being entered into cells.

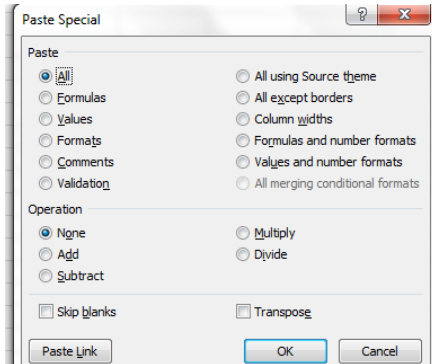
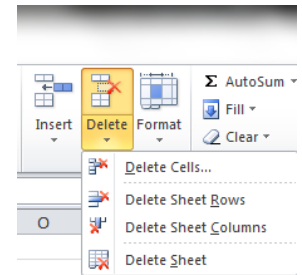
Inserting/Deleting Rows or Columns or Cells

- To insert rows, cells, or columns into a worksheet, select the desired area and choose Insert from the cells group on the Home tab. Excel will insert the cells above rows and to the left of columns.
- To delete column(s), row(s), or cell(s) from a worksheet, select the desired cells and choose Delete from the cells group on the Home tab.



Copying/Moving Cells in a Worksheet

- To copy cells in a worksheet, select the desired cells and choose Copy from the Clipboard group in the Home tab or ribbon. Move to the desired location and choose Paste from the Clipboard group in the Home tab or ribbon (If a range of cells is being copied, it is only necessary to select the top left hand corner of the location the cells will be copied to).
- To move cells in a worksheet, select the desired cells and choose Cut Copy from the Clipboard group in the Home tab or ribbon. Move to the new location and choose Paste Copy from the Clipboard group in the Home tab or ribbon (Only the top left corner needs to be selected).



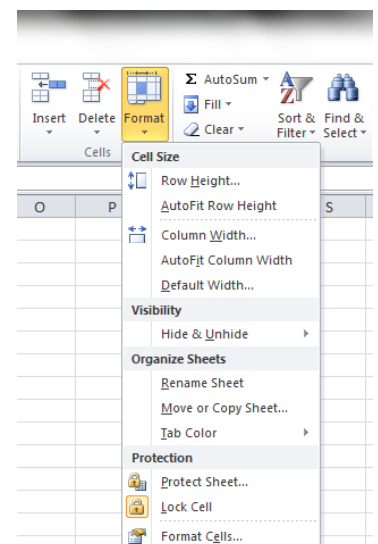
Paste Special

A very important point regarding copying cells is the fact that formulas will be written as a relative reference. If you have answers calculated by formulas and copy the answers to another portion of the spreadsheet, your answers will change because the formulas that obtained the original answers will be re-written to take into account the new location on the spreadsheet. If you intend on using just the answers (**no formula**), use the Paste Special

command from the Clipboard group in the Home tab or ribbon.

Adjusting Column Width/Row Height

- The width or height of columns and rows can be adjusted with the mouse or through the menus.
- To adjust the width or height with the mouse, move the mouse pointer on to the border between two columns or rows (The mouse will turn to a double pointed arrow.) When it changes, drag to the desired location.
- To adjust the width using the menus, select the desired column(s)/row(s) and Format in the Cells group, on the Home Tab. Type the desired amount in the resulting dialog box.

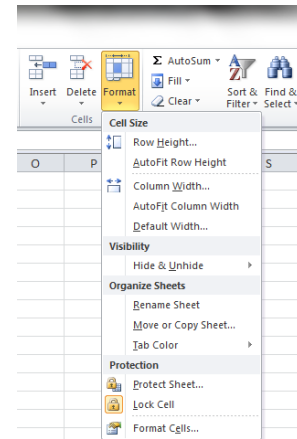


- You may have Excel format the width of a column or height of a row automatically by double clicking the intersection of a row or column.

Formatting a Worksheet or Cells

Formatting a worksheet may involve adding number formats, such as dollar signs and commas, text attributes, such as bold, point size, etc., the alignment of information in the cell, and borders in the cell(s).

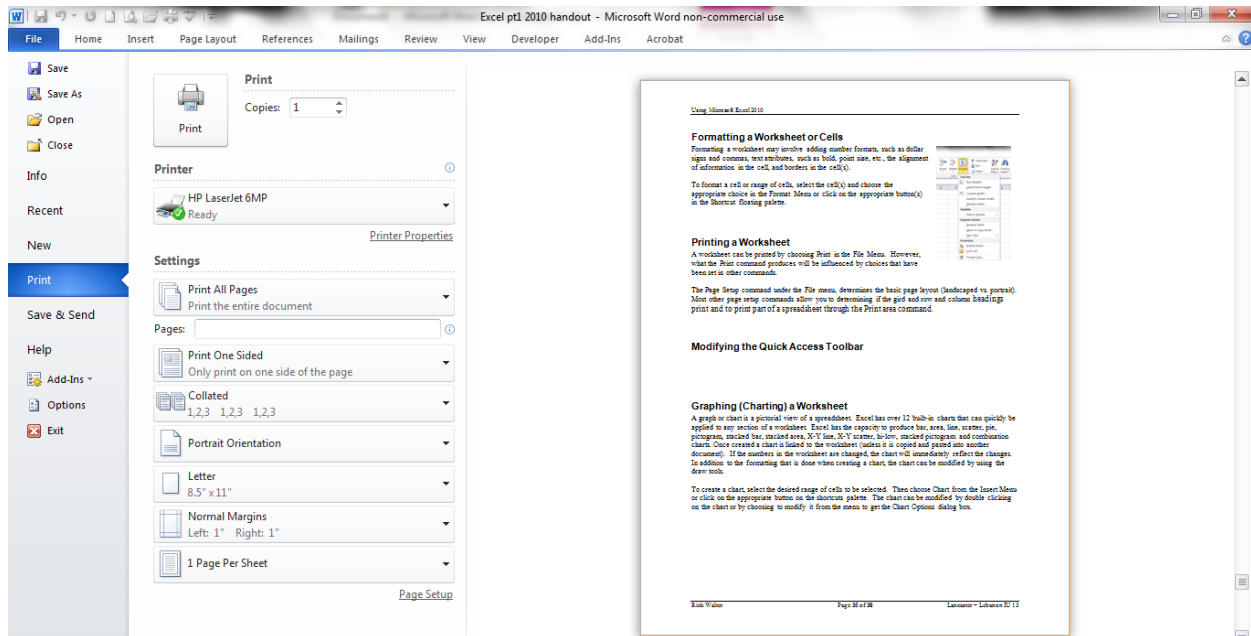
To format a cell or range of cells, select the cell(s) and choose the appropriate choice in the Format Menu or click on the appropriate button(s) in the Shortcut floating palette.



Printing a Worksheet

A worksheet can be printed by choosing Print in the File Menu. However, what the Print command produces will be influenced by choices that have been set in other commands.

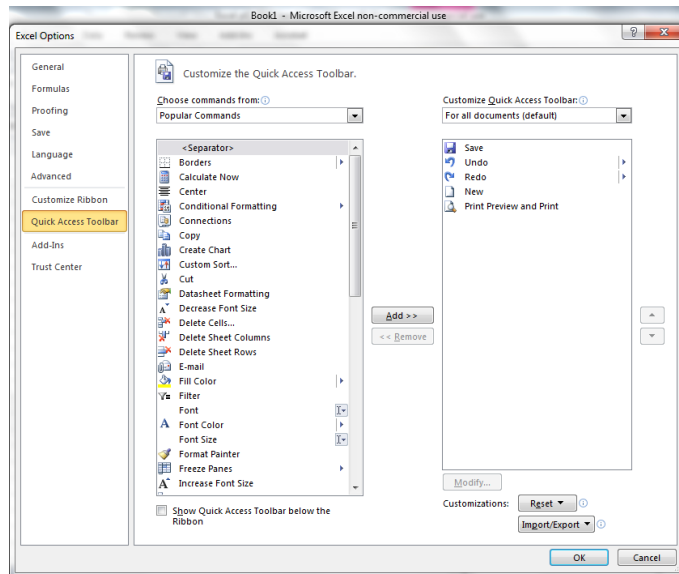
The **Page Setup** group in the **Page Layout Tab**, determines the basic page layout (landscaped vs. portrait). Most other page setup commands allow you to determine if the grid, row and column headings print and if you wish to print part of a spreadsheet through the Print Area command.



Modifying the Quick Access Toolbar

The Quick Access Toolbar provides a place to access the most common commands you will use with Word 2010. You may customize this toolbar to provide quick access to what items you commonly use. From the File Tab, Choose Options, then Quick Access Toolbar. You can add or delete as many items

you wish to this easy toolbar to hold your most used commands. Simply move items left or right between the two windows.



Graphing (Charting) a Worksheet

A graph or chart is a pictorial view of a spreadsheet. Excel has over 12 built-in charts that can quickly be applied to any section of a worksheet. Excel has the capacity to produce bar, area, line, scatter, pie, pictogram, stacked bar, stacked area, X-Y line, X-Y scatter, hi-low, stacked pictogram and combination charts. Once created a chart is linked to the worksheet (unless it is copied and pasted into another document). If the numbers in the worksheet are changed, the chart will immediately reflect the changes. In addition to the formatting that is done when creating a chart, the chart can be modified by using the draw tools.

To create a chart, select the desired range of cells to be selected. Then choose Chart from the Insert Menu or click on the appropriate button on the shortcuts palette. The chart can be modified by double clicking on the chart or by choosing to modify it from the menu to get the Chart Options dialog box.

When Excel creates a new chart, it automatically graphs the data by rows in the cell selection so the column headings appear along the horizontal (**category**) axis at the bottom of the chart and the row headings appear in the legend. To change this convention, you may click the Switch Row/Columns button in the Data Group when clicked on a chart.

Charting Terminology

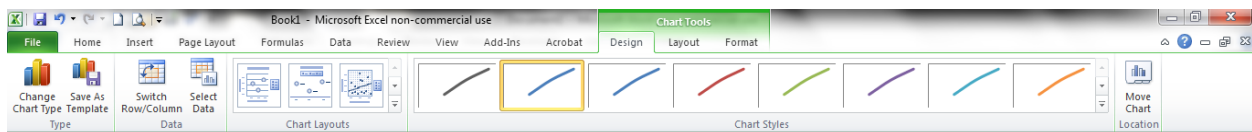
<i>Part of Chart</i>	<i>Description</i>
Chart Area	Everything inside the chart window including all parts of the chart such as labels, axes, data markers, tick marks, etc.
Data Marker	A symbol on the chart that represents a single value in the spreadsheet. A symbol may be a bar in a bar chart, or a line on a line chart. Data markers with the same shape/pattern represent a single data series in the chart
Chart Data Series	A group of related values such as all the values in a single row in the chart. A chart can have just one data series, but usually has more.

Series Formula	A formula describing a given data series. The formula will include a reference cell that contains the data series name, references to worksheet cells containing the categories and values plotted in the chart, and the plot order of the series. The series formula can also have the actual data used to plot the chart. You can edit a series formula and control the plot area.
Axis	A line that serves as a major reference for plotting data on a chart. Two dimensional charts have two axes. They would be the “X” – horizontal category axis, and the “Y” – vertical category axis. Excel follows pre-programmed rules when plotting charts. In most 2 dimensional charts, Excel plots categories (labels) along the “X” axis and values (numbers) along the “Y” axis. Pie charts do not have axes. 3 Dimensional charts have an X, Y and Z axis. The X and Y plot the surface data while the Z axis plots the depth of the third dimension of the chart.
Tick Mark	A small line running at right angles to an axis. This mark indicates a category scale or a chart data series. Tick marks may be labeled.
Plot Area	This is the area Excel uses to plot the data. It includes all the axes, markers, and data points.
Gridlines	These represent optional lines that extend vertically and/or horizontally from tick marks. These allow you to view the value data plotted on the chart.
Chart Text	This is a title or label the user adds to a chart. Chart text may also be added with a text box.
Legend	This is a key used to identify data in a chart.
Sparkline	Invented by Edward Tufte – tiny graphs that represent trends or changes in your data. They are very small, almost thumb nail charts shown near your data.

Working with Charts

After entering data in a spreadsheet, a simple chart can be made by highlighting the data and selecting a chart type in the chart group located on the Insert Ribbon. After you create a chart, click on it and the Chart Tools Tab will appear. This tab consists of three parts, Design, Layout, and Format.

Chart Tools - Design

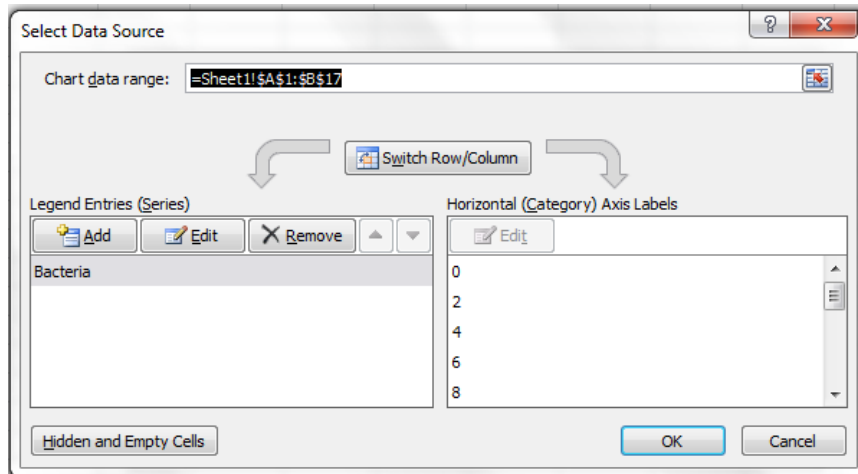
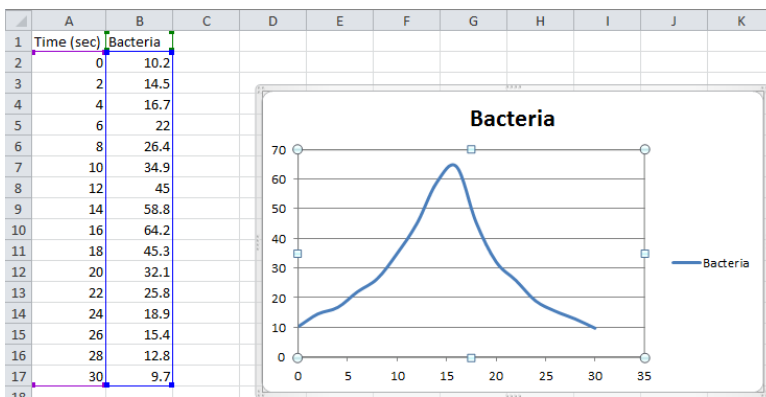


While in the Chart Tools – Design, you are able to click on following buttons located in different groups in the ribbon.

- ✓ **Change Chart Type in the Type Group** – This button allows you to change the type of chart you made.
- ✓ **Save As Template in the Type Group** - This button allows you to save the current chart’s formatting and layout to be used as a template for creating future charts with those same attributes.
- ✓ **Switch Row/Columns in the Data Group** - This button allows you to interchange worksheet data used for the Legend Entries (the series) with that used for the Axis Labels (categories) in the current selected chart.

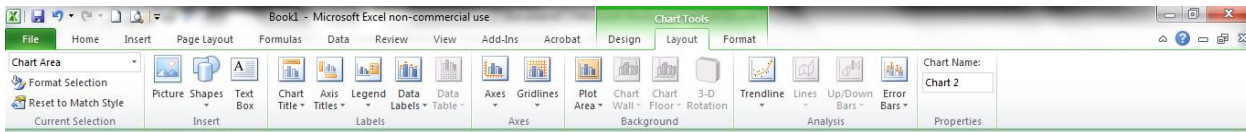
- ✓ **Select Data in the Data Group** - This button allows you to interchange worksheet data used for the Legend Entries (the series) with that used for the Axis Labels (categories) but also edit out or add entries to either category. When you click the **Select Data** button from the **Design** tab of the **Chart Tools** contextual tab, the **Edit Data Source** dialog box opens. The controls in this dialog box enable you to make these changes to the source data:

1. **Modify** the range of data graphed in your chart by clicking the **Chart Data Range** text box and then making a new cell selection in the worksheet, or typing in a new range of data.
2. **Switch** the row and column headings back and forth by clicking the **Switch Row/Column** button.
3. **Edit** the labels used to identify the data series in the **legend** or on the horizontal (**Category**) by clicking the edit button on the Legend Entries (**Series**) or Horizontal (**Categories**) **Axis Labels** side and then selecting the cell range with appropriate row or column headings in the worksheet.
4. **Add** additional data series to the chart by clicking the **Add** button on the Legend Entries (**Series**) side and then selecting the cell containing the heading for that series in the series **Name** text box and the cell containing the values to be graphed in that series in the **Series Values** text box.
5. **Delete** a label from the legend by clicking its name in the legend entries (**Series**), list box, and then clicking the **Remove** button.
6. **Modify** the order of the data series in the chart by clicking the series name in the Legend Entries (**Series**) list box and then clicking the Move Up or Move Down button until the data series appears on the correct position in the chart.
7. **Configure** how to deal with empty cells in the data range being graphed by clicking the **Hidden and Empty Cells** button and selecting the appropriate **Show Empty Cells As** option button (Gaps, Zero and Span with Line, for line charts). Click the **show hidden rows** and **Columns** box to make Excel graph data in the hidden rows and columns within the selected cell range.



- ✓ **Chart Layouts Group** – When clicking on the more button (right of the three buttons in this group) displays all the thumbnails of the new layout style you wish to apply to the selected chart.
- ✓ **Chart Styles Group** – Click the more styles button to the right of the styles shown to display the thumbnails of the new chart styles you wish to apply to the selected chart.
- ✓ **Move Chart in the Location Group** – This button allows you to move an embedded chart to its own chart or move a chart on its own sheet to one of the worksheets in the workbook as an embedded chart.

Chart Tools – Layout

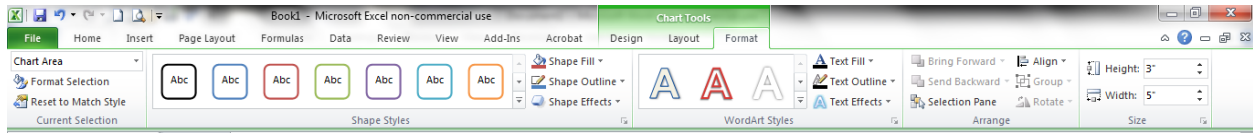


Customizing Your Chart From the Layout Tab

<i>Tab Group</i>	<i>Option Name</i>	<i>Purpose</i>
Current Selection	Chart Elements	This combo box shows the name of the element currently selected in the chart and enables you to select a new element in the current chart
	Format Selection	Opens a format dialog box for the currently selected chart element that you can use to modify format
	Reset to Match Style	Resets any formatting changes made to the currently selected chart element to match the style selected for the chart
Insert	Picture	This command's button drop-down menu enables you to add a picture saved to your hard drive or one of the graphics that come with the Microsoft programs
	Shapes	This command's button drop-down menu enables you to add any preset graphic shapes to a chart
	Text Box	This command's button drop-down menu enables you to add a horizontal or vertical text box to a chart
Labels	Chart Title	This command's button drop-down menu enables you to add a chart title centered above a chart, centered above of a chart plot area, or remove a chart title
	Axis Title	This command's button drop-down menu enables you to add, reposition, or remove the chart's horizontal (category) axis titles or vertical (value) axis title
	Legend	This command's button drop-down menu enables you to add, position, or remove the legend from the chart
	Data Labels	This command's button drop-down menu enables you to add, position, or remove labels that identify each data series represented in the chart
	Data Table	This command's button drop-down menu enables you to

		add, position, or remove a data table beneath the chart that displays the values graphed in the chart
Axes	Axes	This command's button drop-down menu enables you to reposition, reformat, or remove the chart's horizontal (category) axis titles and vertical (value) axis
	Gridlines	This command's button drop-down menu enables you to display or hide horizontal or vertical grid lines in the chart area
Background	Plot Area	This command's button drop-down menu enables you to remove the plot area background or redisplay it
	Cart Wall	This command's button drop-down menu enables you to clear or redisplay a 3-D chart's back walls
	Chart Floor	This command's button drop-down menu enables you to clear or redisplay a 3-D chart's floor
	3-D Rotation	This command's button drop-down menu enables you to open the format Chart Area dialog box for a 3-D chart where you can modify a large number of aspects of the chart including its 3-D shadow and rotation
Analysis	Trendline	This command's button drop-down menu enables you to display or hide linear, exponential, linear forecast, or two period moving average trend lines that display a trend implied by the charted data. Trendlines are often added to XY Scatter charts that correlate two different sets of numerical data to graphically point out the correlation between two sets.
	Lines	This command's button drop-down menu enables you to display or hide drop lines on a 2-D or 3-D line or area chart that connect related values as well as high-low lines on a 2-D line chart that emphasize the high and low values in the chart
	Up/Down Bars	This command's button drop-down menu enables you to display or hide up/down bars in the chart that emphasize the high and low values in the chart
	Error Bars	This command's button drop-down menu enables you to display or hide error bars with standard error, error bars with percentage, or error bars with deviation that show how much the data markers are above or below a particular value, percentage, or standard deviation in the chart
Properties	Chart Properties	The chart name box shows you the generic name of the selected chart and allows you to edit or replace it with a name you choose

Chart Tools - Format



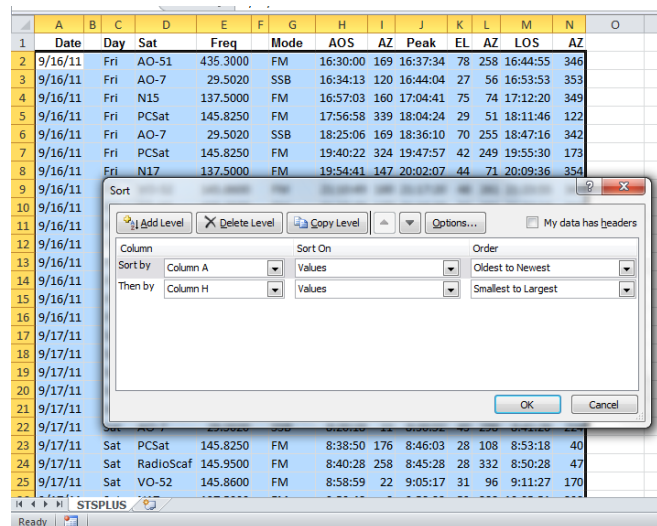
Customizing Your Chart from the Format Tab

<i>Tab Group</i>	<i>Option Name</i>	<i>Purpose</i>
Current Selection	Chart Elements	Click this command button to select a new chart element by clicking its name on the button's drop-down menu
	Format Selection	Click this command button to open a format dialog box for the currently selected chart element as displayed on the chart Elements drop-down list button
	Reset to Match Style	Click this command button to remove all custom formatting from the selected chart and to return it to the original formatting bestowed by the style selected for the chart
Shape Styles	Shape Styles	Click the Shape Styles' More button to display a drop-down gallery in from which you can preview and select new shapes and colors for the currently selected chart element as displayed on the Chart Elements drop-down list
	Shape Fill	Click this command button to display a drop-down color palette from which you can preview selected chart elements as displayed on the Chart Elements drop-down list
	Shape Outline	Click this command button to display a drop-down color palette from which you can preview and select an outline color for the currently selected element as displayed on the Chart Elements drop-down list
	Shape Effects	Click this button to display a drop-down menu listing an array of graphic effect options to be applied to the element displayed on the Chart Elements drop-down list
WordArt Styles	WordArt Styles	Click the WordArt Styles button to display a drop-down gallery in from which you can preview and select a new WordArt gallery to the currently selected element as displayed on the Chart Elements drop-down list
	Text Fill	Click this button to display a drop-down list from which you can preview and select a new text fill color to be applied to the element displayed on the Chart Elements drop-down list
	Text Outline	Click this button to display a drop-down list from which you can preview and select a new text outline color to be applied to the element displayed on the Chart Elements drop-down list
	Text Effects	Click this button to display a drop-down list from which you can preview and select a new text effect to be applied to the element displayed on the Chart Elements drop-down list

Arrange	Bring Forward	Click this button to move an object to a higher level in the stack (moving it closer to your face) or click Bring Front to move the object to the top of the stack
	Send Backward	Click this button to move an object to a lower level in the stack (moving it away from your face) or click Send to Back to move the object to the bottom of the stack
	Selection Pane	Click this button to display and hide the Selection and Visibility task pane that shows all the graphic objects on the page. This enables you to hide or display the objects as well as move them in the stack. This command only works if two or more objects in the spreadsheet are selected
	Align	Click this button to display a drop-down list from which you can snap the selected chart to an invisible grid on another graphic object as well as choose between a number of alignments of selected objects
	Group	After selecting at least two objects, clicking this button will allow you to combine multiple objects to be treated as one
	Rotate	After selecting at least one object, this command will allow you to rotate or flip the selected object
Size	Shape Height	After selecting at least one object, this command will allow you to change the height of an object by typing in a value or choosing one from a spinner button
	Shape Width	After selecting at least one object, this command will allow you to change the width of an object by typing in a value or choosing one from a spinner button

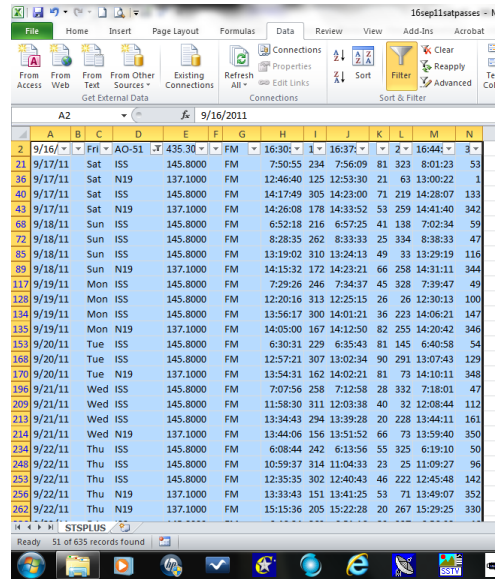
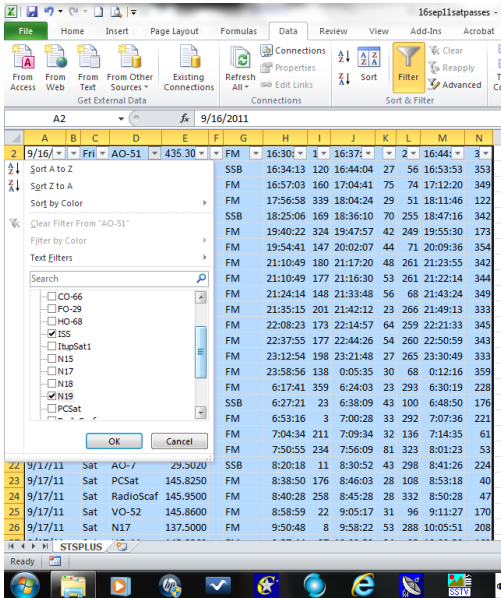
Sort and Filter Group in the Data Tab

The Data tab allows you to manipulate data in your spreadsheet. Many of the options are beyond the first level of the Excel class but are covered in the advanced class. Like a database, the information in a spreadsheet may be sorted. To sort a spreadsheet or part of a spreadsheet, select the desired range of data and choose **Sort** in the **Sort and Filter Group** in the **Data Tab**. You may use up to **3 keys** to sort a selected range. In the example below, I selected all columns of the data. After clicking the sort button, the sort dialog menu appears. There will be one line with drop down boxes to fill in your choices. I told Excel to sort by column A in the spreadsheet. This put all the satellite passes in chronological order from the oldest to the newest date. I also wanted the satellite passes sorted by the time the satellite passes my house. I added another level and chose Column H which is the AOS or Acquisition of Signal time. The sorted list shows mw what satellites pass each day as well as when they pass according to the time through the day.



You may wish to filter specific data in a spreadsheet. If I wished to pull one or more satellites out of the above list I can keep the data highlighted and click on the **filter** command button in the **Sort and Filter Group** in the **Data Tab**. In the

following example, I chose to pull out just the International Space Station (ISS) as well as the NOAA 19 weather satellite.



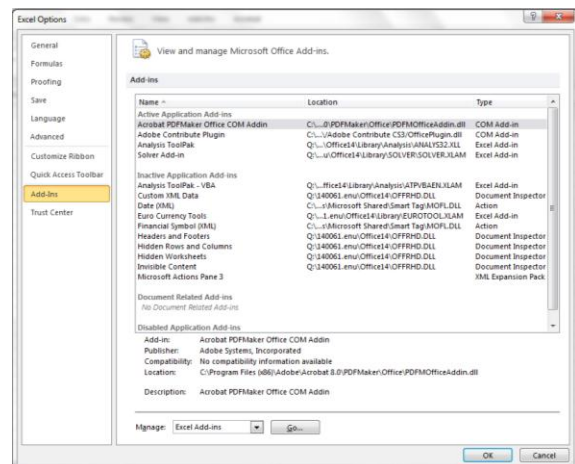
Add-Ins that come with Excel

After adding Excel to your computer, there are some features you may use after they are installed.

- ✓ Analysis ToolPak – Adds extra financial, engineering, and statistical functions to your spreadsheets.
- ✓ Analysis ToolPak VBA – Allows VBA programmers to publish their own financial, engineering, and statistical functions for Excel.
- ✓ Euro Currency Tools – You may format worksheet values as euro currency and adds a euroconvert function for converting other currencies into euros.
- ✓ Solver Add-In – Calculates solutions to what-if scenarios based on cells that both adjust and constrain the range of values.

Adding the Add-Ins

To incorporate any of the add-Ins provided by Microsoft, choose from the file Tab, Options, then Add-Ins. The following dialog box allows you to choose items you wish to use.



Microsoft Excel Assignments

In addition to the practice spreadsheets completed in class, the following assignments will be completed:

Outside Classroom Assignment #1

1. Create a sample spreadsheet similar to our multiplication table.
2. Use the fill down and fill right commands along with at least one function (formula).
3. Format labels in the spreadsheet using different fonts, point values, styles, and colors.
4. Create borders in different areas of the spreadsheet.
5. Make sure you vary some row heights and column widths.
6. Include your name in the footer of your document.
7. Do not exceed one page in length, have at least 20 rows of data, and at least 4 columns of data.

Outside Classroom Assignment #2

1. Create a spreadsheet to track student grades.
2. The spreadsheet must contain at least 15 students.
3. The spreadsheet must contain 8 different assignments for each student.
4. The point value of each assignment must be different.
5. The spreadsheet must calculate the percent of points the student earned compared to the points possible for the entire class.
6. Using a lookup table, make the spreadsheet calculate the letter grade for each student based on their grade percent.
7. Spice up your spreadsheet with borders, color, and different fonts and styles.
8. Include your name in the footer of your document.

Outside Classroom Assignment #3

1. Download yearly data for 4 different stocks from the Yahoo financial website. (<http://www.yahoo.com>).
2. Convert the data to spreadsheet format.
3. Create a line chart comparing the four stock prices as line graphs using different colors.
4. Make sure the legend in the chart specifies the names of the four stocks.
5. Make a hard copy (print) of your chart. It is not necessary to print your spreadsheet data.
6. Include your name in the footer of your document (chart).

Outside Classroom Assignment #4

1. Create an independent project spreadsheet that can be used in your classroom.
2. Use relative and absolute cell addressing.
3. Use various fonts and styles in your labels.
4. Make sure you format values specific to what they represent in your spreadsheet.
5. Vary column widths and row heights.
6. Create a chart to show the results of your spreadsheet.
7. Print the spreadsheet and chart. Include your name in the footer of your document.

Outside Classroom Assignment #5

1. Complete your independent project with instructor's assistance and supervision.
2. Share independent projects with the participants in class.

Using Microsoft Excel Class Outline

Introduction:

- Who am I - background - where and what I teach/taught
- How to contact me
- Handouts - reference documents
- Outside assignments
- Act 48 credit - attendance and assignments
- Name tags
- Break time
- Bathrooms
- Start and end of class time

Items Covered during the class:

- What is Excel? What is new in 2010?
- What is new in 2010?
- Getting around the harddrive - using Windows Explorer
- Closing, re-sizing, minimize, maximize, the task bar
- Viewing menus
- Left and right mouse buttons
- Moving, copying, renaming, and deleting files
- Creating personal folders for your files
- Download files from my website
- Unzipping and placing my files in the correct folder(s)
- Running the Excel application
- How we load multiple files into Excel
- Open sample files - Demos using various files to show the capabilities of Excel
- Open a new spreadsheet workbook
- Cursor moves, return, arrows, tab, shift-tab, shift-return
- Entering labels in cells - right cell not filled and filled
- Entering values in cells - right cell not filled and filled
- Formatting text - font, style, color, size, alignment
- Formatting values - currency etc.
- Borders and cell grid
- Formatting painter tool
- Changing column widths - manual, calculated, automatic
- Changing row heights - manual, calculated, automatic

- Start a multiplication table from 12*500 then increase to 12*1000
- Show fill down
- Show fill series
- Relative vs. absolute references
- Triple the length of the first spreadsheet
- Look at my grade spreadsheets
- What functions are built into Excel?
- Use the sample spreadsheet functions to examine commonly used functions in spreadsheets
- Class creates a simple spreadsheet
- Page set-up and formatting
- Headers and footers
- How to print a spreadsheet
- Combining functions
- Paste functions with the Fx command button
- Go back to my grade spreadsheet and explain how it calculates answers
- Sorting
- Copy/paste functions
- Paste Special command
- Add grades to my spreadsheet
- Explain the lookup function to calculate letter grades
- Delete students
- Add students
- Review mulch guide with absolute references
- Check temperature conversion and show negative numbers
- Create a grade spreadsheet using the sample functions for assignment
- Special functions like now, time, convert, etc.
- Formatting page - headers, footers, margins, grid, and border
- Printing spreadsheets
- Creating simple charts
- Data series and categories
- Advanced charts
- Graphing stock quotes from the internet
- Using draw tools in Excel spreadsheets
- Add AutoShapes and WordArt to a spreadsheet
- Using a spreadsheet in Microsoft Word
- Independent project