Excel 2007
Introduction

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Starting Out

Microsoft Excel is one of the most powerful and widely used spreadsheet applications available today. Excel's functionality and popularity have made it an essential component on computers in countless organizations, businesses, and other institutions throughout the world.

If you are new to Excel, the extensive array of features and capabilities that it provides may seem daunting at first, but don't worry. The keys to becoming proficient with Excel are patience, practice, and a solid foundation built on the basics.

What is Microsoft Excel 2007?
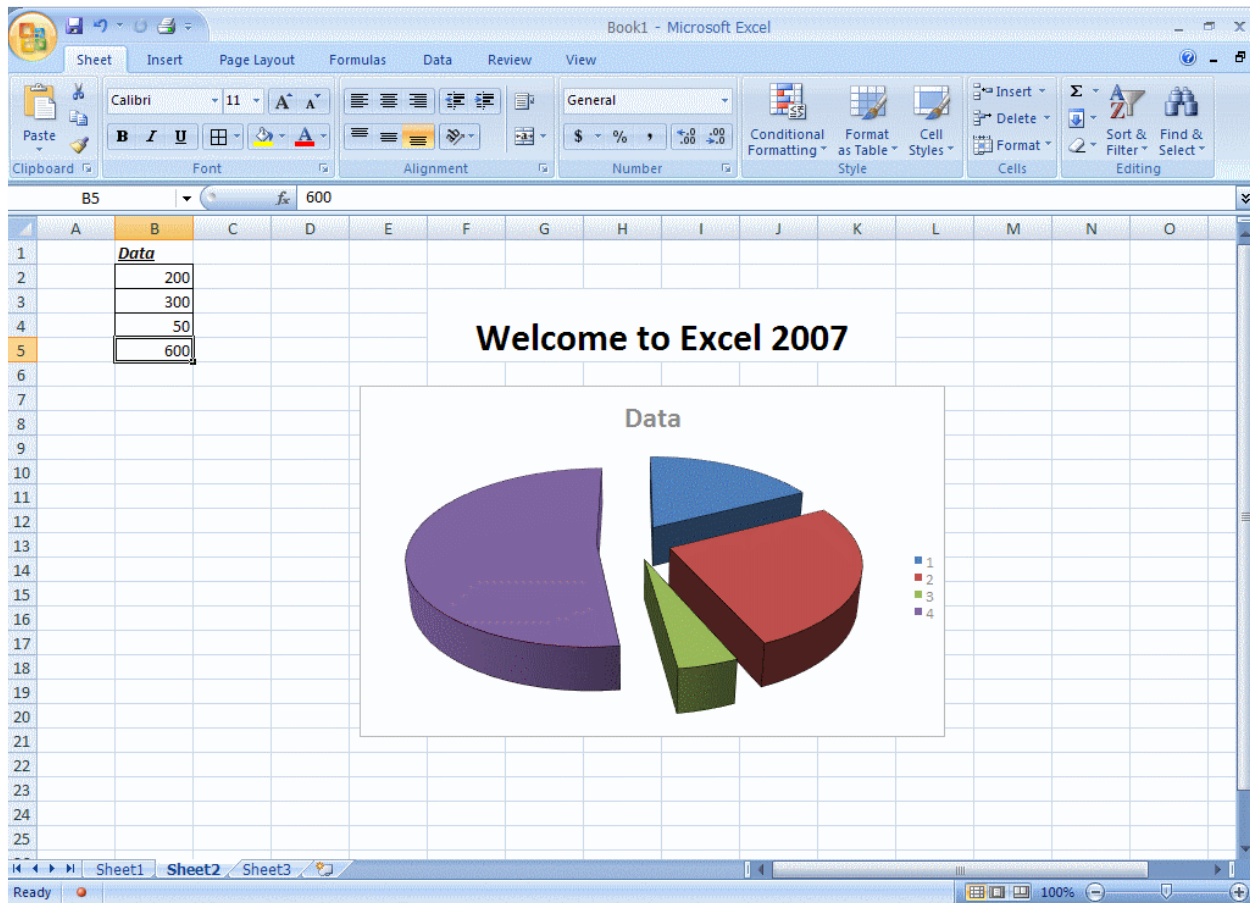
Microsoft Excel 2007 is the latest version of Microsoft's famous spreadsheet application. In a general sense, Excel is a very powerful and flexible tool for organizing and analyzing data. Although Excel is often used for managing financial information, it is just as well suited to scientific data, sports statistics, or practically any other kind of information you need to work with.

 Excel 2007 provides a wealth of financial, mathematical, and statistical functions that you can apply to your data. Excel 2007 also offers numerous formatting and presentation options that will help you create slick, professional looking reports. You can use Excel as a database, a graphing and charting tool, a means of evaluating complex formulas, and as a way of sharing data and collaborating with others. When you change data in an Excel spreadsheet, Excel will recalculate your totals, functions, and formulas accordingly.

Excel 2007 is comprehensive enough to meet the needs of beginners and experienced users alike. With Excel you can perform a wide range of tasks, from building basic spread sheets to performing advanced data analysis. Excel can help you process, interpret, and extract meaningful conclusions from your information. If you start at the beginning and work your way up, it won't be difficult to learn and work with Excel at any level you want.

Opening Microsoft Excel

There are a number of ways to open the Excel 2007 program. First, look for the Excel 2007 icon on your desktop () and double click it. The Excel 2007 screen should open for you.

If you cannot find the Excel 2007 icon, click the Start button on the bottom left corner of your desktop to display the Start menu. When the Start menu appears, move your mouse pointer to the menu item called Programs to display a second menu. On the second menu, move your pointer to the Microsoft Office menu item. The positions of the menu items are likely to differ from computer to computer, depending on what software is installed.

When you see the third menu (a list of Microsoft Office programs) move the mouse pointer over the Microsoft Office Excel menu item and click the left mouse button. Excel 2007 should now open.

If you cannot find the Excel 2007 icon anywhere on the desktop and you cannot locate Excel 2007 on the Start menus, move your pointer down the Start menu and select Run. You will now see the Run dialogue box shown below. Type Excel and click the OK button. Excel should now open.
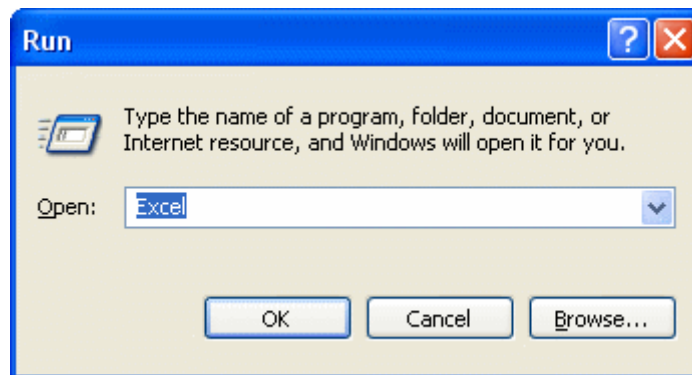
Interacting with Excel

Once you open Excel 2007, you should see an Excel screen (also called a user interface) like the one shown below.

Ribbon Tabs   Excel Title Bar

Spreadsheet Tabs   Status Bar
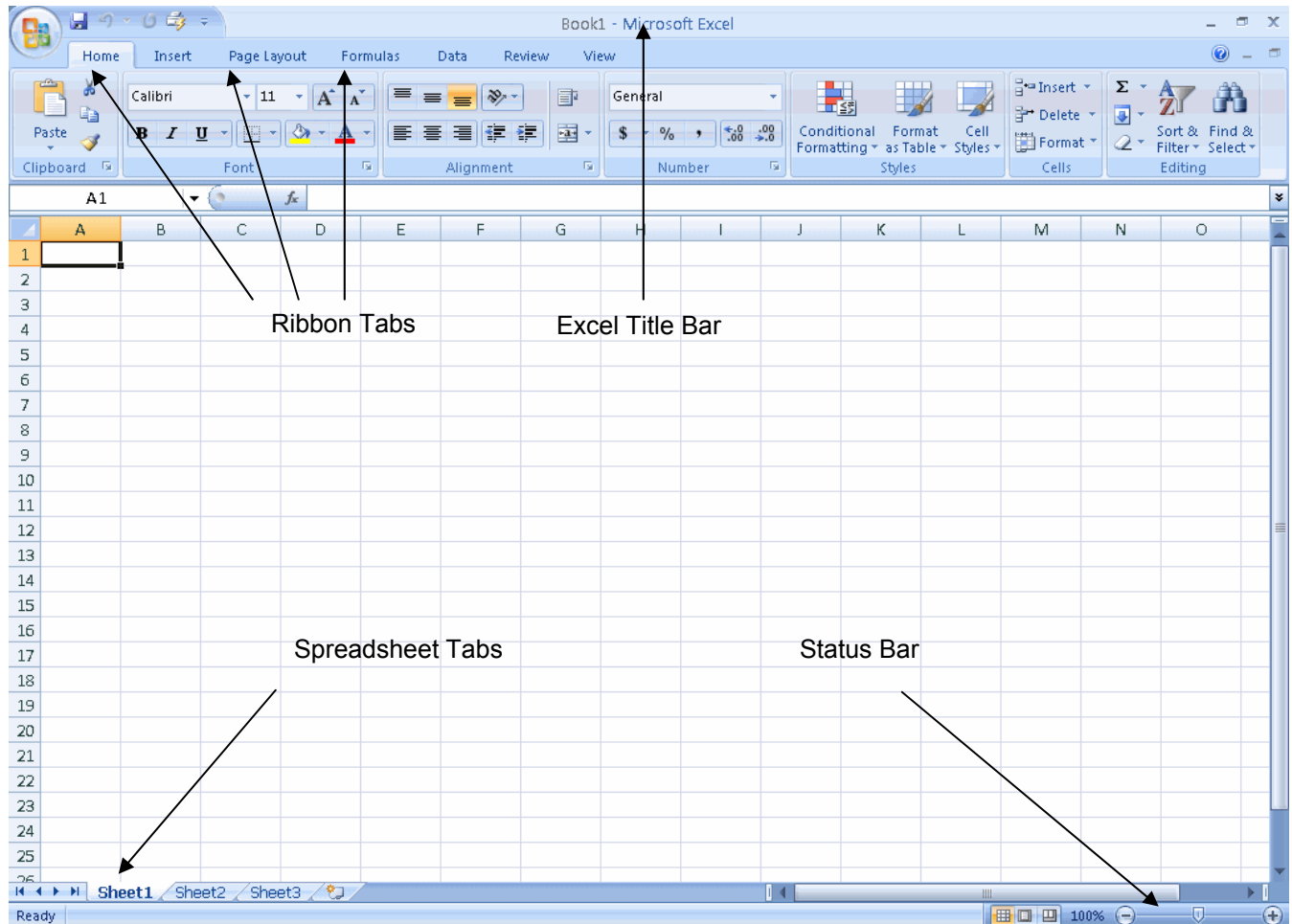
The largest part of the Excel 2007 screen consists of a grid like pattern of cells. These cells are indexed by letters along the top of the grid and by numbers down the left side of the grid. An individual cell is simply one of the small rectangles formed by the crossing grid lines.

When the Excel screen is first opened, you should notice a heavy black border around the cell in the upper left corner of the grid. If you press the arrow keys on your computer keyboard, you should see the heavy black border move from cell to cell in the direction of the arrow keys you are pressing. This grid area is an extremely important part of the Excel program because it is where all of your data will be entered, organized, and displayed. If you hold the Ctrl key and press an arrow key, the black border will move to the extreme end of the row or column of cells you are in, according to what arrow you press. If you type numbers or letters at the keyboard, they will be entered into the cell that is surrounded by the heavy black border.
You will also notice that as you move the heavy black border from cell to cell, the letter at the top of the grid above the cell and the number at the side of the grid to the left of the cell will be highlighted with an orange-brown color. This combination of letter and number can serve as a kind of name for an individual

cell. For example, the cell with the heavy black border in the following image could be called C7, because the cell's column is C, and the cell's row is 7.
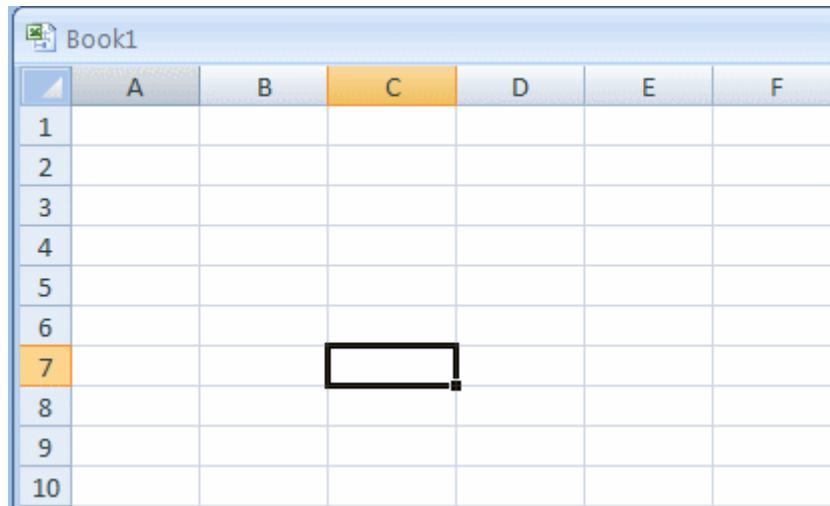
Every cell in your spreadsheet has a name that can be formed by a letter-number combination. This very important concept is one of the keys to controlling how your data elements will relate and interact with each other.

Continuing on this note, one of the major improvements in Excel 2007 is an increased number of cells in your spreadsheet. An Excel 2007 spreadsheet contains 16000 columns and more than 1000000 rows. This means that there are more than 16000 X 1000000 = 16000000000 individual cells in a spreadsheet!

Above the grid area of the Excel screen, you will see a region with several tabs, labels, buttons, and other controls.

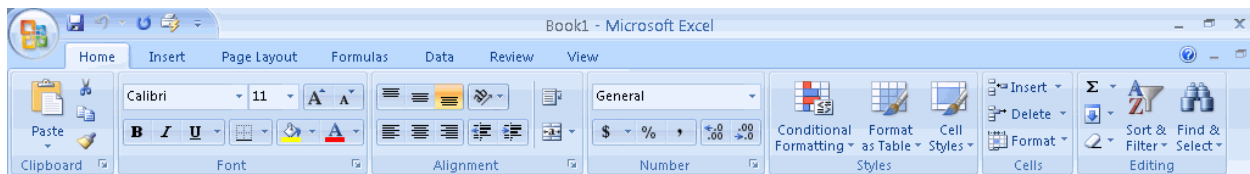This part of the Excel interface is what allows you to control, format, and edit the data stored in the Excel grid area of the spreadsheet. This part of the interface also gives you access to Excel's automated features, functions, and other options. This is also where the tools that help you analyze, interpret, organize, and present your data are found.

If you are familiar with older versions of Excel, you will notice that the new user interface in Excel 2007 has some significant changes. This is another major innovation for Excel 2007. In older versions, the large number of menus and associated menu options made many Excel features difficult to find and remember. This new interface is designed to be more intuitive to the user, providing even more functionality with less clutter and confusion.

This panel of buttons and controls is called a "Ribbon." If you left click one of the labeled tabs above the Ribbon (Home, Insert, Page Layout, Formulas, Data, Review, View), you will see the buttons and controls in the Ribbon change according to the tab you click on.

If you let your mouse pointer hover on a button or control in the new interface, you will see a shaded box appear. This box will show you the name and a brief description of the button or control in question. In the

image provided below, you can see an information box for conditional formatting. This information was displayed by letting the mouse pointer hover over the conditional formatting control.
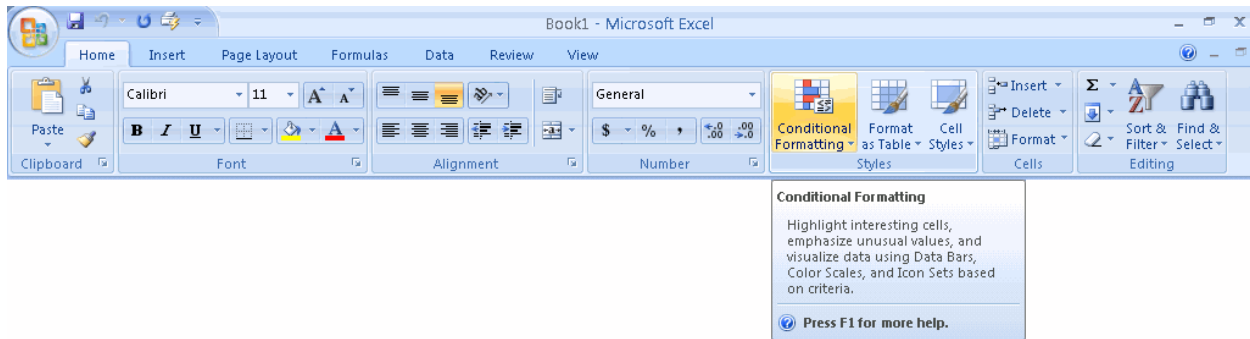
Try viewing the different Ribbons available by clicking on each tab (word) above the Ribbon. Let your mouse pointer hover over the individual controls and buttons in a Ribbon to see information about them.

Closing Excel

If you feel you are ready to close down the Excel 2007 program, there are three main ways to do so. First, you can simply click the X in the upper right corner of the Excel screen.
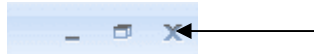
You can also display the Office menu by clicking the Office menu button in the upper left corner of the screen.

When the Office menu appears, you will see a "Close" option and an "Exit Excel" option. Left clicking the Close menu item will close the current workbook, while leaving the Excel 2007 program open. Clicking on the Exit Excel button will close the Excel 2007 program.
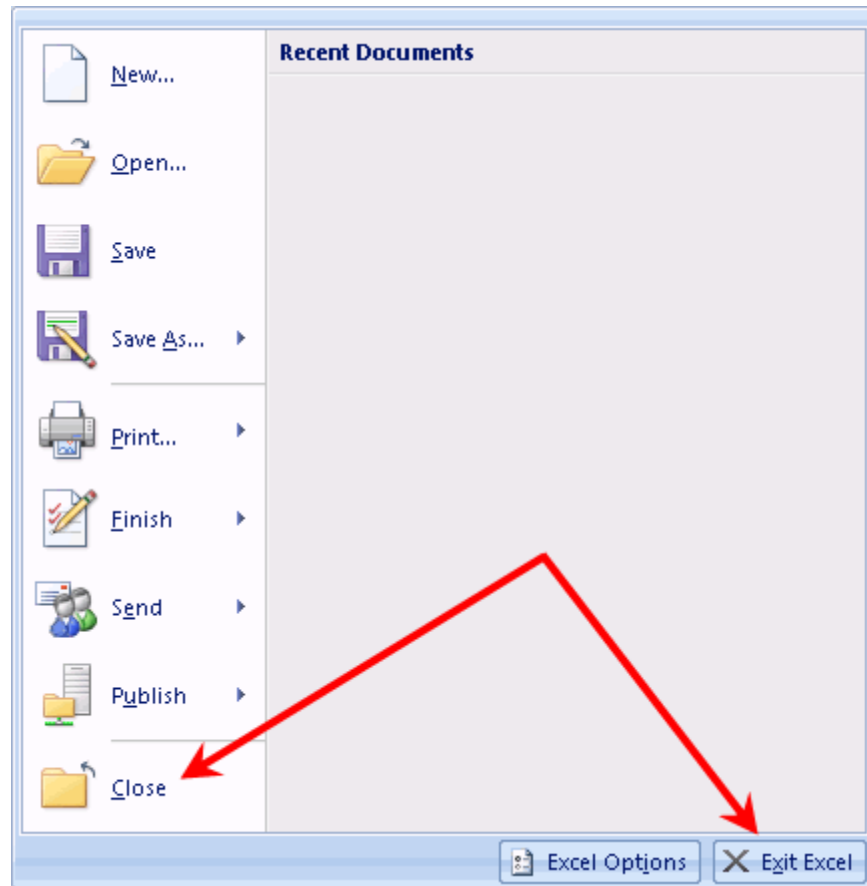
If you attempt to close Excel 2007, and you haven't saved recent changes to your work, you will be presented with the following alert box.
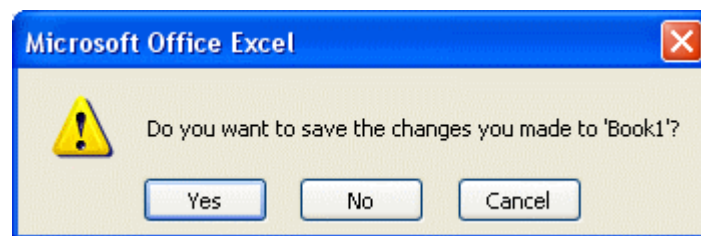
If you click the Yes button, any changes you have made to your spreadsheet will be saved and Excel will close. If you click the No button, any changes you have made to your worksheet will be discarded and Excel will close. Clicking the Cancel button will cancel the closing action, and Excel 2007 will remain open.

About Workbooks

In the previous lesson, you learned how to open Excel 2007 and how to close it. You also received a brief introduction to Excel spreadsheets, cells, and the new Excel 2007 user interface. All of these concepts and more will be dealt with in greater detail as this manual proceeds.

For now, the next topic of discussion is Excel workbooks. As you already know, a spreadsheet (sometimes called a worksheet) consists mainly of a large grid-like array of cells that contain data or information. Essentially, a workbook is just a collection of individual spreadsheets. As a matter of fact, when you open Excel 2007, you are not opening a single spreadsheet, but rather a workbook that contains three spreadsheets. Take a look at the three spreadsheet tabs at the bottom of the newly opened Excel screen.
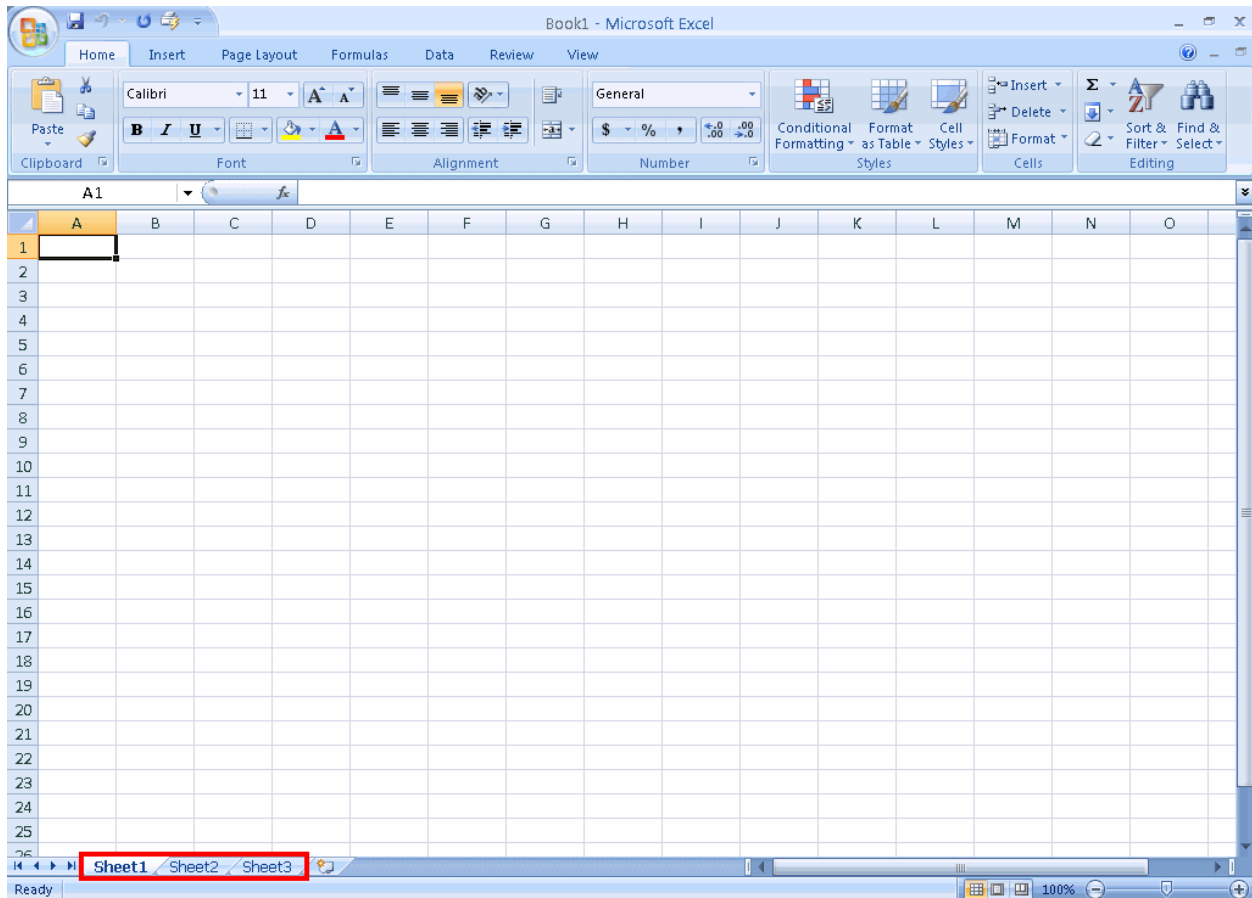
Creating a New Workbook

As mentioned above, simply opening the Excel 2007 program automatically creates a new workbook. This workbook is named Book1 by default. Once Excel is open, you can create additional new workbooks by clicking on the Office menu button.

Clicking this button will display the Office menu options. The first option in the Office menu is the New button.
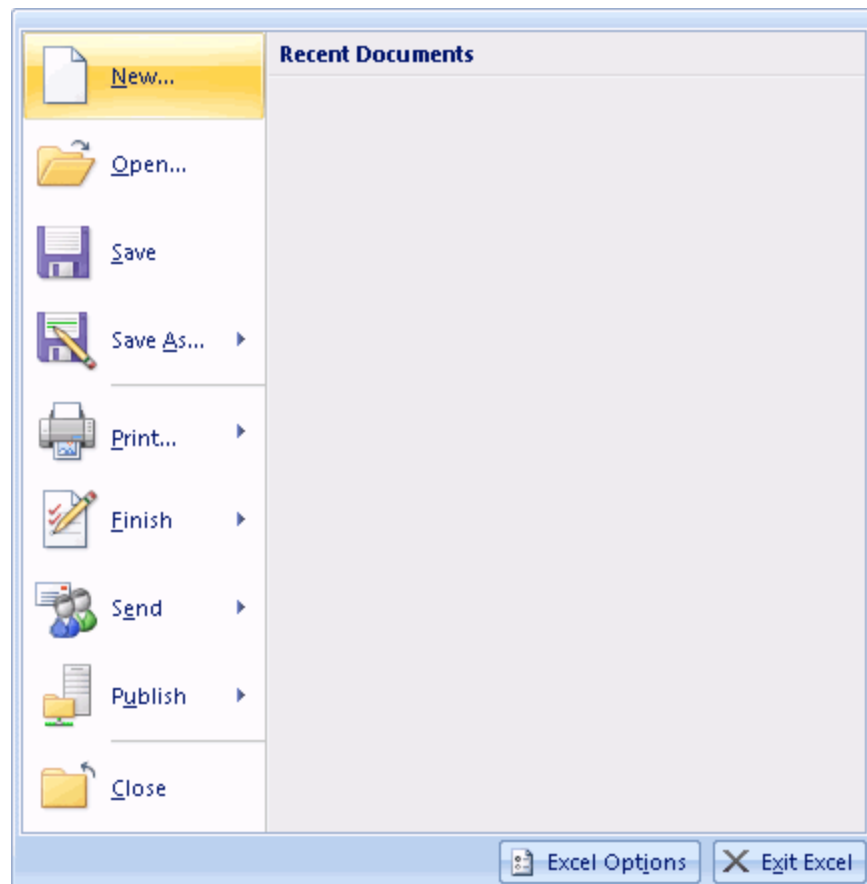
When you click the New button, the New Workbook dialogue box will be displayed.
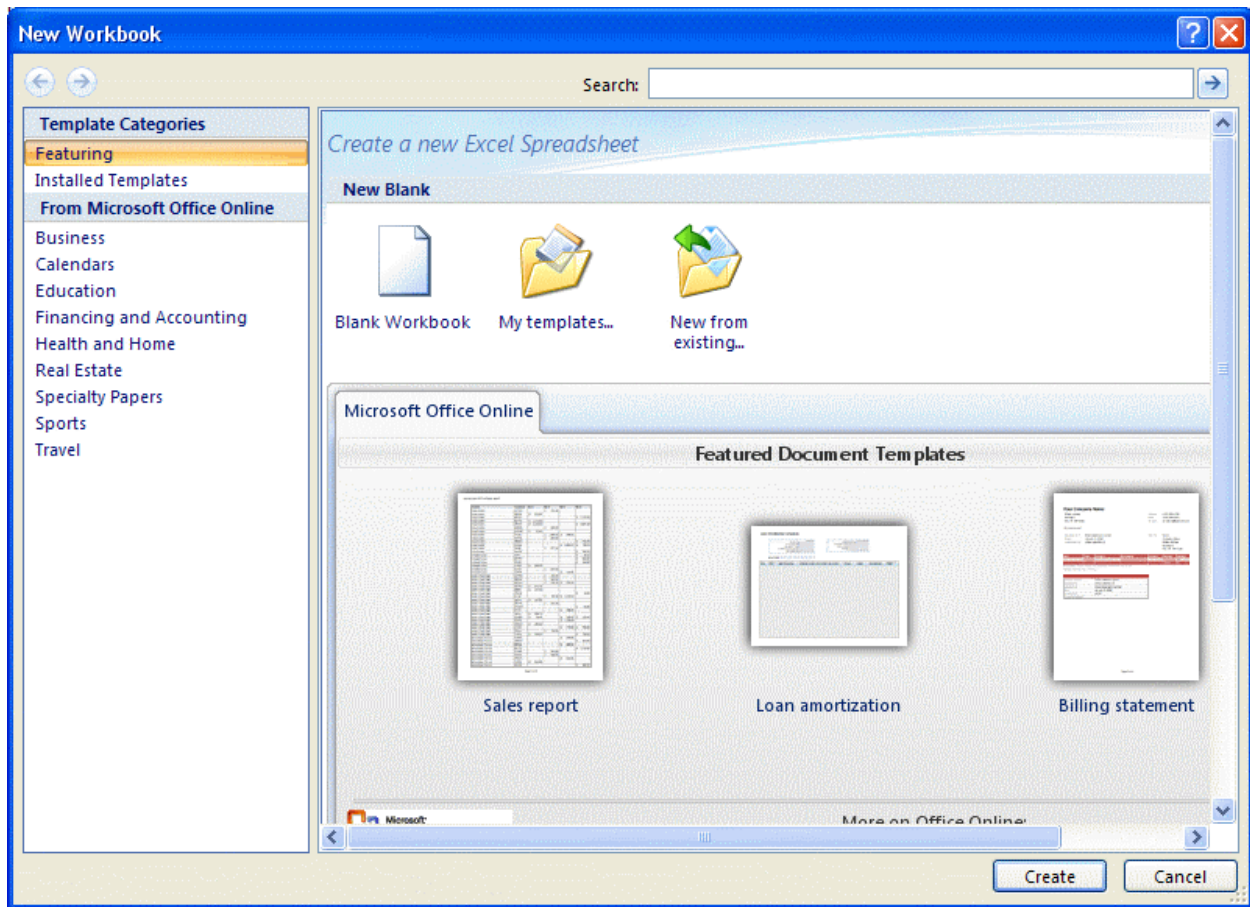
This dialogue box allows you to choose a blank workbook, a workbook based on a template, or a workbook created from an already existing workbook. If you are starting a workbook from scratch, then you would click the Blank Workbook option. If you would like your workbook to follow a pre-existing pattern that you can enter data into, click the Templates option. If you would like to create a workbook based on the organization and data of an existing workbook, click the New from Existing button. This button will display a dialogue box which will allow you to browse to a particular folder on your computer and open a new workbook based on the existing workbook of your choice.
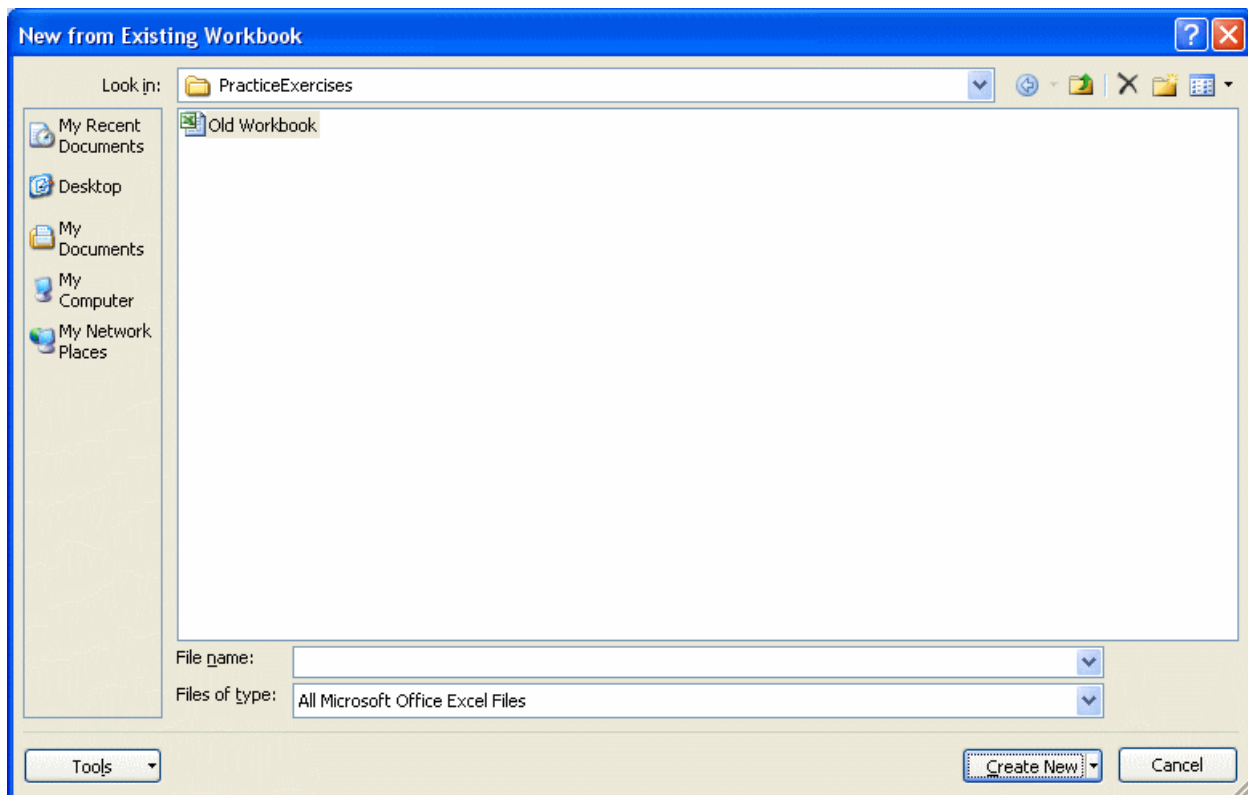
Simply highlight the workbook of your choice from the list of available workbooks and click the Create New button to create a new workbook based on it. You can use the panel of locations (directories) on the left to help navigate to the location of your choice.

This dialogue box behaves just like the "Save As" dialogue or any other file navigation dialogue. If you click the Cancel button, a new workbook will not be created. Clicking on the Tools button will allow you to show the properties of, print, rename, or delete the workbook that is highlighted in the dialogue box. If you click the X in the upper right of this dialogue box, it will close, and you will be returned to the original New Workbook dialogue.

If you choose the Templates option from the New Workbook dialogue, you will be able to create a workbook based on templates that you have created and stored on your computer, or based on templates that can be downloaded from the Internet. A template (discussed in greater detail in the Intermediate manual) is just a pre-designed layout for a workbook.

If you choose the Blank Workbook option from the New Workbook dialogue box, you will create a second blank workbook in addition to the original that you opened with Excel. Please take note of the two distinct workbooks (Book1 and Book2) that are available in the following Excel screen. The names of the workbooks are visible in their respective title bars.
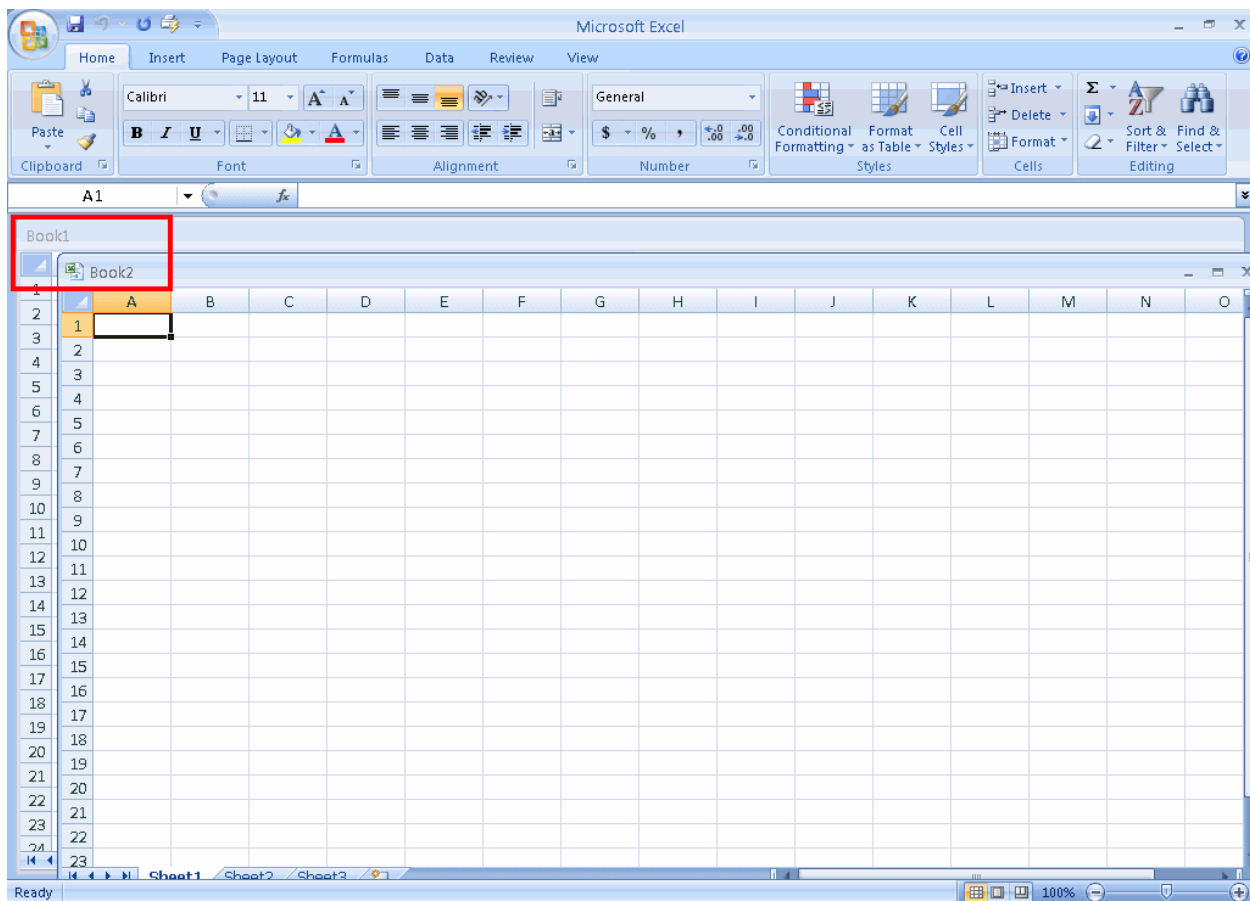
Either of these two workbooks can be minimized, expanded, or closed independently of the other. When you create or open more than one workbook at a time, the names of these workbooks will be visible in the task bar, normally located at the bottom of your desktop. The following is an image of a task bar showing that there are three workbooks available.

In this image, Book2 has darker shading than Book1 or Book3 in the task bar, meaning that Book2 is the workbook that is currently active.

Finally, you can also create a new workbook by using the Ctrl + N keyboard shortcut. When Excel is open and running, pressing the Ctrl key and the N key at the same time will create a new blank workbook in exactly the same way as choosing the Blank Workbook button from within the New Workbook dialogue box.

Opening a Workbook

It is often the case that you simply want to open an existing workbook without creating anything new. The simplest way to do this is to navigate to an existing Excel workbook file on your computer and double click on its icon.
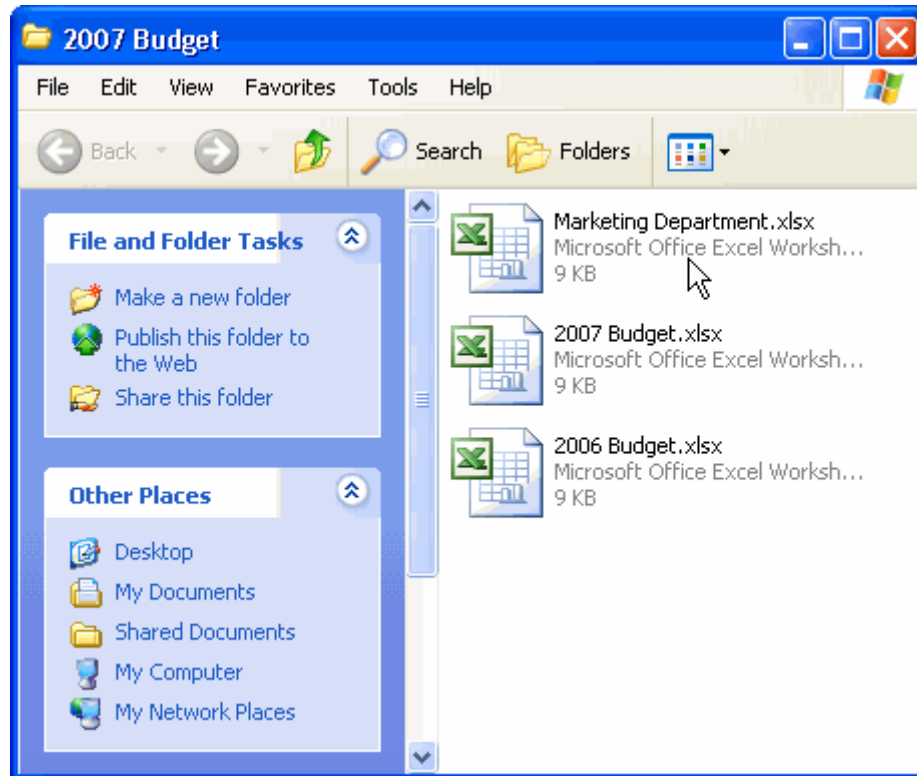
Double clicking the Excel workbook icon shown above will open the workbook named Marketing Department in Excel.

Another way to open a Workbook is to display the Excel 2007 Office menu and then choose a workbook from the Recent Documents list.
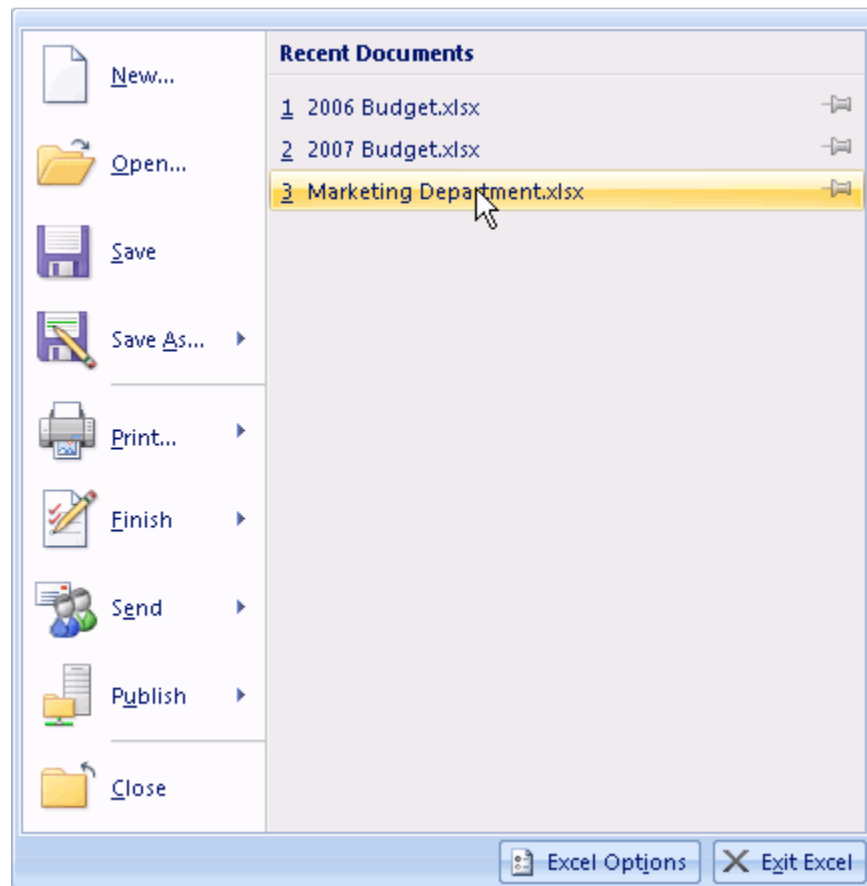
You can also click the Open command in the Office menu. When you click this option, an Open dialogue box will be displayed. You can use this dialogue box to navigate to a location (directory) of your choice, and then open the workbook of your choice by first highlighting it in the dialogue box's window and then clicking the Open button as shown in the following image.
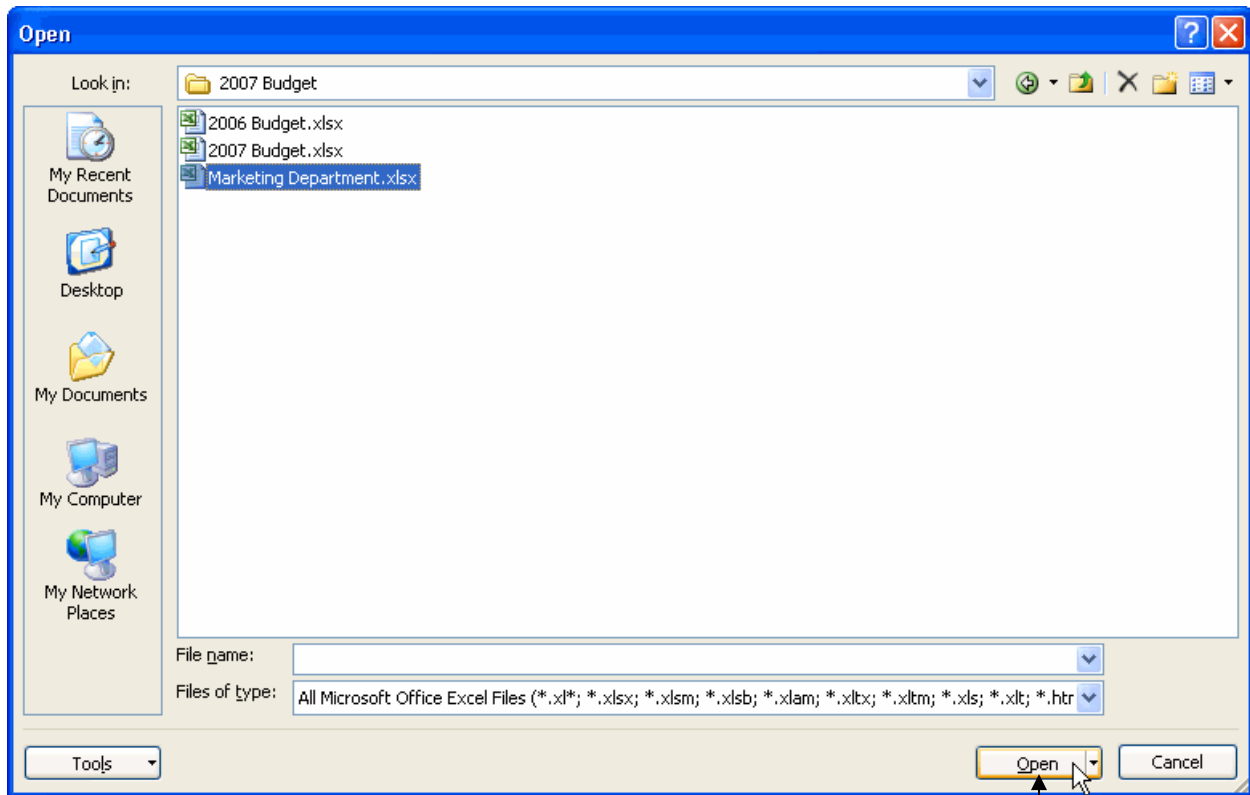
Finally, you can display the same Open dialogue box by pressing the Ctrl + O keyboard shortcut with Excel running. The Open dialogue will appear allowing you to navigate to and open the workbook of your choice.

Closing a Workbook

Closing a workbook is different from saving a workbook. If you have not made any changes to the workbook, just left click the X in the upper right corner of the workbook.
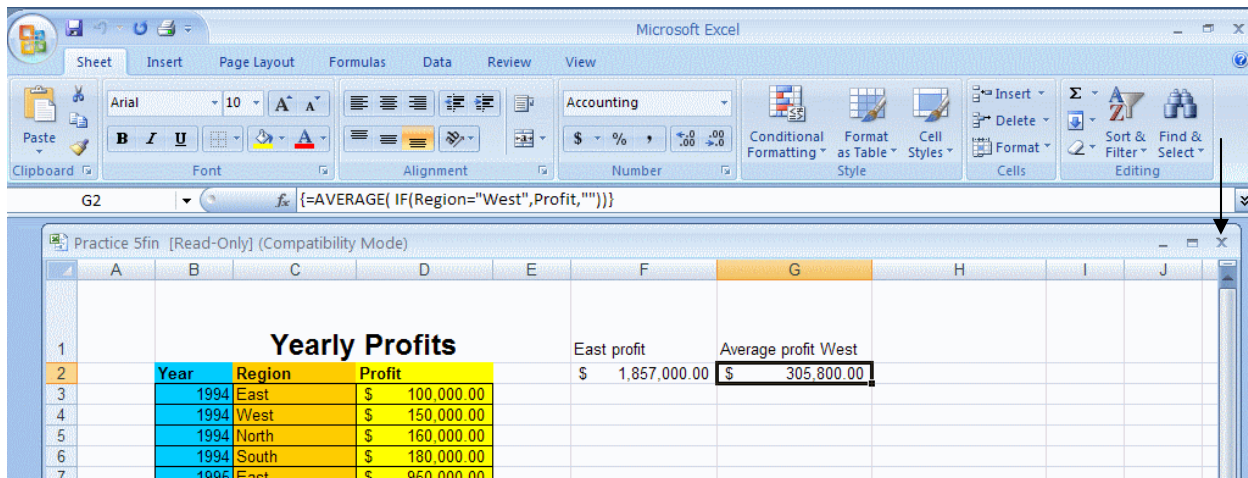
If the workbook is maximized within the Excel 2007 screen, this X may not be visible. If this is the case, you can also close a workbook be displaying the Excel 2007 Office menu and clicking the Close menu item.
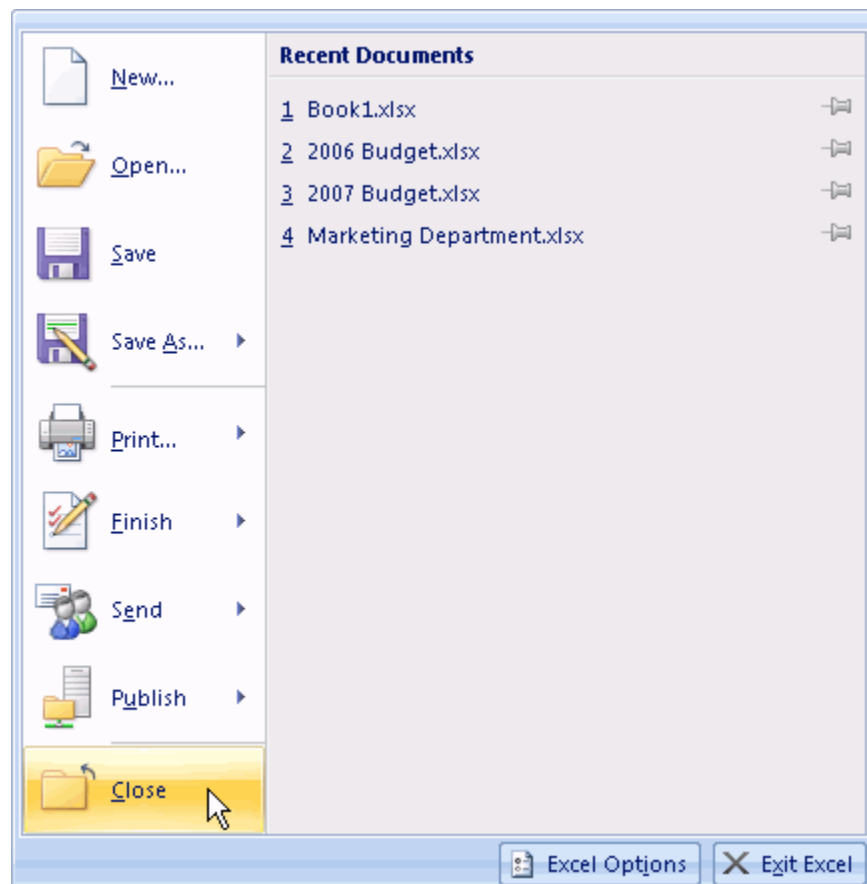
Clicking this option will close the currently active workbook. You can also close the active workbook by using the Ctrl + F4 keyboard shortcut (pressing Ctrl and F4 at the same time).

If you make changes to a workbook and attempt to close it, you will see an alert box appear. The alert box will ask if you want to save the changes that you made to the work book.

Microsoft Office Excel

Do you want to save the changes you made to 'Book1'?

Yes   No   Cancel
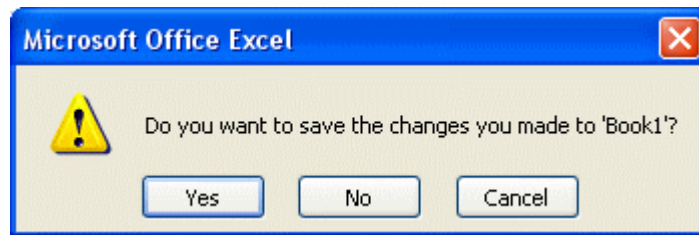
If you click the Yes button, the changes will be saved and the workbook will close. If you click No, the changes will not be saved and the workbook will close. If you click Cancel, the workbook will not close.

Exploring your Workbook

Now that you are familiar with the basic concepts of spreadsheets, cells, and workbooks, it is time to learn how to explore and navigate your workbooks in greater detail.

In this lesson, you will learn how to switch between worksheets in a workbook, how to select cells in a worksheet, how to move around in a worksheet, how to use the active cell, and how to use Excel's zoom feature.

Using Worksheets

A workbook is just a collection of worksheets. If you look near the bottom of the Excel screen you will see a group of worksheet tabs.
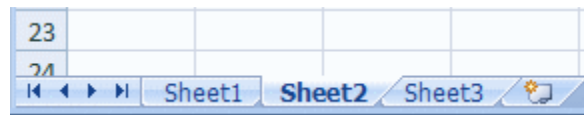
These tabs are labeled with the names of worksheets (spreadsheets) belonging to the current workbook. You can easily switch between worksheets by left clicking on the tab of the worksheet that you want to view. The name of the worksheet that you are presently working with will be in bold type, and the tab itself will have slightly less shading. In the image shown here, Sheet2 is the worksheet that is currently being used.

You can also use the worksheet navigation buttons just to the left of the worksheet tabs to switch between worksheets. This technique is especially useful if you have so many worksheets that the worksheet tabs cannot all be displayed. Simply right click on one of the arrow buttons, (just to the left of the sheet tabs), and you will see a list of the worksheets available in your workbook. You can then switch to a particular worksheet by clicking on its name in the list.
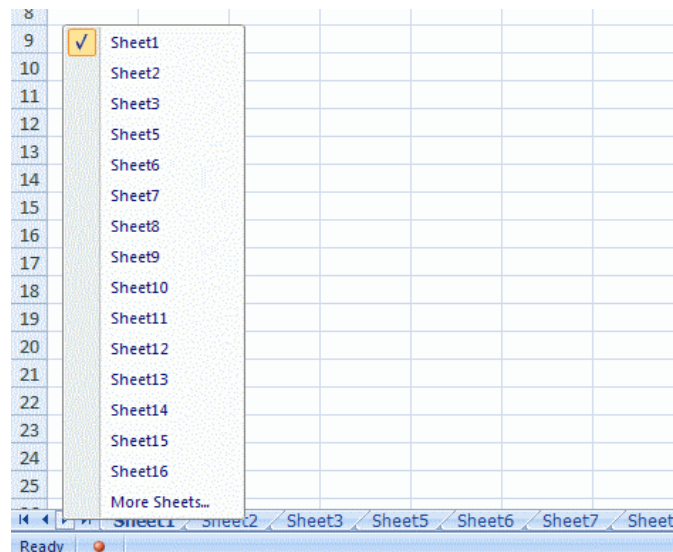
You can also quickly add a new worksheet (spreadsheet) to the workbook, by clicking the new sheet button.

If you right click on any worksheet tab, you will see a menu with several options.
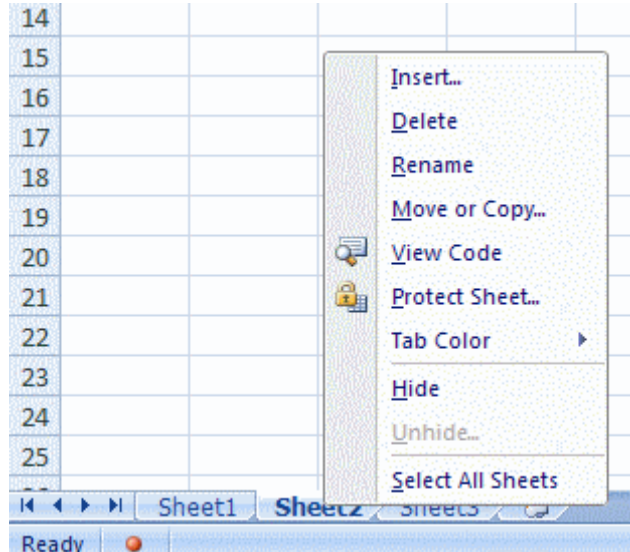
You can use these options to insert, delete, or even rename a worksheet. If you display the sub menu for the Tab Color option, you can specify a color for the tab of the worksheet in question.
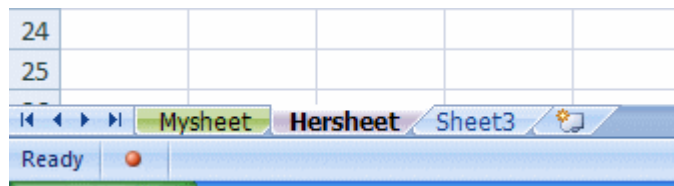
Here, the worksheet names have been changed, as well as the tab colors.

To quickly switch between workbooks using the keyboard, use the Ctrl +Page Up and Ctrl + Page Down keyboard shortcuts. Ctrl + Page Up will move to the next worksheet to the right, (relative to the worksheet tabs), while Ctrl + Page Down will move to the next worksheet to the left.

The Active Cell

When you left click on a cell in an Excel worksheet, it becomes enhanced with a thicker border. You will also notice that the number at the far left of the cell row, and the letter at the top of the cell column, will be shaded differently. The cell you have chosen is now the active cell, and its name or reference is the cell column letter followed by the cell row number (the number and letter that are shaded differently).

In this image, cell G4 (the one with the thick border) is the active cell. The column letter and row number of the active cell are displayed in a text field near the upper left corner of the Excel grid. If you enter a column letter and row number into this text field (a cell reference), the corresponding cell will become active.

You can enter text or a number directly into the active cell. If you click one of the formatting buttons on the Home Ribbon (such as bold, italics, underline), the formatting will be applied to the active cell. If there is already data in the active cell, the formatting option you choose will be applied to this data.

In summary, to change the contents (formatting or data) of any individual cell, click on it to make it active, and then make your changes.

If you enter text or numbers into the formula bar, the text or number that you type will also be entered into the active cell. If you make a cell containing data the active cell, the data will also appear in the formula bar. You can even edit the contents of the active cell in the formula bar if you wish.
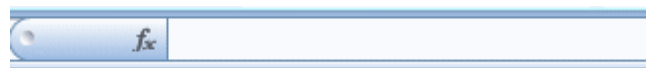
Selecting Cells

To select a group of cells, place your mouse pointer in the center of a cell. When the pointer turns into a thick white shaded cross, hold the left mouse button down and drag the pointer across the row or down the column of cells you want to select.

As with the active cell, the numbers at the left ends of the selected rows, and the letters at the top of the selected columns, will be shaded differently. In this image, the cells B2 to B4 have been selected. You can also drag the thick cross pointer diagonally across a block of cells to select multiple columns and rows. A block of cells that you select will be highlighted in blue, and surrounded by a heavy black border.

You can also select cells by using the Shift key. Simply click on the first cell of your selection, press Shift, and then click on the last cell of your selection. To make the selection shown above, you would click cell B2, making it active; press Shift, and then click cell B4.

Exploring a Worksheet

It is not difficult to move around in an Excel spreadsheet. If you click a cell to make it active, pressing the Enter key will make the cell immediately below it active. If you keep pressing Enter, you will see the enhanced border move down the column from cell to cell.

If you use the Up arrow key you can move to the cell just above. The Down arrow key will move you to the cell just bellow. The Right arrow key will move one cell to the right, and the Left arrow key will move one cell to the left.

Using the Page Up key will move you up one full screen (grid of cells). Using the Page Down key will move you down one full screen. Alt + Page Up and Alt +Page Down move you one full screen left and right respectively.

If you have a block of cells that contain data, pressing Ctrl + Left arrow will move you to the left side (beginning) of the block while the Ctrl + Right arrow will move you to the right side (end) of the block. Similarly, Ctrl + Up Arrow will move you to the top of the data block, and Ctrl + Down arrow will move you to the bottom. If the spreadsheet is empty, these same shortcuts will move you to the extreme left, right, top, and bottom of the spreadsheet grid respectively.

Pressing the Ctrl + Home keys you will move to the top left of the spreadsheet grid. If your spread sheet contains data, pressing Ctrl + End will move you to the bottom right of the data area.

You may also notice that on some Excel menus, you will see the first letter in a menu option underlined. This simply indicates that if you press Ctrl + the underlined letter on your keyboard, the menu option will be activated.

The Zoom Feature

A single Excel 2007 spreadsheet can contain more than 1000000 rows and 16000 columns. This means that there can be as many as 16 billion cells in a spreadsheet. This poses a problem for viewing large spreadsheets. How can you possibly get a big picture of your work if it is spread over a large number of cells?

By using Excel's Zoom feature, you can change the viewing scale of a work sheet. By default, a workbook opens at 100% zoom. In the image that follows, you can see that at the current zoom level, (100%), you cannot see the entire block of data.

You could use the scroll bars at the right side and the bottom of the grid area to view all of the data, or you could use the zoom slider switch in the lower right corner of the screen.
You can drag the slider with your mouse toward the negative (-) sign to decrease the zoom level, or toward the (+) sign to increase the zoom level. You can also left click on the current zoom amount (100% in the following image) to display preset magnification options, or to enter your own custom level of magnification.

You can use these options to choose from a preset zoom value, or you can select a custom value by entering it in the small text field provided. When you have made your selection, clicking the OK button will implement your choice.
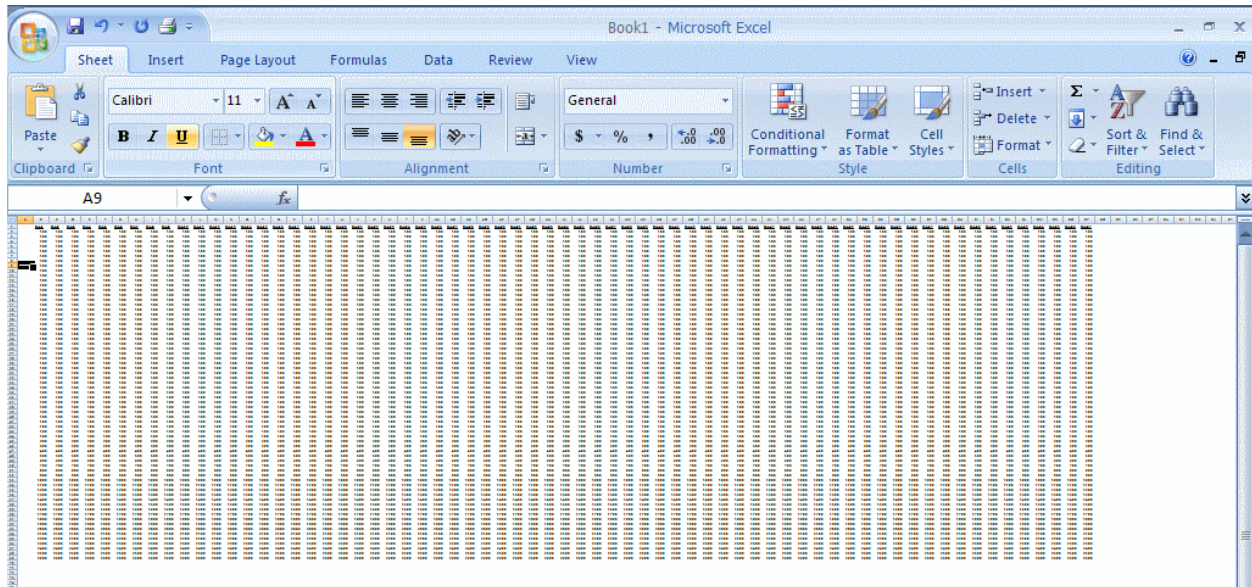
This image above shows the Excel spread sheet zoomed out to 20%.

The following image is of the same spreadsheet zoomed in to 320%.

Getting Help in Excel 2007

Before we get into the nuts and bolts of working with Excel 2007, it is probably a good idea to learn about Excel's help features.

Almost anyone who works with a spread sheet program, word processor, or any application with many functions and options, will find themselves needing help at some point. You may know exactly what you want to do, but not how to do it.
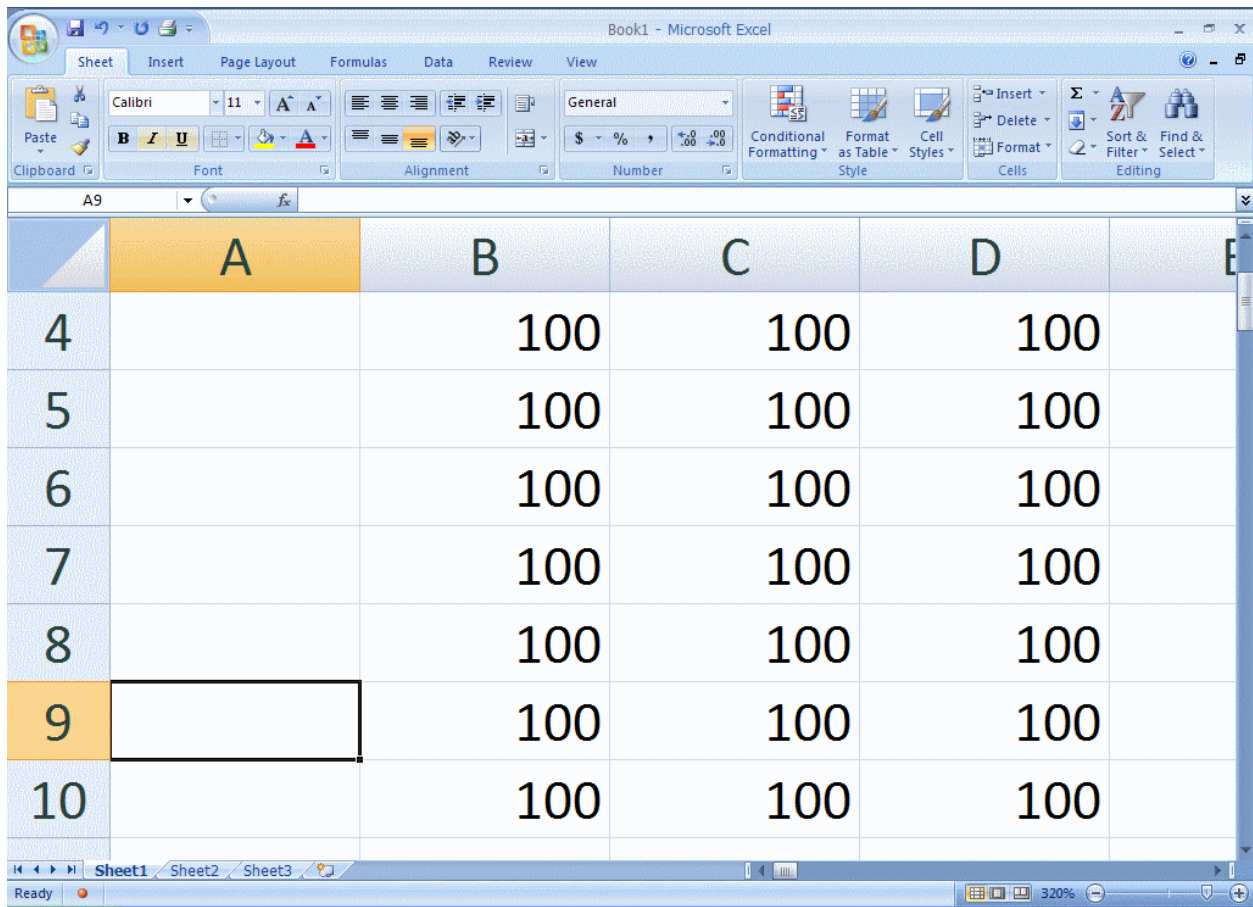
In this lesson, you will learn how to get help by using the Excel 2007 Help Screen. You will also learn about online and offline help. Knowing how to use these features can help you access the information and instructions you need to accomplish your Excel goals.

Using the Help Screen

If you find that you need help with a given topic in Excel 2007, you can access the Excel Help Screen by clicking on the question mark button in the upper right corner of the Excel screen. You can also display the Help Screen by pressing F1 on your computer keyboard.
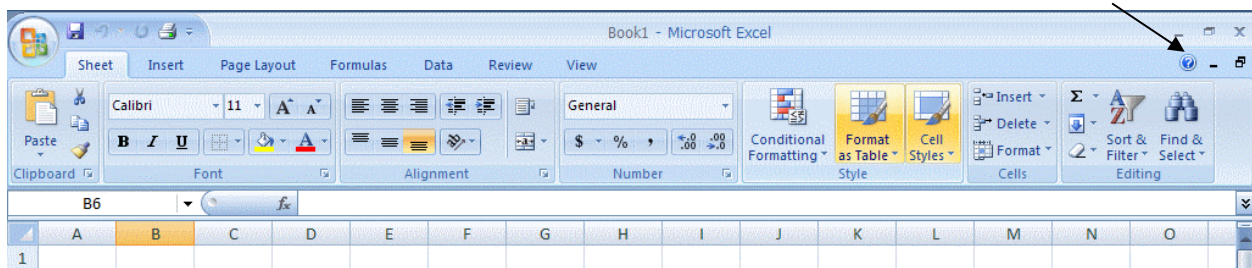
When you first open your help screen it may not be fully expanded. To maximize the help screen just click the maximize button in the upper right hand corner.
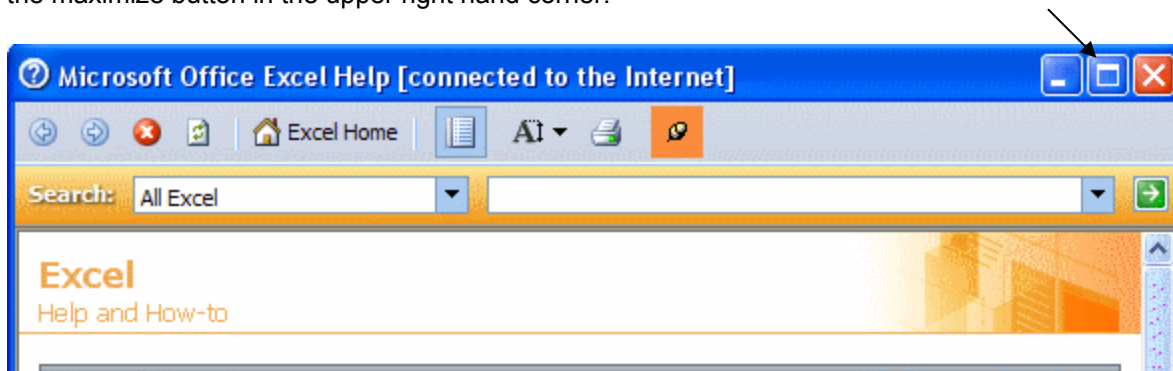
If your computer is connected to the Internet, your Help screen will look something like the following.
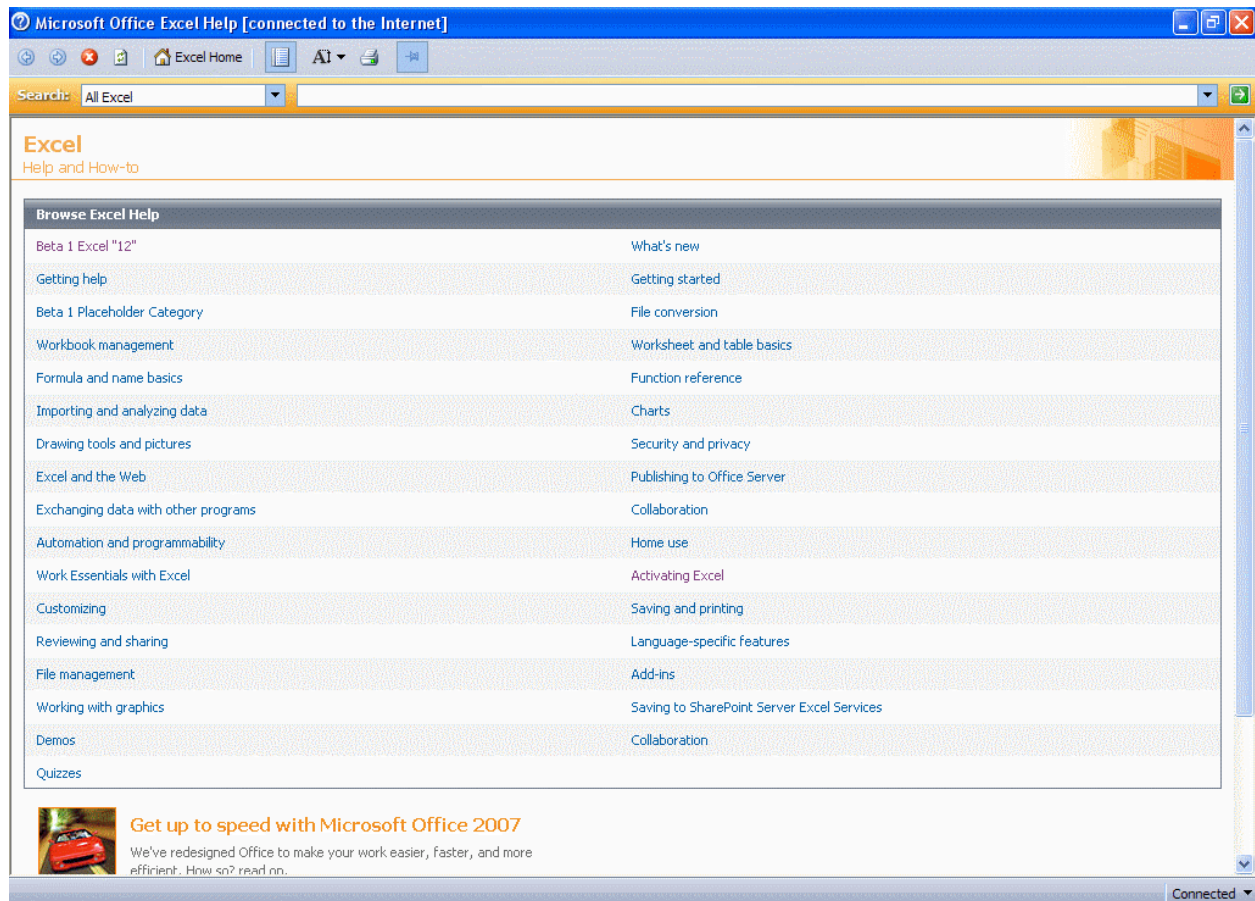
You can use the scroll bar on the left of the screen to see any information that is out of view.

From this screen you can access both online and offline help. (Online help requires an Internet connection, while online help only requires the help files that are stored on your computer when you install Excel.)

If you are not connected to the Internet, your help screen will look something like this:
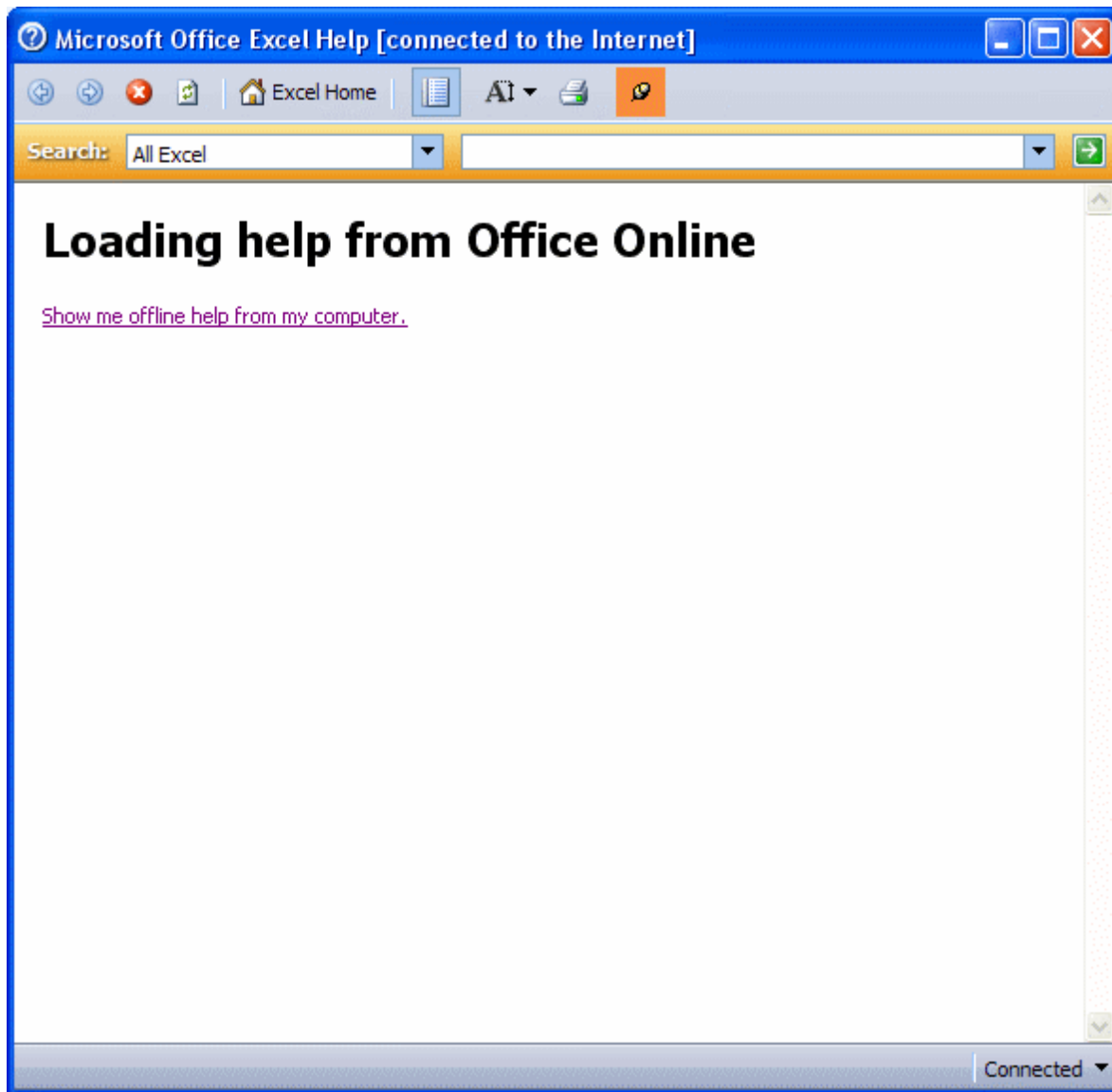
If you click "Show me offline help from my computer," a list of offline help topics will appear on your help screen.

About Online Help

When you display the Online Help Screen (by clicking the help button or pressing F1 with your computer connected to the Internet), you will see a screen displaying a number of hyperlinks. If you click on any of these links, you will be presented with additional links that are more specific to the subject you are finding help on.

As an example, if you click on the charts hyperlink in the help screen, you will see these choices:

Formula and name basics	Function reference
Importing and analyzing data	Charts
Drawing tools and pictures	Security and privacy
Excel and the Web	Publishing to Office Server

If you continue to follow the links, you will get even more specific subject headings until you reach the information and instructions that are closest to what you are looking for.
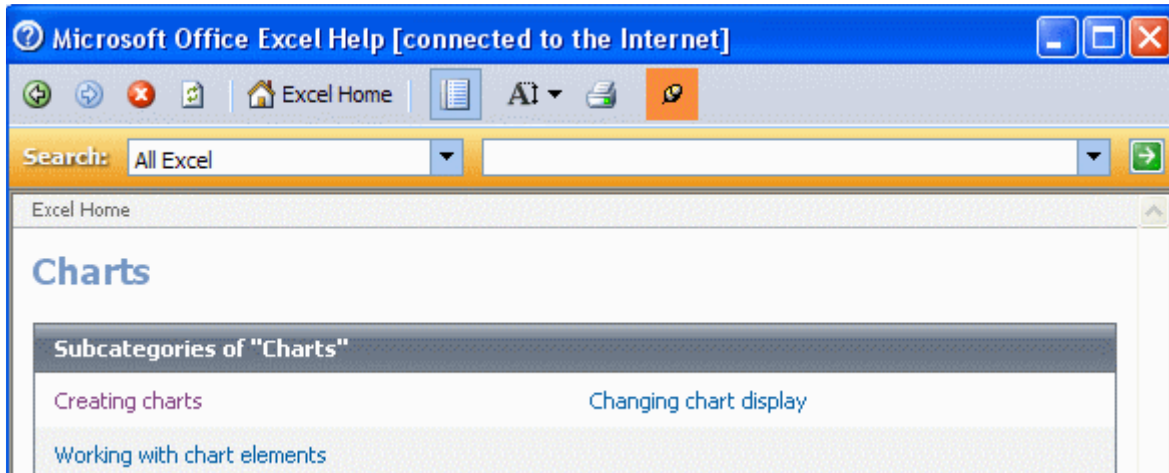
You can click the back and forward buttons (   ) to move between pages that you have visited in the help screen. (These buttons behave very much like the back and forward buttons in a Web browser.) You will also notice a Refresh button near the top of the Help screen and an Excel Home button. Clicking on the Excel Home button will take you to the original online help screen that you started with.

There is also a table of contents button (   ) if you prefer to work through a table of contents like the one shown below.
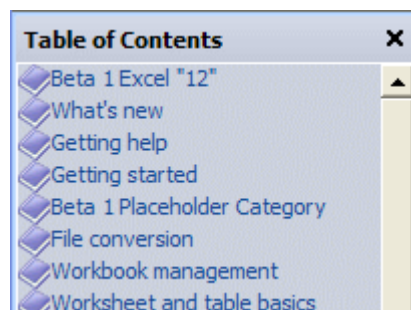
You can print the information in the help screen by clicking the printer icon, or you can make sure the help screen stays visible while you are working with Excel by clicking the keep on top button (   ).

You can refine your search for help topics by specifying a particular section of help topics to be searched (in this example, Developer Reference) and then entering a particular term to search for (in this case, VBA). When you are ready to search, click the green arrow button to start.
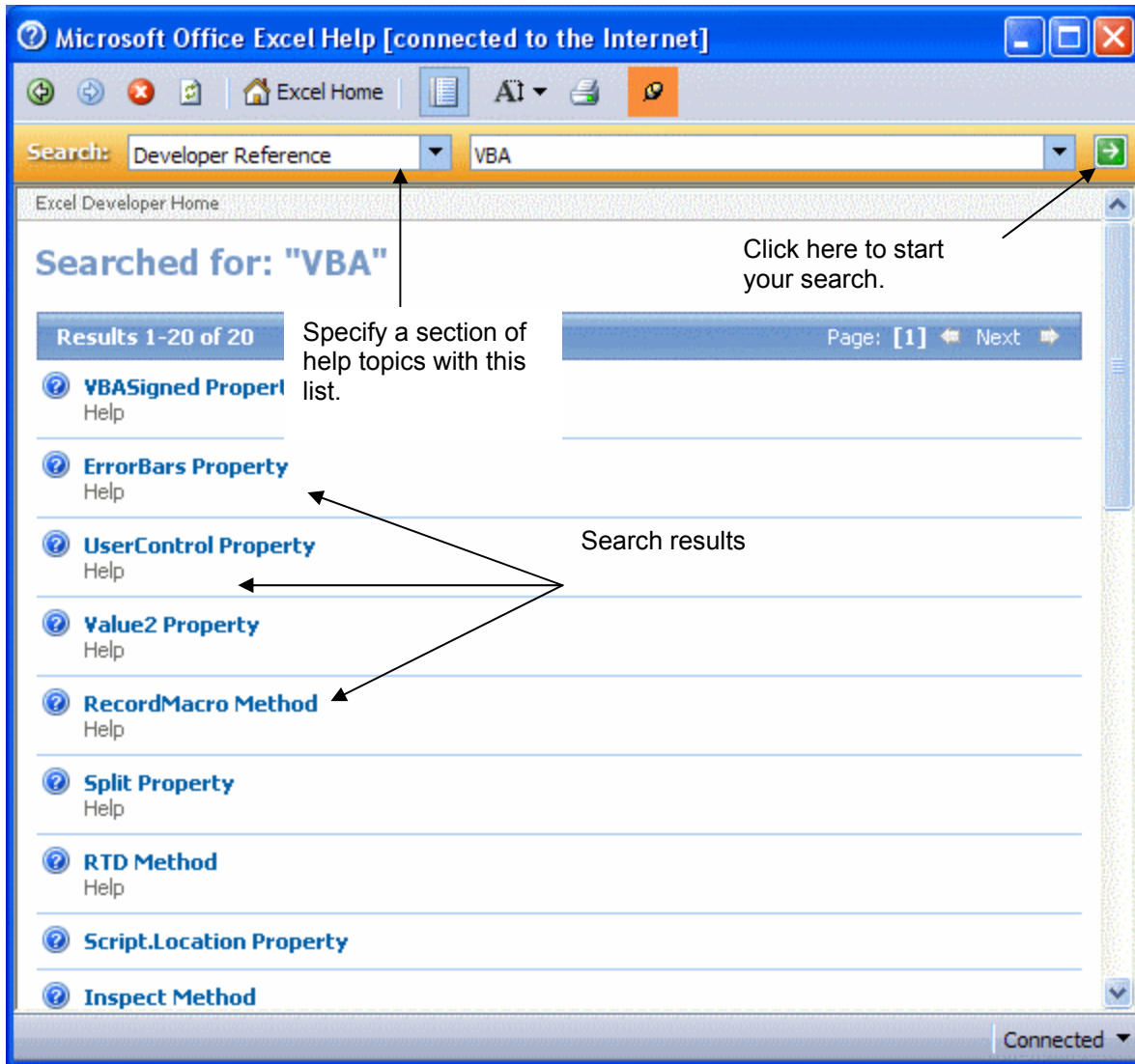
If you want to close the help screen, simply click the close button in the upper right corner of the help screen.

About Offline Help

It may sometimes be the case that you need help with Excel, but an Internet connection is not available. In this instance there is still an offline help option that you can take advantage of.

When you display the help screen without an Internet connection, it will look like the following image.

Click here to show offline help
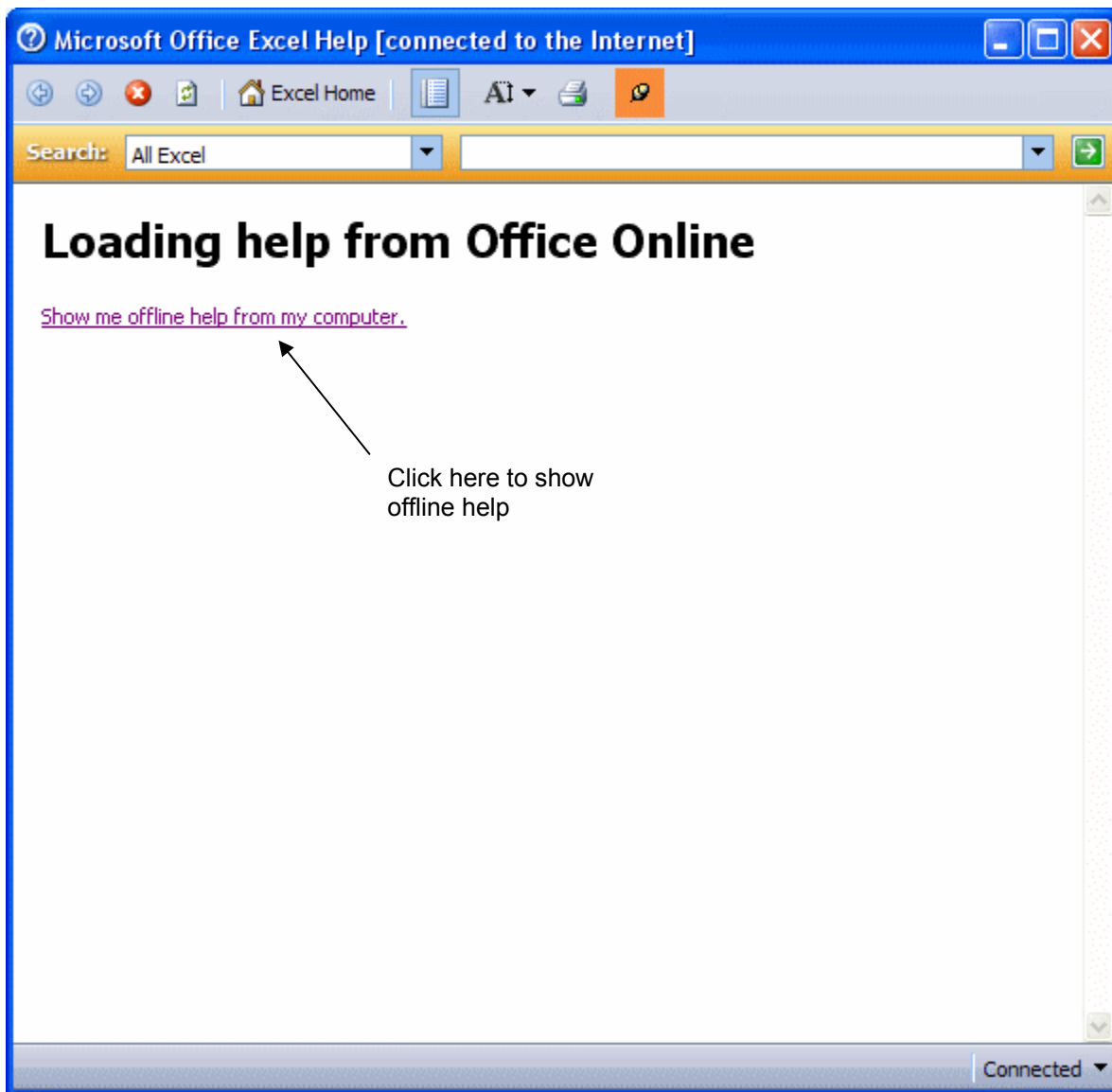
If you click on the "Show me offline help" link, you will see the following screen.
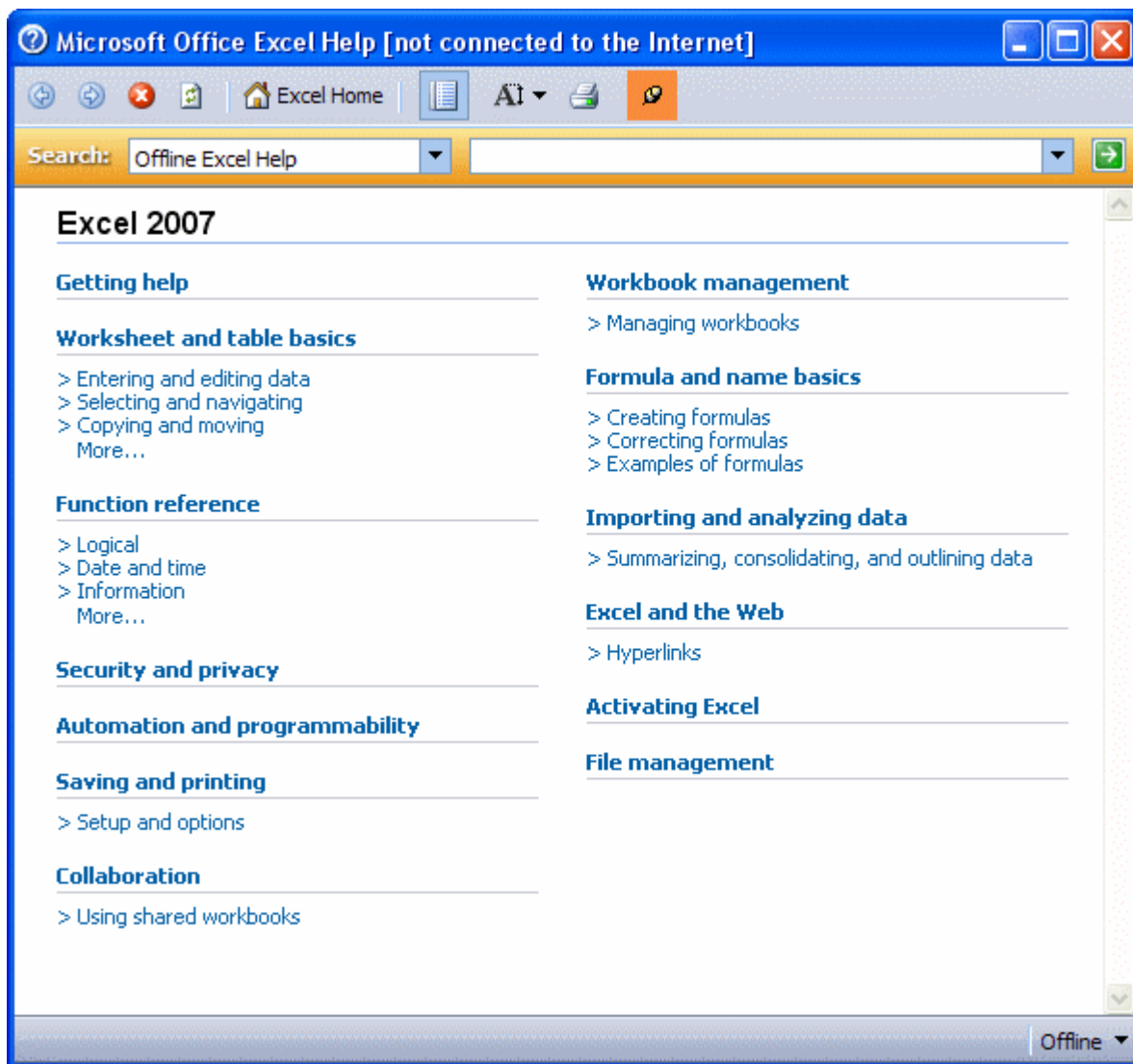
Each one of the subject links on this page will lead to information that is stored locally on your computer. To follow the links simply click on them. Each link will take you to more specific subject links that you can follow until you find the information that is closest to what you are looking for.

The search option and the table of contents are still available to you just as they were in online help, but in offline help there will be significantly less information at your disposal. For this reason, it is a good idea to use online help if you are able to.

SECTION 2: Entering and Editing Data

In this section you will learn how to:
- Work with columns, rows, cells, and ranges
- Create worksheet labels
- Enter and delete data
- Use the AutoFill feature
- Use AutoComplete
- Work with basic formulas
- Use the AutoSum feature
- Save an Excel workbook

Working With Excel 2007

The main purpose of an Excel 2007 worksheet is to organize and analyze data. To accomplish this, you must learn to work with the basic structures found in every worksheet. You must also be able to enter and group your data according to different categories so your worksheet has meaning.

In this lesson you will learn about the basic building blocks of worksheets: columns, rows, cells, and ranges. You will learn about worksheet labels and you will learn how to enter and remove data in a worksheet. Finally, you will learn how to print a worksheet.

Columns, Rows, Cells, and Ranges

Columns, rows, and cells are the most fundamental components of a work sheet.
A column is a vertical series of adjacent cells from top to bottom. A row is a horizontal series of cells from left to right. A basic cell is an individual rectangle anywhere in the grid area of a worksheet.

There is a letter or combination of letters at the top of every column. Since there are only 26 letters, and far more than 26 columns on a spreadsheet, the next columns after column Z are indexed by the letters AA, AB, AC, and so on until the last column (XFD).

At the far left of a row you will see an index number. The rows are numbered, staring at the top, 1 through to 1048576. The top left cell in the worksheet is indexed by the letter number combination A1.
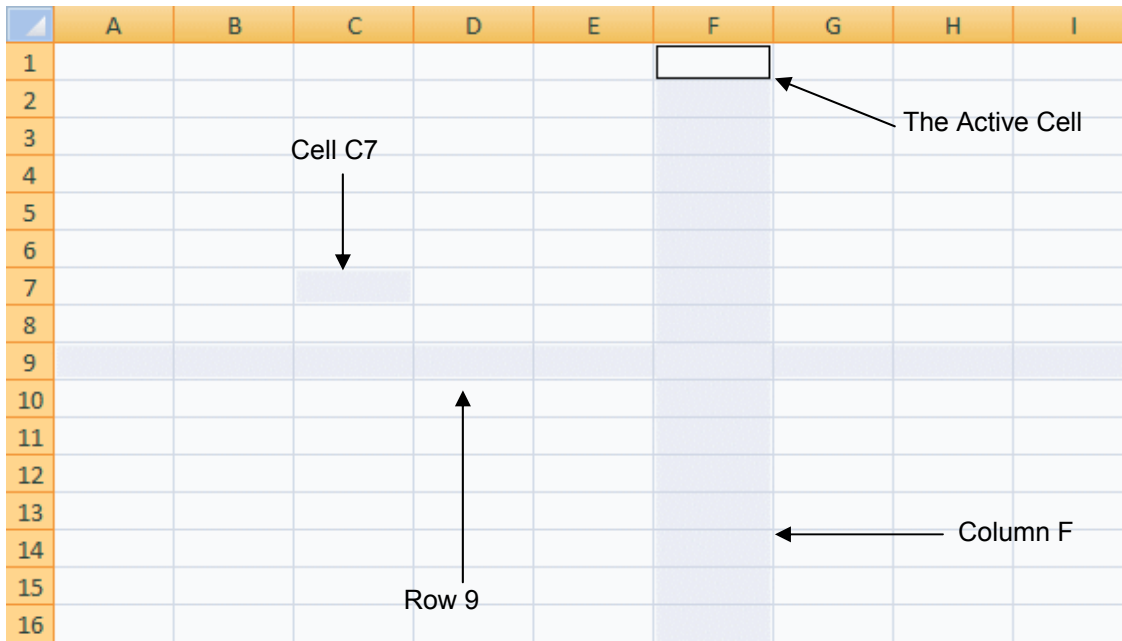
Excel is designed to have data organized down the sheet under column headings more so than across the sheet in rows. This is why there are over a million rows down the sheet and only about 16000 columns.

In Excel, a range can be described as a series or block of adjacent cells. A range can be a very useful tool because it allows you to make changes (such as applying formatting) to multiple cells at once. To select a range, let your pointer hover over the center of a cell. When you see the thick cross, hold the left mouse button down, and drag your pointer to select a range. (A selected range will be highlighted in blue.)
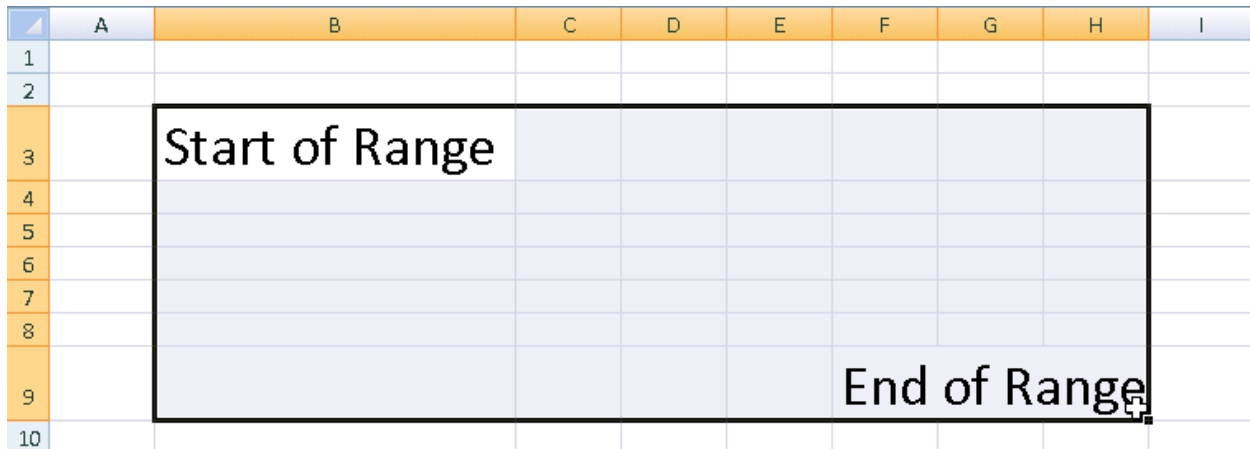
If you have a block of data in a worksheet, you can click on any data cell in the block, and press the Ctrl + Shift +8 keys. This will select the block of data as a range. Excel will use the empty cells adjacent to the data-filled cells as boundaries to the range.

Still another way to select a range is to enter it directly into the Cell Name field.
If you enter the range A1:A7 into the cell name field, the range shown below will be selected.

Cell name field
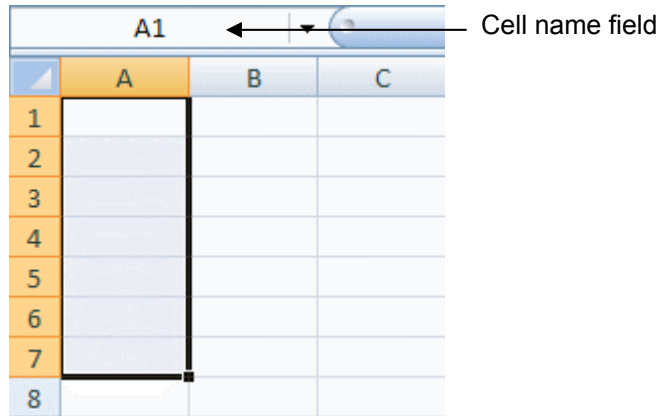
You can also select a range by clicking on the first cell in a block that you want to select, then press Shift, and click on the last cell in the block you want to select.

When you make a selection of cells, you should notice some numbers that appear on the Excel status bar. These numbers, located near the bottom of your screen, tell you the average, the count, and the sum of the data in only the cells that you have selected.

Creating Worksheet Labels

It is always a good idea to label or identify your data so that your worksheet can be understood by whoever uses it. It would be extremely difficult to make sense of multiple rows and columns of unidentified numerical data. Basically a label is a simple text description of the data it represents.

For example, if your worksheet contains information about the age, height, and weight of a group of people, the words age, height, and weight, would make ideal labels for the data.

Label

Label

Entering and Deleting Data

Now that you understand the basics of columns, rows, ranges, and labels, it is time to start working with data. One way to enter data into an Excel worksheet is to click on the cell you want to use (making it the active cell) and enter the information directly into it. When you type something in the active cell, what you type will also be displayed into the formula bar.
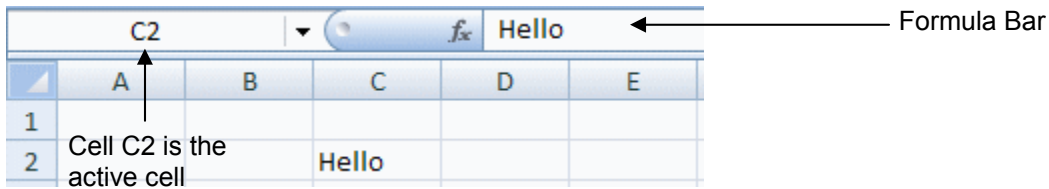
Formula Bar

If you type text, numbers, or formulas in the formula bar and press Enter, the data or formula you typed will be entered into the active cell. When you enter data in the formula bar, you will see an X and a check mark next to the data entry field. If you click the X (cancel), the data in the formula bar will be cleared. Clicking the check mark will enter the data just like the Enter key.
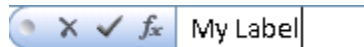
To delete data from a cell, right click on the cell to display the drop down menu. Clicking the Clear Contents option will remove the cell data, but not the cell formatting. New data entered into the cell will be formatted like the previous data.
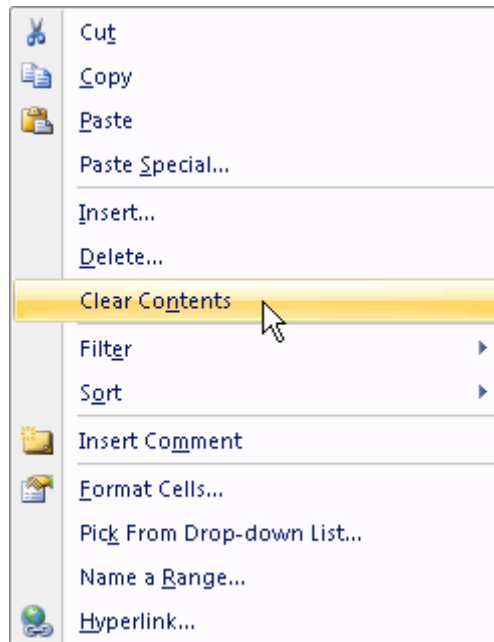
If you click the Delete option, a delete dialogue box will be displayed as shown. Note that in the sample below, the Shift cells left radio button is selected.
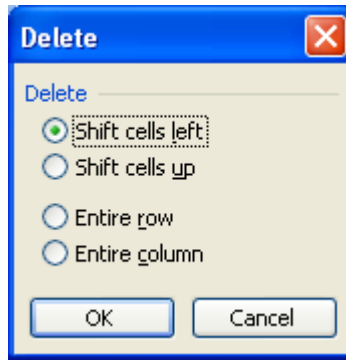
If you click OK both the data and formatting will be removed, and the data from the cell to the immediate right will be shifted left into the now vacant cell. If the Shift Cells Up radio button had been selected, the data in the cell immediately below would be shifted up into the vacant cell. Clicking Cancel will cancel the delete operation.

You can also delete rows and columns by clicking the Delete button on the Home Ribbon.
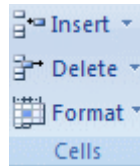
Clicking the small arrow at the right of the delete button will display a menu with options to delete cells, delete rows, or delete columns. To delete rows, first select a row or rows. Then, click the Delete Button Arrow to display the delete menu, and then click the Delete Sheet Rows option. This will delete the row, and shift the below cells up.

To delete columns, select the column or columns you want removed, and then choose the Delete Sheet Columns option. The columns to the right of the deleted data will be shifted left.

Remember, clearing contents only removes the data, while deleting removes data and formatting.

It is important to keep in mind that Excel treats text and numbers differently. A number is seen as a value in Excel, something that can be used in mathematical operations. Text is often used as labels or identifiers. If you want to enter a number as text (use a number as a label), put an apostrophe (') in front of it.

Using Undo, Redo, and Repeat

Anyone can make mistakes, especially when creating a complex worksheet. Excel provides a way of backtracking over, or undoing incorrect or unintended actions.

To undo an action, click the Undo button on the Quick Access Toolbar.

This will undo the very last action you performed. If you continue to click the Undo button, the next most recent action will be undone, and so on. You can also click the downward pointing triangle to show a list

of recent actions. You can select actions from this list and then click the selected item to delete it and any other actions above it in the list.
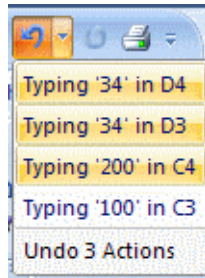
If you want to redo an action (perform an action that you undid with Undo), you can click the Redo button on the quick access toolbar.

Here, you can also use a drop down list to select multiple actions to Redo, in just the same way as with Undo.

In certain cases, the Redo function will change to a Repeat command. If you perform an action on a cell, (making it currency style for example), you can then click on another cell, or select a range of cells and use the Redo button to repeat the action on the additional cells.

AutoFill and AutoComplete

When working with spreadsheets, it is often the case that you must repeat data in a large number of cells. Excel helps you do this efficiently by automating some basic and repetitive tasks for you.

In this lesson we will discuss some of the most fundamental and useful Excel features: AutoFill, AutoSum, and AutoComplete. In addition to covering these automated features, you will learn another key concept: how to work with basic formulas.

What is AutoFill?

Excel's AutoFill feature can help you enter repeated or incremental text or numbers quickly. Say, for example, that you have to enter all of the years from 1990-2010 in a worksheet. Rather than typing each year into a cell manually, you can take advantage of the AutoFill feature to enter the data quickly and easily.

By dragging your pointer down a column, you can make AutoFill enter consecutively increasing or decreasing values in adjacent cells by what ever increment is defined between the first two selected cells.

	A	B	C	D	E
1	Year	Ave Temp	Ave Rain	Ave Snow	
2	1990				
3	1991				
4					
5					
6					
7					
8					

If you wanted to enter all of the years from 1990 to 2010 into the sample worksheet shown above, you can enter the year 1990 in cell A2 (under the Year label) and 1991 just below in cell A3. If you select both cells, and place your mouse pointer over the small black square in the lower right corner of the selection, your mouse pointer will turn into a thin cross.

	A	B	C	D
1	Year	Ave Temp	Ave Rain	Ave Snow
2	1990			
3	1991			
4				
5				
6				
7				

If you hold down the left mouse button and drag the + pointer down column A, a small comment box will appear telling you what AutoFill is putting in each cell.

	A	B	C	D
1	Year	Ave Temp	Ave Rain	Ave Snow
2	1990			
3	1991			
4				
5				
6				
7				
8				
9	1996			
10				
11				

When you see 2010 in the comment box, stop dragging.

	A	B	C	D
1	Year	Ave Temp	Ave Rain	Ave Snow
2	1990			
3	1991			
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23	2010			
24				

The worksheet will now contain the years 1990-2010. Note that you have to select two adjacent data items, and they have to change incrementally for AutoFill to enter the correct consecutive values. If you selected only 1990 and dragged down the column, AutoFill would enter 1990 into every cell.

Depending on what you want to do, however, this can work to your advantage. For example, if you select a single cell and drag the corner with the + pointer, AutoFill will fill the cells you drag over with the value in the original cell.

	A	B	C	D
1	Year	Ave Temp	Ave Rain	Ave Snow
2	1990			+
3	1991			1990
4	1992			

What is AutoComplete?

AutoComplete will help you enter data by completing what you type, based on similar data in adjacent cells in the same column. If you enter the name John in a cell, and then type the letter J in the cell immediately below it, AutoComplete will fill in the letters ohn completing the word John. You simply need to press Enter to accept the substitution. If you have two words with the same first letter in a column of adjacent cells, John and Jack for example, and you type a J, AutoComplete will wait until you type a second letter to discern the most likely match to complete the entry.

|	A	B	C
1	Salesperson	Product	Units Sold
2	John		
3	John		
4			

If you want to turn the AutoComplete feature off, display the Office menu and click the Excel Options button at the bottom of the menu. When you see the options screen, click the Advanced option in the panel on the left, and then clear the check box next to words Enable AutoComplete for cell values. When you click the OK button, AutoComplete will be turned off.
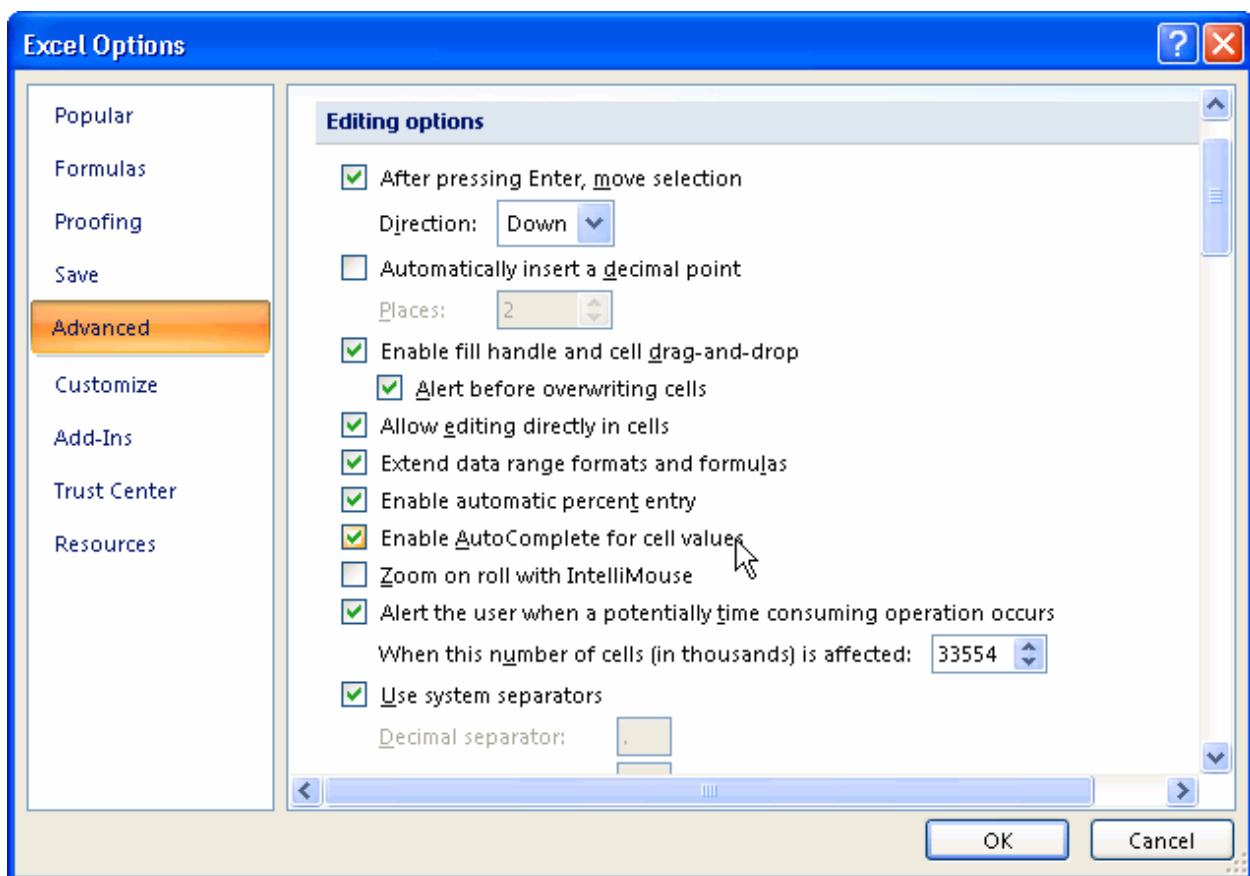
Using Formulas in Excel

As you probably already know, Excel 2007 is a great tool for organizing and presenting your data. However, Excel 2007 can do much more than neatly arrange and total rows and columns of information. The real power of Excel lies in the number and variety of functions and formulas that you can apply to your data.

When you enter or change your data, the Excel worksheets are automatically recalculated based on the mathematical formulas and functions that connect your information. Needless to say, a good understanding of how to build and use formulas and functions will help you improve the functionality and efficiency of your worksheets.
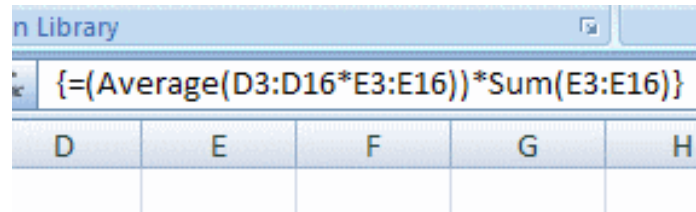
In this lesson you will learn about absolute and relative cell references, basic mathematical operations, and using formulas that involve multiple cell references. You will also become familiar with the formula auditing toolbar and you will practice fixing formula errors.

Basic Mathematical Operators

To build formulas in Excel, you will have to use the basic mathematical operators as shown in the following table.

^   **Exponent   (10^2 = 100)**

*   **Multiplication (10*2 = 20)**

/   **Division   (10/2 = 5)**

+   **Addition   (10+2 = 12)**

-   **Subtraction   (10-2 = 8)**

=   **Equivalence**

>   **Greater than   (10>2)**

<   **Less than   (2<10)**

These operators are listed from top to bottom in order of precedence. This means that the following expression, 3*2+4, will have the answer 10. This is because 3*2 is evaluated first, and then 4 is added (multiplication takes precedence over addition).

The equation 3^2*4 will have 36 as a result, because 3^2 is evaluated first, and the result is then multiplied by 4 (exponentiation takes precedence over multiplication).

You can impose your own order of operations by enclosing expressions in parentheses ().
The operations inside the parentheses will be evaluated before the operations outside. If you have parenthesis within parenthesis as in ((2+3)*4), the expression in the inner parentheses, (2+3) =5, will be evaluated first, and the result will be used to evaluate the expression in the outer parentheses, (5 *4) =20.

Using Formulas with Multiple Cell References

In the following spreadsheet we have columns for Items Sold, Price, Total Sales, Cost per Item, Overhead, and Profit.

|	A	B	C	D	E	F	G	H
1		Items Sold	Price	Total Sales	Cost per Item	Overhead	Profit	
2	Region1	400	10.5		2.3	45		
3	Region2	356	10.5		2.3	45		
4	Region3	25	10.5		2.3	45		
5	Region4	780	10.5		2.3	50		
6	Region5	23	10.5		2.3	70		
7	Region6	360	10.5		2.3	70		
8								

To come up with a figure for the profit column, we must evaluate the total sales (items sold multiplied by the price per item) and the total expenses (items sold multiplied by the cost per item, and then added with the overhead).

To do this, we can click on cell D2 and enter =B2*C2 in the formula bar. If we then drag this formula to fill cells D2:D7, we will have the total sales for each location.

Profit is the total expenses subtracted from the total sales. In this instance, the total expenses for the row labeled Region1 would be B2*E2+F2 (items sold * cost per item + overhead). Remember, we have total sales in column D, so if we enter =D2-(B2*E2+F2) into cell G2, and then fill down to G7, we will have completed our profit column.

Saving a Workbook

One way to save an Excel Workbook is to choose the Save As option from the Excel 2007 Office menu.
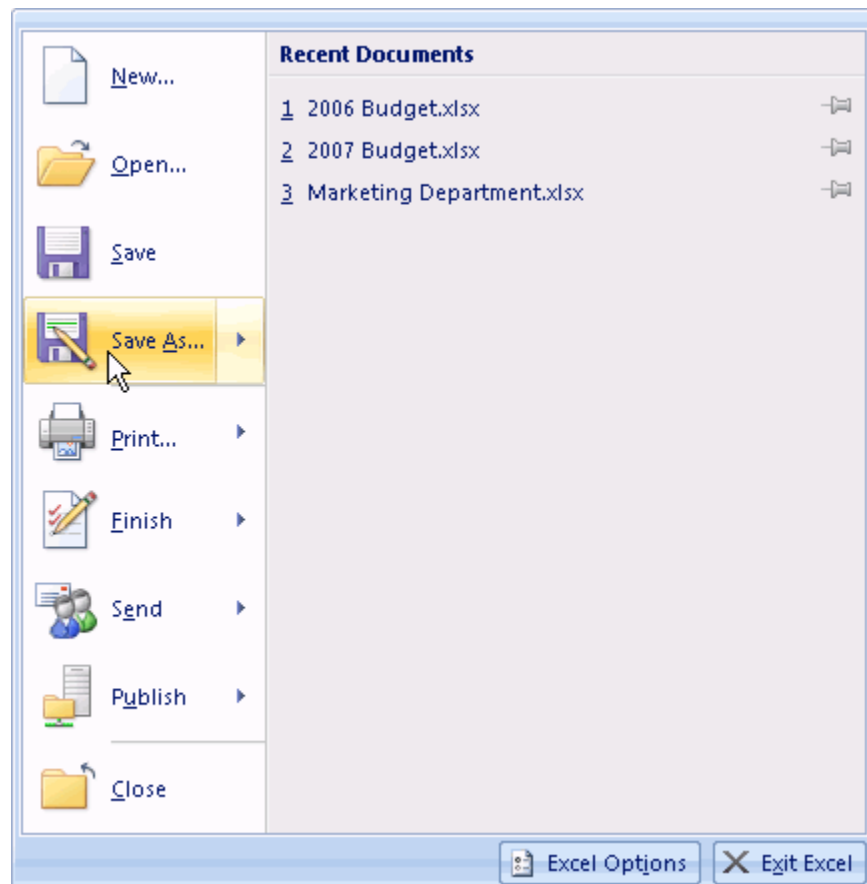
Choosing this option will display the Save As dialogue box. (Another quick way to display the Save As dialogue box is to press the F12 key.) You can enter a name for your file in the File Name text field and click the Save button to save the current workbook under that name. You can also use the Save In drop list to find a folder to save your files in. If you are saving an existing workbook, using Save As will let you save the workbook as a new file with a new name.
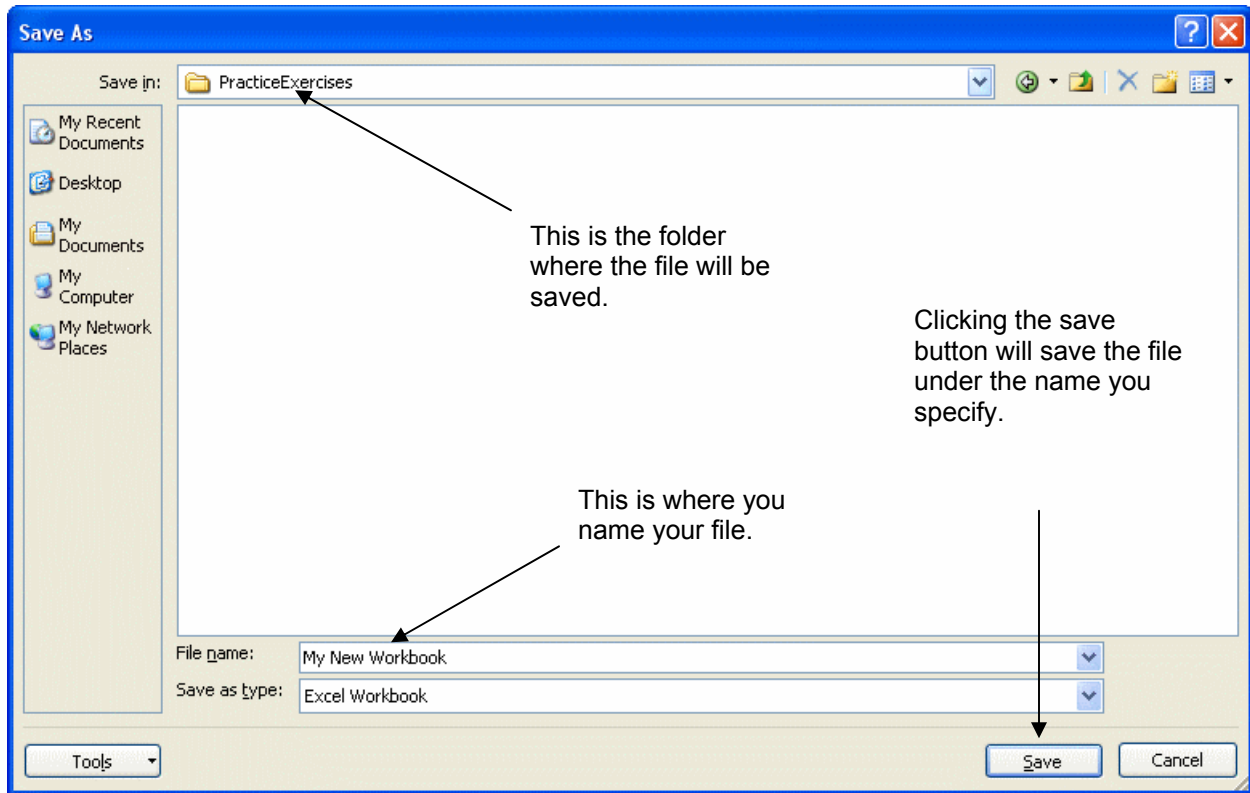
Another way to save your workbook is to click the Save button ⊡ in the top left of the Excel 2007 screen or press Ctrl + S on the keyboard. If you are working with an existing workbook, and you click the Save button or press the Ctrl + S keys, any changes you have made to the workbook will be saved under its current name (that is, the workbook with changes will be saved over the original). This type of save option is also available under the Excel 2007 Office menu as a button labeled Save.

About Excel File Types

When you start working with Excel 2007, it is a good idea to get a feel for some basic Excel 2007 file types and extensions. Excel 2007 uses a new file format known as Microsoft Excel XML format. XML (extensible mark up language) is a type of mark-up language that looks something like HTML, but is designed more for communication of information rather than the presentation of information. XML has been incorporated into the Office 2007 file formatting system to facilitate communication of data between Microsoft Office programs, and other applications.

Because of this file format change, Excel 2007 file types are different from the file types of previous versions of Excel. You should have no problems using Excel 2007 to open and work with files created with earlier versions of Excel. If you find that you can't use Excel 2007 files with earlier versions of Office, like Office XP or Office 2007, you may require a software patch available from Microsoft Office Online or Microsoft Update.

When you are saving a workbook file with Excel 2007, you can specify Excel 97-2007 Workbook as the file type by using the Save As type drop list in the Save As dialogue box. This can be helpful if you are worried about compatibility with earlier versions of Microsoft Office.

In most computer systems, a file is normally identified by a file name and a three or four letter file type extension. Abstract.doc, for example, is a Microsoft Word document named Abstract. The three letter

"doc" extension signifies that this file is a Microsoft Word document. The following table summarizes some of the file types associated with Excel 2007.

xlsx   This file extension signifies an Excel 2007 workbook file. Earlier versions of Excel used the xls extension.

xlsm   This Excel 2007 file extension signifies a macro enabled workbook.

xltx   This extension signifies an Excel 2007 template file. (Earlier versions used xlt.)

xltm   This extension indicates that the file is a macro enabled Excel 2007 template file.

xlsb   This extension signifies an Excel binary workbook.

xlam   This extension signifies an Excel add-in. An add-in is a type of program that adds extra features or functionality to Excel.

You may also see file type extensions like HTML, HTM, or MHTML associated with Excel files if they are being published as Web pages. These file types are most commonly used on the World Wide Web, or in help files that are to be viewed with a Web browser.

It is always a good idea to keep your files organized by creating and naming appropriate folders to contain your files. You should also give your Excel files names that imply something about their content, like Budget03 or YearlyReport05.

SECTION 3: Modifying a Worksheet

In this section you will learn how to:

- Move and copy data
- Move and copy formula
- Identify relative and absolute references in a formula
- Create an absolute reference in a formula
- Inserting and deleting ranges
- Use Smart Tag options

Moving your Data

The ability to manipulate your data is crucial to building worksheets and workbooks. To work with your data efficiently, you should know how to cut, copy, and paste single and multiple items. You should also know how to insert and delete cells, rows, and columns, and understand how to use paste special. You should also know how to drag and drop cells, and be familiar with Excel's undo, redo, and repeat features.

Dragging and Dropping Cells

It is a simple matter to drag and drop cells. First, select a cell by clicking on it, making it the active cell.

	A	B	C
1	numbers		
2	100		
3	200		
4	300		
5	400		

When you see the thick black border around the cell, move your mouse pointer over one edge of the border. You will see your pointer turn into a four-headed arrow.

Now, hold your left mouse button down and drag the cell contents to a new location.

	A	B	C	D
1	numbers			
2	100			
3			200	
4	300			
5	400			
6				

In this example, the value 200 was dragged from position A3 to position C3.

If you select a group of cells, the selection will be surrounded by a thick black border. You can mouse drag a selection by grabbing this border, just as you dragged a single cell.

You can drag and drop cells pretty much anywhere in the worksheet. If you drag a cell with a formula, the formula will move to the place you drop it. If you drag a cell that is referenced in a formula (a single cell, or a selection of cells) all formulas that reference the cell will be adjusted to reference the new location.

Be careful when dragging and dropping in a worksheet. It is easy to drag and drop cells by mistake when trying to perform other operations.

How to Cut, Copy, and Paste Cells

To be able to move your data effectively, you must know how cut, copy, and paste cells. To cut and paste a cell, right click on the cell and select Cut from the drop down menu.
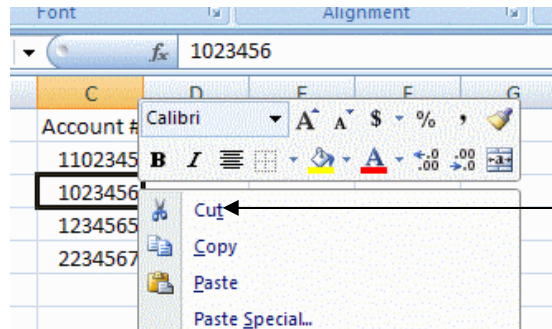

The cell will be surrounded by a dark and light flashing border. When you see this flashing border, move your mouse pointer to one of the border's edges and when it turns into a cross arrow, you can drag the cell to another location.

You will notice that the data has been removed (cut) from its original location (C3) and relocated in the place where it was dropped (D3).

You can also right click on a cell, select the Cut option, and then point and click or use the arrow keys to move to your destination. When you select a destination cell, right click it, and select Paste from the drop down menu. The data will be relocated in the destination cell and removed from its original location.

Often, data needs to be duplicated in another area of the worksheet without disturbing the original cells. To achieve this goal, use the Copy feature. To use Copy, once again right click on a data cell, but this time select Copy from the drop down menu. The cell will once again have a dark and light flashing border.
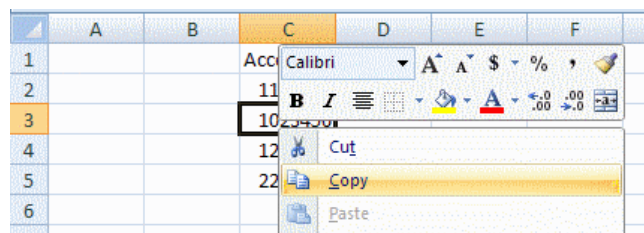
Now move to a new location as before, by dragging, pointing, and clicking, or by using the arrow buttons.
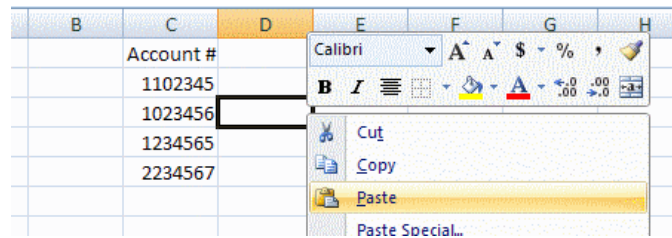
The data will be pasted to its new location, and the original cell and data will remain unchanged.

	A	B	C	D
1			Account #	
2			1102345	
3			1023456	1023456
4			1234565	
5			2234567	

Notice that as long as the flashing dark and light border is around the source cell, you will be able to paste data that you copied from it. It is also important to remember that cutting and copying moves formatting information to the destination as well as the data.

How to Cut, Copy, and Paste Multiple Cells and Items

Cutting copying and pasting multiple cells is a lot like cutting copying and pasting single cells. The important difference is that you must select a range of cells first.

To begin, select a range of cells by dragging the thick cross pointer.

When you have made your selection, right click on any cell in the selected range, and choose Cut or Copy from the dropdown menu. The selected range will have a light and dark flashing border.

	A	B	C	D
1			Account #	
2			1102345	
3			1023456	
4			1234565	
5			2234567	
6				

The next step is to select a destination area by dragging and dropping, pointing and clicking, or using the arrow keys.

	A	B	C	D	E	F
1			Account #			
2			1102345			
3			1023456			
4			1234565			
5			2234567			
6						
7						

If you choose a destination cell by pointing and clicking the mouse, or with the arrow keys, the selected block of cells will be copied so that the destination cell is in the upper left corner of the new block.

	A	B	C	D	E
1			Account #		
2			1102345		
3			1023456		
4			1234565		
5			2234567		1102345
6					1023456
7					1234565
8					2234567
9					

If you cut a selection of data, it is just like cutting a single cell in the sense that the cell information in the original selected area will be removed (cut) from the worksheet.

When you cut or copy items, they are saved to the clipboard. You can view the items on your clipboard at any time by accessing the Clipboard Task Pane. You can do this by clicking the Home tab to display the Home Ribbon, and then clicking the small arrow at the bottom right of the clipboard button.

Any items copied from other Microsoft Office applications like Power Point, Word, or Access, (up to 24 items) will be saved on this clipboard. You can paste items to your Excel worksheet (at the location of the active cell). You can also copy items to the clipboard from Excel, and paste them to another program like Word.

2 of 24 - Clipboard

Paste All   Clear All

Click an item to paste:

1102345 1023456
1234565 2234567
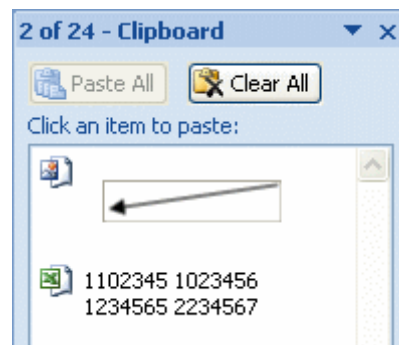
You can clear all the items from the office clipboard by clicking the Clear All button, or you can paste all of the items on the clipboard by using the Paste All button.

How to Use Paste Special

Paste Special is a very interesting and useful Excel feature. You can use Paste Special to perform a lot of operations that might be awkward and tedious to perform using other Excel tools.

Paste Special does more than just paste data. It allows you to use the values you will paste to perform operations on the destination cells.

In this worksheet we have a column labeled quantity, a column labeled price, and a column labeled sales which is calculated with the formula (quantity * price).

	A	B	C	D	E
1	Quantity	Price	Sales		
2	10	$ 11.00	$ 110.00		
3	11	$ 12.00	$ 132.00		
4	15	$ 10.00	$ 150.00		
5	34	$ 5.00	$ 170.00		
6	52	$ 4.00	$ 208.00		
7	1	$ 3.50	$ 3.50		
8	78	$ 6.75	$ 526.50		
9	50	$ 2.00	$ 100.00		

Suppose that all prices are to be raised by 20%. You can manually enter the new prices, use a formula in a new column to calculate the prices, or you can use paste special.

To use paste special for this situation, we would enter the value 1.2 (the numerical equivalent of 20%) in cell D1, then right click on cell D1 and choose Copy, giving the cell a flashing border.

	A	B	C	D	E
1	Quantity	Price	Sales	1.2	
2	10	$ 11.00	$ 110.00		
3	11	$ 12.00	$ 132.00		
4	15	$ 10.00	$ 150.00		
5	34	$ 5.00	$ 170.00		
6	52	$ 4.00	$ 208.00		
7	1	$ 3.50	$ 3.50		
8	78	$ 6.75	$ 526.50		
9	50	$ 2.00	$ 100.00		

Next, select the column of prices by dragging the thick cross pointer. When the selection is highlighted in blue, right click on the selected area, and choose Paste Special from the drop down menu.
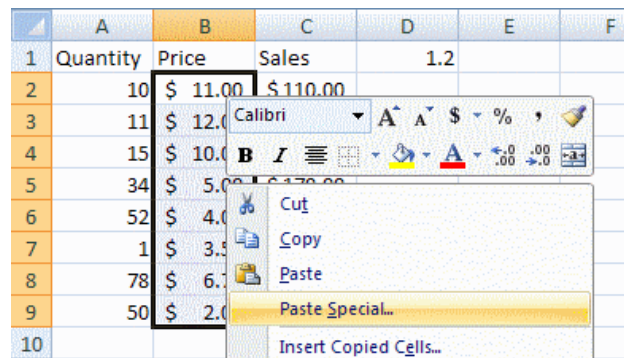
This will display the Paste Special dialogue box.

There are a number of options In the Paste Special dialogue box that you can choose from. Since we want to increase the prices in the selected range by 20%, we want to multiply each price in the selected range by 1.2 (the value that we copied). To do this we would select the Multiply radio button and then click the OK button.

Notice that the prices have now been increased by 20%, and Sales have increased as well, taking the new prices into account.

⬛	A	B	C	D	E
1	Quantity	Price	Sales	1.2	
2	10	$ 13.20	$ 132.00		
3	11	$ 14.40	$ 158.40		
4	15	$ 12.00	$ 180.00		
5	34	$ 6.00	$ 204.00		
6	52	$ 4.80	$ 249.60		
7	1	$ 4.20	$ 4.20		
8	78	$ 8.10	$ 631.80		
9	50	$ 2.40	$ 120.00		
10					

By using paste special, we have not copied the value 1.2 in cell D1 to the selected range. Instead, we have used the value to perform a multiplication operation on the values in the selected range.

Remember, you must copy the value or values that you want to paste, creating a flashing light and dark border around the cell or range, and then select the cell or range that you want to paste to, before invoking the Paste Special dialogue.

Like the regular copy and paste operation, you can use single or multiple items with Paste Special. You can copy and Paste Special a single item to a single cell, a single item to multiple cells, and multiple items to multiple cells.

With Paste Special you can choose to add the copied value, subtract it, multiply it, or divide by selecting the appropriate radio button. You can also choose to paste only values, so a formula will not be copied but its result will.

Take a look at the options available to you in the dialogue box, and remember, the default setting under the Paste heading is All.

Moving and copying formulas

In order to understand what happens when formulas are moved or copied, it is important to know about relative cell references and absolute cell reference; and understand how each type of reference behaves in a formula when moved or copied.

Relative cell references

In Excel, a specific cell can be named or referred to with a cell reference. A simple cell reference is just the letter at the top of the cell's column, paired with the number at the left of the cell's row. Cell A1, for example, is the first cell in the top left corner of the Excel grid (first column letter, A, and first row number, 1).

C2		▼	○	*f*ₓ	=A2+B2	
	A	B	C	D	E	
1	A number	A number	The Sum			
2	500	250	750			
3						
4						

In the image above, Cell A2 contains the value 500 while cell B2 contains the value 250. Cell C2 contains a formula (=A2+B2, visible in the formula bar) that adds these two numbers by using their respective cell references.

The first rule of formulas is that all formulas must begin with an equals sign. This tells Excel that what follows is a formula.

If you use your mouse to drag the cell containing the formula (E3) down to fill part of the column (using the thin cross mouse pointer), you will see zeros in the cells that you drag the formula to.

C8		▼	○	*f*ₓ	=A8+B8
	A	B	C	D
1	A number	A number	The Sum	
2	500	250	750	
3			0	
4			0	
5			0	
6			0	
7			0	
8			0	

You should also notice that the formula for cell C8 (the active cell) can be read from the formula bar as =A8+B8. But remember, the original formula in C2 (the cell we filled from) was =A2+B2. The formula has changed to reflect the relative positions of the cells. The formula in cell C2 adds the two cells to its immediate left. Each cell that this formula has been filled to will contain a formula that adds the two cells to its immediate left.

In other words, the formula adopts cell references that are relative to its position in the worksheet. This maintains the same relative positioning of the original formula. This results in zeros in the locations where the cells to the immediate left of the formula are empty.

This is called a relative cell reference, meaning that if the formula is moved (dragged, filled, or copied) the cells involved will change to reflect the formula's new position.

Absolute cell references

In the example below, we have mouse dragged a formula with absolute references to fill the six cells beneath it.

	A	B	C	D	E
	C8		▼	f_x =$A$2+$B$2	
1	A number	A number	The Sum		
2	500	250	750		
3			750		
4			750		
5			750		
6			750		
7			750		
8			750		

Notice that this time, the value of 750 is in each cell, and the formula contained in the active cell, C8, contains dollar signs. These dollar signs tell Excel that the references in the cell are absolute: no matter where the formula is copied or filled to, it will always use the same cell references.

The original formula at cell C2 is =$A$2+$B$2. When this formula is copied or dragged or filled anywhere on the worksheet, the formula will retain the same cell references because they are marked with dollar signs.

To summarize, a reference like A1 it is a relative cell reference because there are no dollar signs included. The cell reference $A$1 is an absolute cell reference, because of the dollar signs in front of the letter and number. The cell reference $A1 has an absolute column reference (because the column letter has a dollar sign in front). In this case, the column reference will never change. The cell reference A$1 has an absolute row reference, meaning the row reference will never change.

If you want to copy or fill a formula across cells, and you want the cells in the formula and the result of the formula to change relative to location, use relative references.

If you want to copy or fill a formula across cells, and you always want the specific cells used in the formula to remain the same, use absolute references.

Inserting and Deleting Cells, Rows, and Columns

Suppose you are building a worksheet with Excel 2007, and you realize that you forgot to include a row or column of important data. It could also be the case that a row or column of data is unnecessary or contains multiple errors and must be removed. Excel provides a simple way for you to delete or insert columns or rows if you have to.

To insert a column in a worksheet, first right click on the letter at the top of the column. A drop down menu will be displayed.
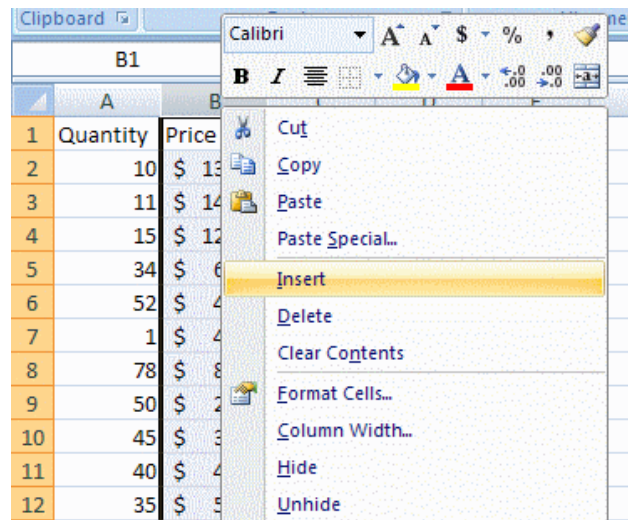
Click the Insert option from the menu. Now, all of the data to the right of, and including the highlighted column, will be shifted one column to the right. In this example, the data in column B will now be shifted to column C, the data in column C to column D, and so on.

Now there is an empty column where you can enter a new label and data.

This procedure is essentially the same for inserting rows. To insert a row, just right click on the row number and choose Insert from the menu. All of the data in the row you selected as your insertion point, and the data in the rows beneath it, will be shifted down one row. This will leave an empty row where you can enter new data.

On the next page is a worksheet, just before inserting a row at position 8.
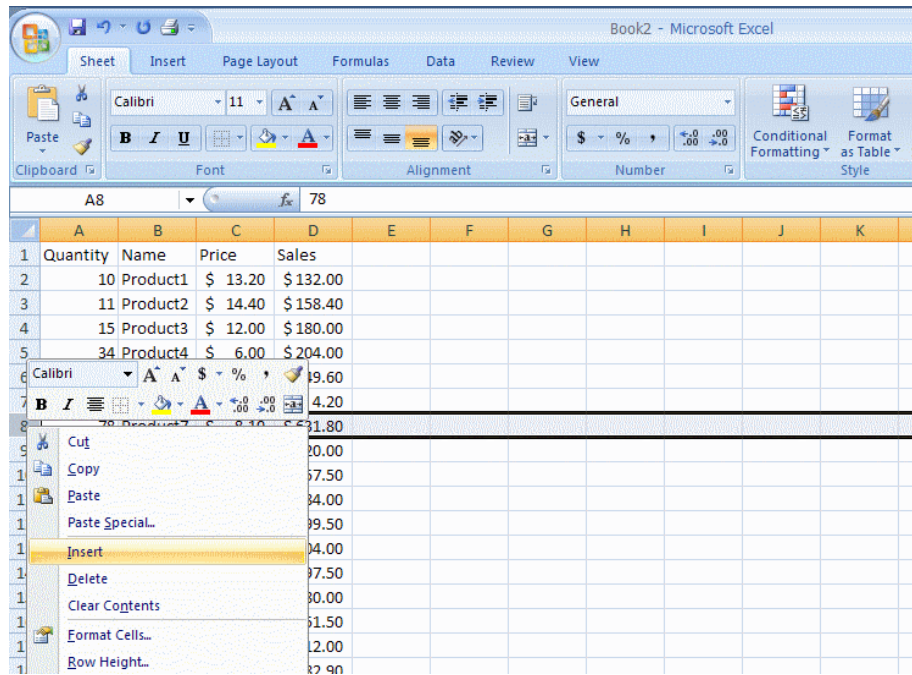
This is a worksheet just after inserting a row at position 8.

It is also easy to delete rows and columns. To delete a column, right click on the letter at the top of the column and choose Delete from the drop down menu. All of the data to the right of the column will be shifted one row to the left, and the old information will be replaced with the data that was in the column to the immediate right.

To delete a row, right click on the row number and choose Delete from the drop down menu.
All of the data below the column will be shifted up one row, and the old information will be replaced with the data that was in the row directly beneath.

To insert a cell, right click on it and click Insert. The Insert dialogue box will appear.
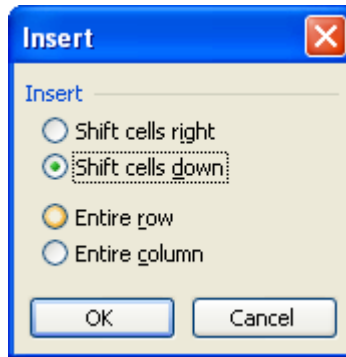
When you insert a cell, the existing data must be relocated. You can click the radio buttons in the dialogue box to specify how the data will be moved. Selecting Shift Cells Right and clicking OK will move the item in the active cell, and all the items to the right of it, one cell further to the right, leaving a blank cell at the original location. For example, the data in cell A1 would move to B1, and the data in B1 would move to C1 and so on, leaving cell A1 empty.

Selecting Shift Cells Down will perform a similar operation, but in the direction of the bottom of the worksheet. For example, if you inserted a cell at location B1, the data in B1 would shift to B2 and the Data in B2 would shit to B3, and so on, leaving B1 empty.

The Entire Row or Entire Column options allow you to insert a row or a column as previously discussed.

Let's look at an example. Here is our worksheet before inserting a cell at C5:

	A	B	C	D	E
1	Quantity	Name	Price	Sales	
2	10	Product1	$ 13.20	$ 132.00	
3	11	Product2	$ 14.40	$ 158.40	
4	15	Product3	$ 12.00	$ 180.00	
5	34	Product4	$ 6.00	$ 204.00	
6	52	Product5	$ 4.80	$ 249.60	
7	1	Product6	$ 4.20	$ 4.20	
8	78	Product7	$ 8.10	$ 631.80	

After inserting a cell at C5 (shifting cells right):

	A	B	C	D	E
1	Quantity	Name	Price	Sales	
2	10	Product1	$ 13.20	$ 132.00	
3	11	Product2	$ 14.40	$ 158.40	
4	15	Product3	$ 12.00	$ 180.00	
5	34	Product4		$ 6.00	$ 204.00
6	52	Product5	$ 4.80	$ 249.60	
7	1	Product6	$ 4.20	$ 4.20	
8	78	Product7	$ 8.10	$ 631.80	

Smart Tags and Options Buttons

Excel's Smart Tags and Option Buttons can provide you with information and actions based on the context of what you are currently doing with your worksheet.

In this lesson you will learn what smart tags are and how to use them. You will also learn about the Error option button, the AutoFill option button and the Paste option button, and how they can make tasks easier.

What Are Smart Tags?

When working in Excel, buttons will sometimes appear based on the context of your current actions. These buttons will provide a menu of options related to the information you are entering or the action you are performing. A Smart Tag is a button that appears in response to information you enter in a worksheet.

As an example, if you are working in Excel 2007, and you enter the letters XRX in a cell, a small purple triangle will appear in the lower right corner of the cell. This indicates the presence of a smart tag.

XRX

In this case, XRX happens to be the stock exchange symbol for Xerox Corporation. If you let your mouse pointer hover over the triangle a small button will appear.
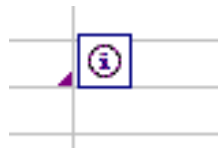
 If you move your mouse pointer over the button, a drop down list will become available. Click the downward pointing triangle (list indicator) and a menu of options will appear.
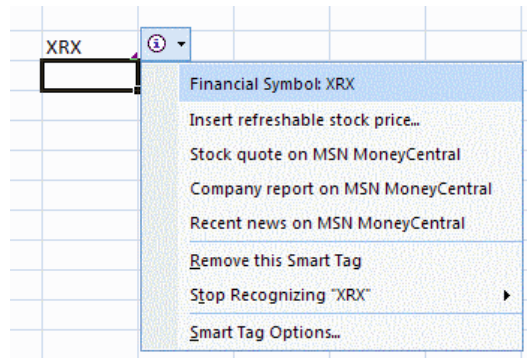
If you have an Internet connection, you can click one of the Smart Tag options and receive online information about this company and you can insert information about the company's stock into your worksheet.

The Error Option Button

Let's say you are building an Excel worksheet like the one shown here, and you enter the formula =A2/B2 into cell C2.

Because cell B2 has the value 0, the formula =A2/B2 causes an error (division by zero is mathematically undefined). Notice that there is a small green triangle in the upper left of the cell. If you click on this triangle, you will see the Error option button. This button has a drop down menu that offers options to help resolve the error.

This is a good example of how Smart Tags and Option Buttons can provide context sensitive help. If you made another type of error (other than division by zero), the choices on the option button's menu would change to reflect this error.

The AutoFill Option Button

After using AutoFill to complete a row or column, the AutoFill option button will appear.
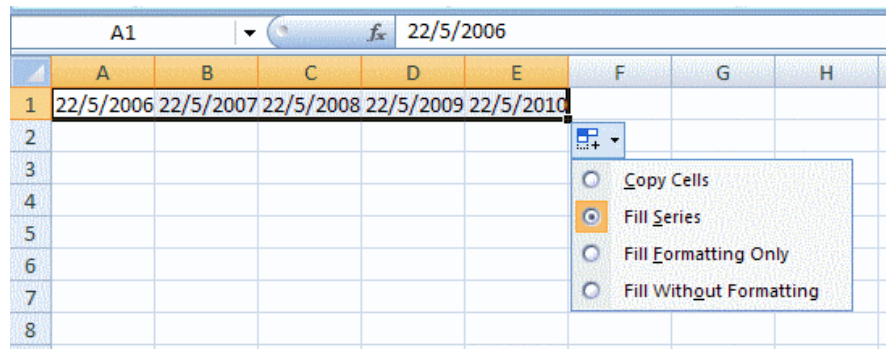
Once again, options are provided that are dependent on the context of your actions. If you use AutoFill to complete dates, for example, the AutoFill option button provides a set of options that will pertain to dates.
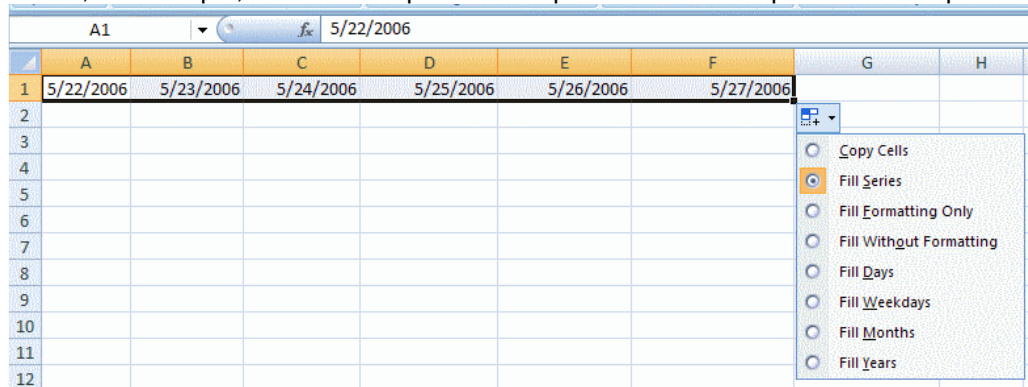
The Paste Option Button

Another option button provided with Excel is the Paste option button. You will see this button appear after you perform the paste command.
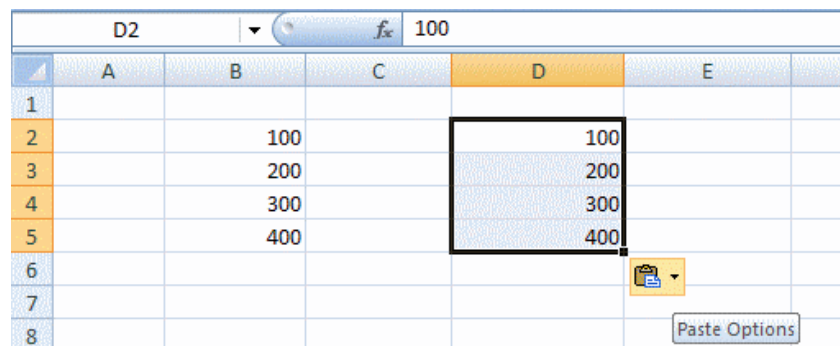
If you click the menu indicator on the button (small downward pointing triangle), a menu will drop down with options regarding whether the source or destination format will be retained, whether the cell widths will be adjusted, or if the cells should be linked.

Setting Smart Tag Options

You can configure Smart Tags by displaying the Office menu and then clicking the Excel Options button near the bottom of the menu. When the Excel Options screen appears, select Proofing from the panel on the left, and then click the AutoCorrect Options button.
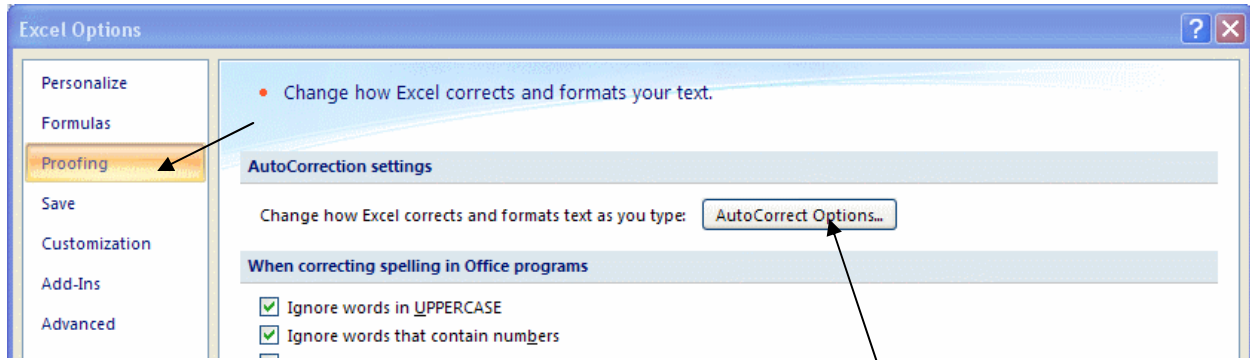
When the AutoCorrect Dialogue box appears, click the Smart Tags tab to see the smart tags options.
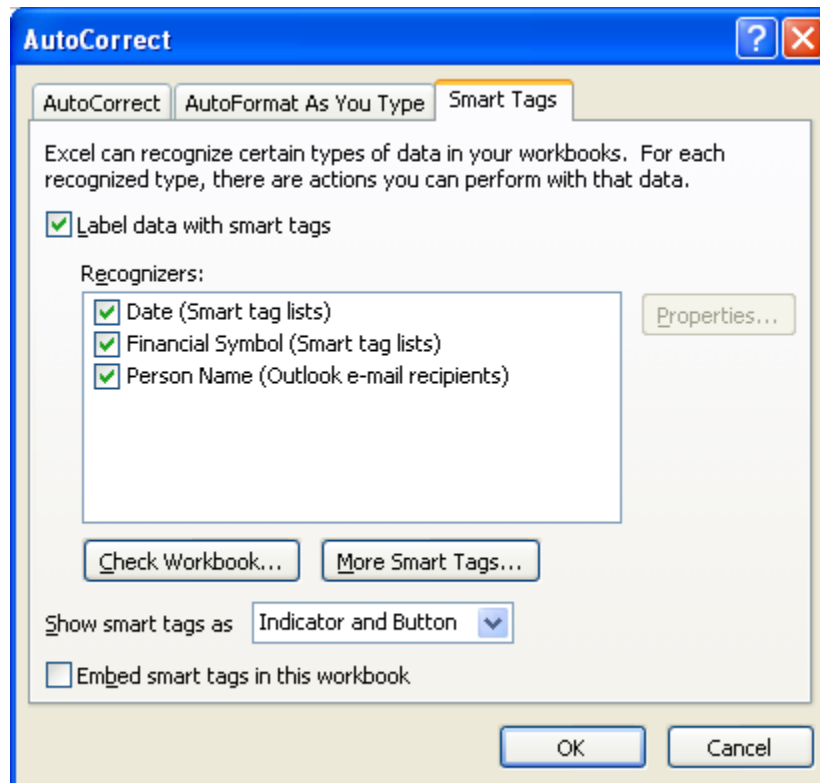
To make smart tags available in your worksheets, you should put a check in the Label Data with Smart Tags check box. If you change the smart tag settings, click the OK button to activate the changes.

SECTION 4: Using Functions

In this section you will learn how to:
- Identify a function in a formula
- Insert a function into a formula
- Use the SUM, AVERAGE, MAX, MIN and COUNT functions

What are Functions?

In Excel, a function can be described as a built in tool for performing mathematical or logical tests. Quite often, you may need to perform operations in your worksheets that involve many cells, like totaling a lengthy column of numbers or averaging a large group of data. When dealing with financial data, you might have to evaluate loan amortizations or future values. In statistical applications, you might have to determine the standard deviation or variance for a group of numbers. Excel's functions can help you with all of these tasks.
Functions can also be used to perform searches for specific values or to perform operations based on conditions that you set.

Operations that are complex and involve many cell references can be difficult or even impossible to implement with basic arithmetic formulas. Thankfully, Excel provides a wide range of built in functions that help make even very complex or repetitive calculations easy.
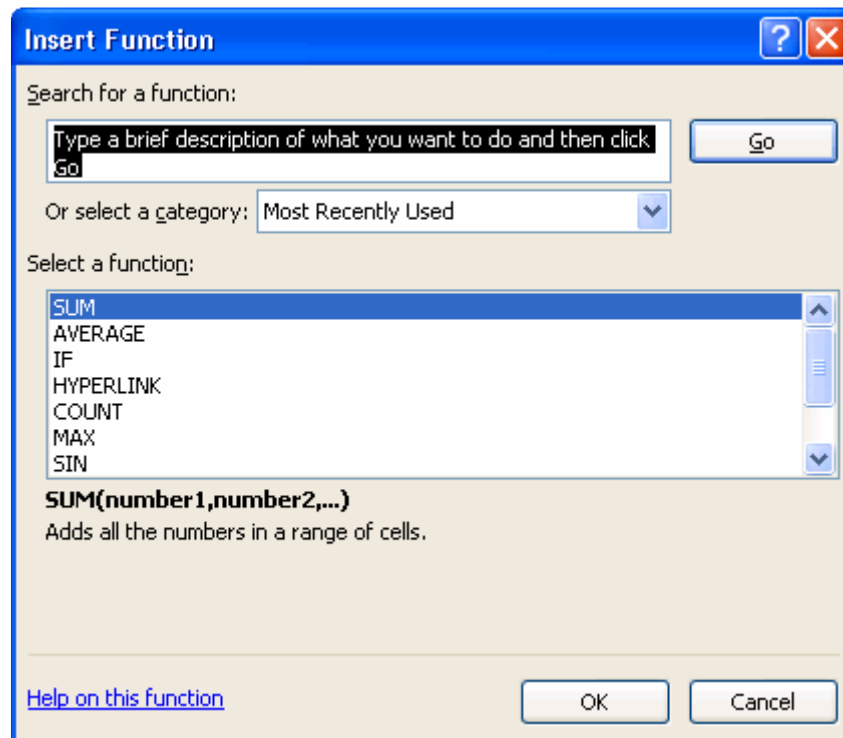
Finding the Right Function

What do you do if you have to perform a calculation that is mathematically complex or involves a large number of cells? One suggestion is to try and find a function that will perform the calculation for you. Excel 2007 has such a wide variety of built in functions that you are likely to find a function or combination of functions that will solve your problem.

In Excel 2007, you can use the Insert Function dialogue box to help you find the function you need for a given situation.
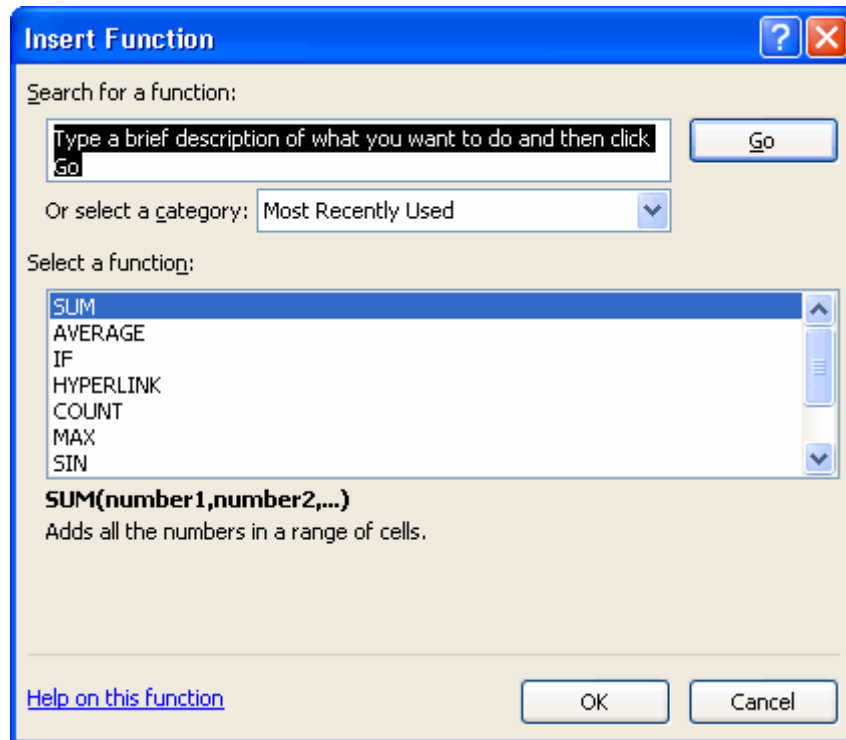
The Insert Function dialogue box can be displayed by clicking the Insert Function button from the Function Library button group.
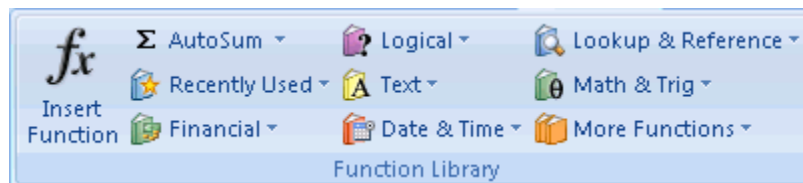
You can also click the small fx button next to the formula bar to display the Insert Function box.

You will notice that the Insert Function box has a drop list of function categories next to the words Select a category. When you select a category that seems appropriate for your given situation, you will see a list of possible functions in the Select a Function area.

If you select a function, an example of the function and its parameter list will be shown in bold near the bottom of the dialogue box. You will also see a brief description of the function that you have selected. For additional help on using the selected function you can click the blue text link (Help on This Function) to open a help window with more links and information.

If you type a function name or a description of what you are trying to do, in the Search for a function field, you can then click the GO button to have Excel search through its library of functions to find one that may suit your purposes.

Excel 2007 has a wide range of functions. For example, you can use functions to find totals, averages, counts, minimum (smallest) and maximum (highest) amounts.

SUM   Calculates the sum for a range of cells.

AVERAGE   Returns the average for a range of numbers.

MAX   Returns the largest number from a range of numbers.

MIN   Finds the minimum number in a range of numbers.

COUNT   Will count the number of cells in a list that contain numbers.

Using AutoSum

It is often useful to have totals or sums for the rows and columns of numbers in your worksheet. AutoSum can easily add all of the numerical data in a column or row.

	A	B	C	D	E
1	Year	Ave Temp	Ave Rain	Ave Snow	
2	1990		12		
3	1991		12		
4	1992		10		
5	1993		8		
6	1994		7		
7	1995		6		
8	1996		9		
9	1997		4		
10					

First, make the cell immediately below the column of data (or immediately beside the row of data) the active cell. Next, click the Formulas tab and then click AutoSum button.
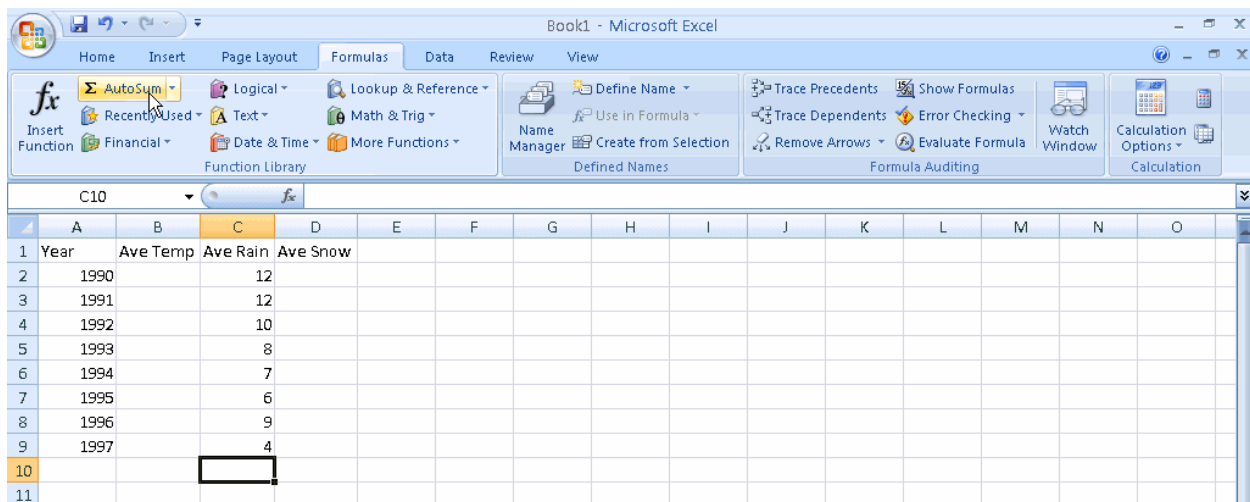
The column or row of data to be summed will now be enhanced by an animated border. Notice that you can see the range to be summed in the active cell (C2:C9).

	A	B	C	D	E
1	Year	Ave Temp	Ave Rain	Ave Snow	
2	1990		12		
3	1991		12		
4	1992		10		
5	1993		8		
6	1994		7		
7	1995		6		
8	1996		9		
9	1997		4		
10			=SUM(C2:C9)		
11			SUM(**number1**, [number2], ...)		
12					

Press Enter and the total, 68, will be displayed in the cell.

	A	B	C	D
1	Year	Ave Temp	Ave Rain	Ave Snow
2	1990		12	
3	1991		12	
4	1992		10	
5	1993		8	
6	1994		7	
7	1995		6	
8	1996		9	
9	1997		4	
10			68	
11				
12				

SECTION 5: Formatting Worksheets

In this section you will learn how to:
- Apply font formats to a worksheet
- Alter alignment
- Apply number formats to a worksheet
- Add patterns and colour to a worksheet
- Add borders to a worksheet
- Change column width and row height

The Home Ribbon

Common formatting features can be found in the Font, Alignment, Number and Styles groups on the Home Ribbon (below).
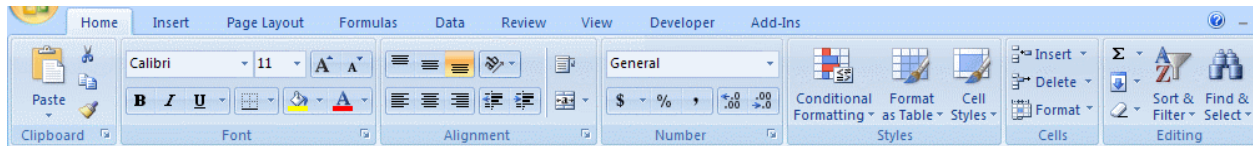
Font

The font button group lies on the Home Ribbon next to the clipboard group.

These buttons allow you to change a font's type, size, color, and style. The following table provides a brief description of the functions of these buttons

The Font Face Button

Calibri

This button allows you to change the type of font. Clicking the small down pointing arrow will allow you to select from a large list of available fonts. The scroll bar at the side of the font list will allow you to view all of the fonts available.
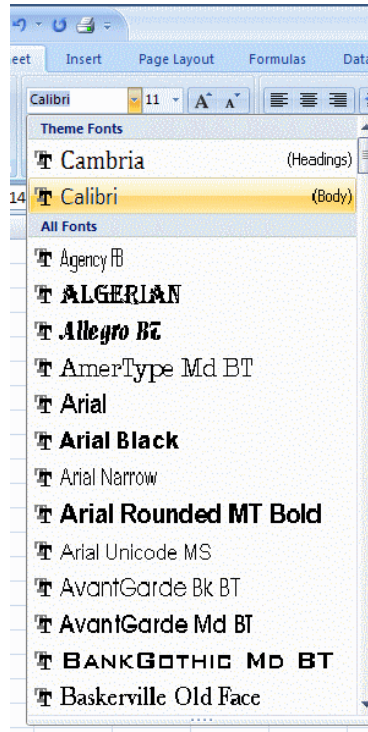
Each individual item in the list is depicted in its own font.

The Font Size Button

11

Use this button and its associated list of sizes to change the font size. You can also enter a size directly by clicking on the area that displays the current size and then entering a new number.

Increase And Decrease Font Size Buttons

These buttons will increase and decrease the font size of a selected cell or cells by increments of one.

Bold, Italic, and Underline Buttons

These buttons will apply bold, italicized, or underlined effects to a cell or selection of cells.

B *I* <u>U</u>
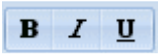
Borders

Clicking the small arrow on this button will display a list of borders that you can apply to a cell or selection of cells.

Fill Color and Font Color

The fill color button (paint bucket) will fill a cell or selection of cells with the specified color. The arrow next to the button displays a palette of color options.

The font color button (letter A) will color the text in a cell or selection of cells with the color that is specified. The arrow will display a palette of color options.

Font Group Button
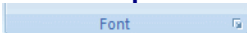
Font

Clicking the small arrow at the right of this button will display the font tab of the Format Cells dialogue box, which provides numerous options related to cell formatting.

Alignment

The buttons in the alignment group control how data (text or numbers) appears in spreadsheet cells.
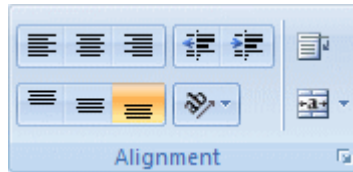
The following table provides brief descriptions of the alignment buttons.

Horizontal Alignment	The Align Left button will align the data in a cell or a selection of cells to the left edge of the cells. The Align Center button will align cell data in the center of the cells. The Align Right button will align cell data to the right edge of the cells.
Decrease and Increase Indent	These buttons will increase or decrease the amount of indent for the data in a cell or group of cells. The button with the left pointing arrow decreases the indent, while the button with the right pointing arrow increases the indent.
Vertical Alignment	These buttons align your data relative to the top, middle, and bottom of the cells.
Text Orientation	This button will rotate the text in a cell to various positions.
Wrap Text	If there is too much data for the length of a cell, the wrap text button will display the data on multiple lines so that it is visible.
Merge and Center	This button will merge multiple selected (empty) cells into one larger cell. Data

in the new large cell will be centered.
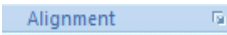
Alignment Group   Clicking the small arrow on this button will display the alignment tab of the
                                   Format Cells dialogue box.

Number

The number button group controls how numerical values are displayed in cells. In Excel, numbers can have different formats including normal, number, accounting, scientific, fraction, percentage, date, and time.
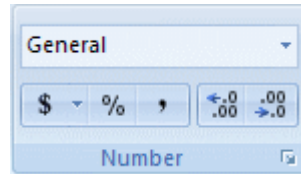
Let's take a look at each command in this group.

Number Format List   Use this list to choose what format will be applied to a cell or selection of cells.
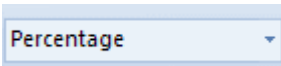
Currency, Percent, and Comma   Use these buttons to select a type of currency, a percent, or a comma separated number format for a cell or group of cells.
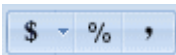
Increase/Decrease Decimal Places   These buttons will increase or decrease the amount of decimal places shown for a cell or selection of cells.
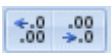
Number Group   Clicking the small arrow at the right of this button will display the Number tab of the Format Cells dialogue box.
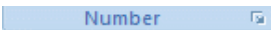
Style

The style button group allows you to quickly apply table styles to groups of cells and individual styles to individual cells. There is also a conditional formatting control which allows you to quickly apply special color coding and other rules to cells conditionally (based on particular aspects or qualities of the data).
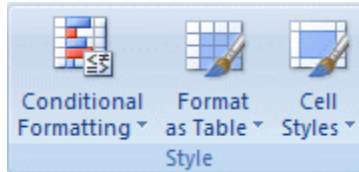
Conditional Formatting

This button allows you to create formatting rules based on conditions of your choice. For example, you can ask Excel to automatically color a cell red if the value in a cell is less than or equal to a certain number.
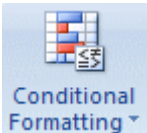
Format as Table

Clicking this button allows you to quickly format a selection of cells with one of several preset table styles.
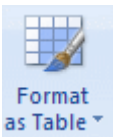
Format Cell

Clicking this button allows you to quickly format a cell or selection of cells with any one of a number of preset cell formats.
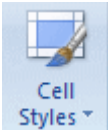
Adding Patterns and Colours

To add colors to a worksheet, first select the range of cells you want to add color to.

	A	B	C	D	E	F
1			**Budget**			
2	**Region**					
3		Income	Accounts Receivable	Overhead	Depreciation	Net
4	Region1	$1,000.00	$ 500.00	100	50	$ 1,350.00
5	Region2	$1,020.00	$ 510.00	150	55	$ 1,325.00
6	Region3	$1,040.00	$ 520.00	200	60	$ 1,300.00
7	Region4	$1,060.00	$ 530.00	250	65	$ 1,275.00
8	Region5	$1,080.00	$ 540.00	300	70	$ 1,250.00
9	Region6	$1,100.00	$ 550.00	350	75	$ 1,225.00
10	Region7	$1,120.00	$ 560.00	400	80	$ 1,200.00
11	Region8	$1,140.00	$ 570.00	450	85	$ 1,175.00
12	Region9	$1,160.00	$ 580.00	500	90	$ 1,150.00
13	**Total**	$9,720.00	$ 4,860.00	$ 2,700.00	$ 630.00	$ 11,250.00

Then, click on the Fill Color button in the Font group on the Home Ribbon to display your color choices.
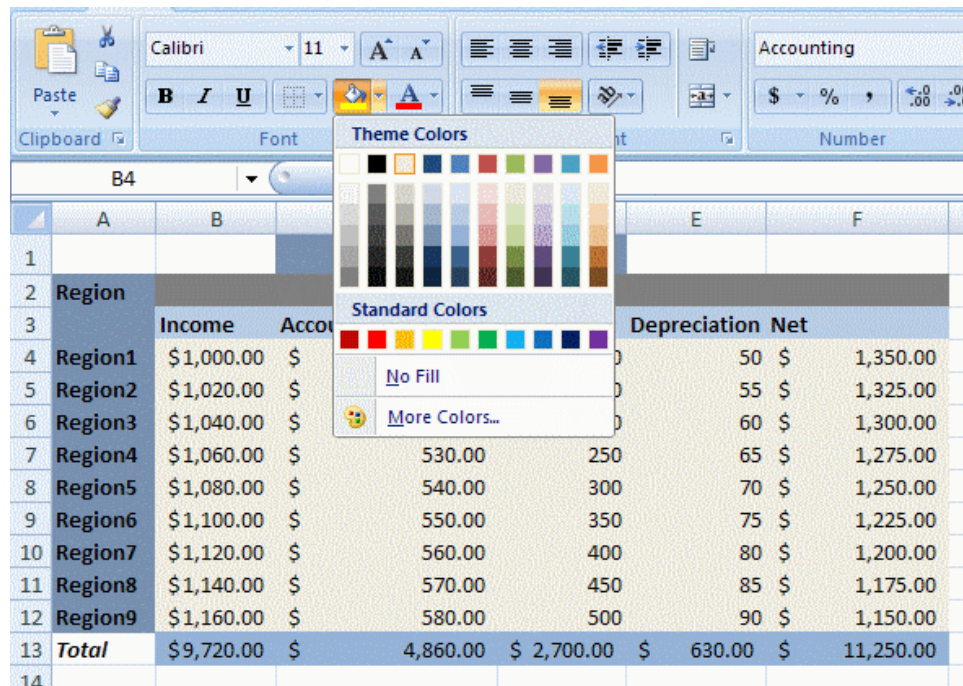
You can choose shades of colors from the theme you are currently using (theme colors) or you can choose from a selection of standard colors. As you let your mouse hover over each color in color menu, the selected cells will be previewed in that color.

 When you are ready, click on the color of your choice from the color menu and the color will be applied to the selected cells. The range will now be shaded with the color you selected.

The procedure to add patterns to a range is almost the same as for adding color. First, select a range of cells. Then, right click and choose Format Cells from the menu.

When the Format Cells dialogue box appears click the Fill tab, select a color, and choose a pattern from the drop down palette.

You can see what the pattern will look like in the sample bar at the bottom of the dialogue.

Format Cells

| Number | Alignment | Font | Border | Fill | Protection |

Background Color:

No Color

Pattern Color:

Pattern Style:

Fill Effects...   More Colors...

Sample

OK   Cancel
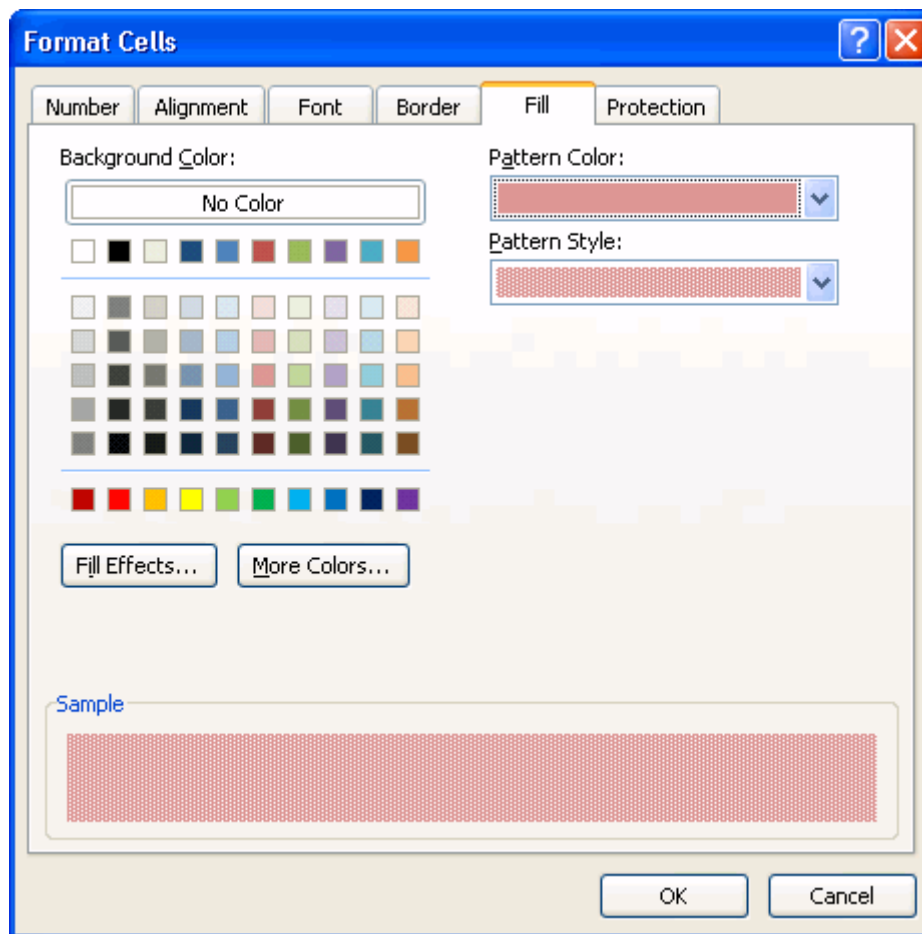
Here is the spreadsheet with the fill pattern applied to the selected cells.

	A	B	C	D	E	F
1			**Budget**			
2	**Region**					
3		Income	Accounts Receivable	Overhead	Depreciation Net	
4	Region1	$1,000.00	$ 500.00	100	50 $	1,350.00
5	Region2	$1,020.00	$ 510.00	150	55 $	1,325.00
6	Region3	$1,040.00	$ 520.00	200	60 $	1,300.00
7	Region4	$1,060.00	$ 530.00	250	65 $	1,275.00
8	Region5	$1,080.00	$ 540.00	300	70 $	1,250.00
9	Region6	$1,100.00	$ 550.00	350	75 $	1,225.00
10	Region7	$1,120.00	$ 560.00	400	80 $	1,200.00
11	Region8	$1,140.00	$ 570.00	450	85 $	1,175.00
12	Region9	$1,160.00	$ 580.00	500	90 $	1,150.00
13	*Total*	$9,720.00	$ 4,860.00	$ 2,700.00	$ 630.00 $	11,250.00

Adding Borders

Borders can help to separate and distinguish selected data within a worksheet, or give a worksheet a more polished overall appearance.

To add a border to your worksheet, select a range of data and display the borders option menu from the Borders button (on the Home Ribbon) by clicking on the small down pointing arrow.

From the menu, click on the type of border you wish to apply to the range, and the borders will be added.
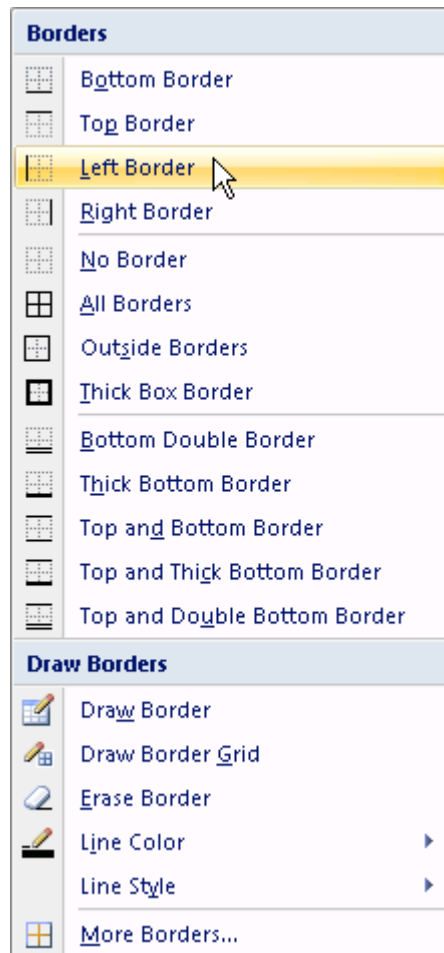
You can gain more control over the borders by clicking the More Borders option on the border drop down Menu. This will once again display the Format Cells dialogue box, this time with the Border tab activated. You can also display this dialogue box by clicking directly on the Borders button.

Customize line position

Customize line thickness
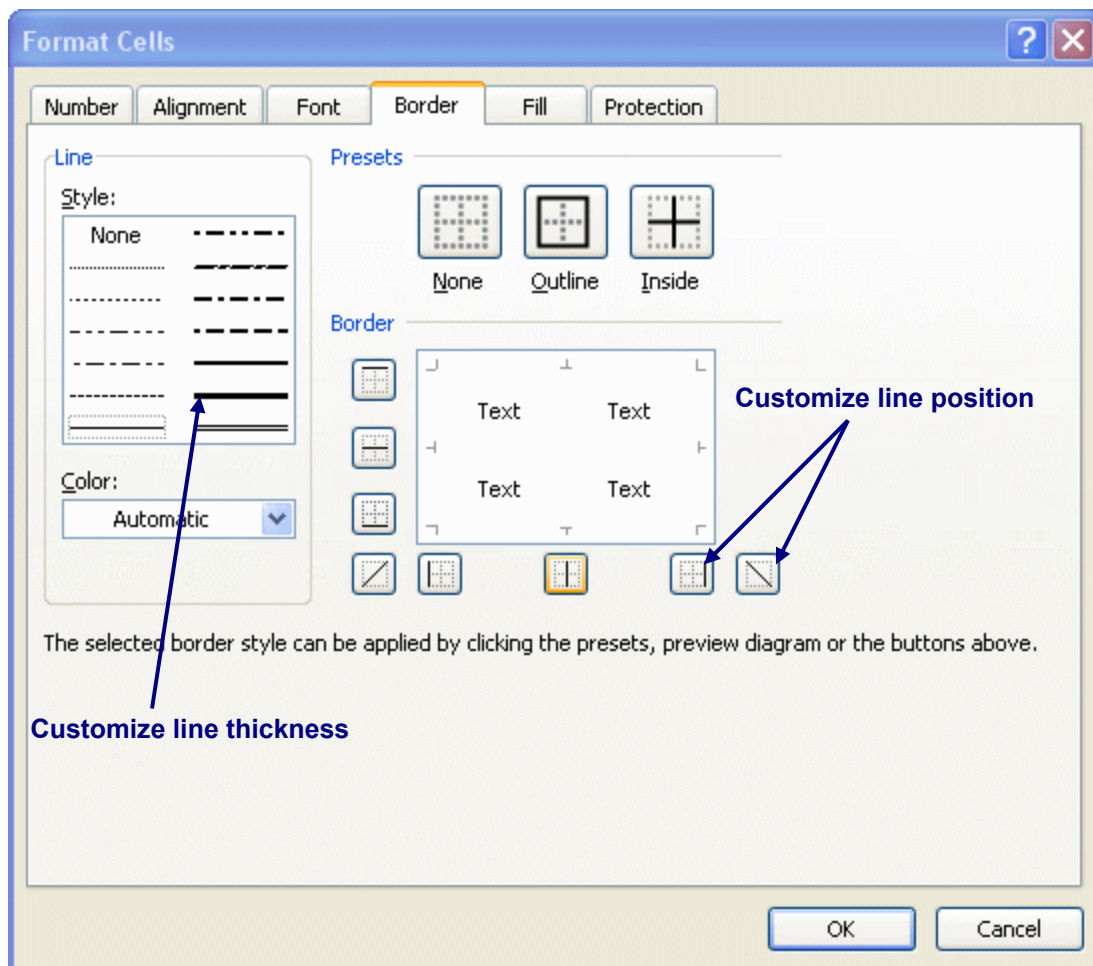
Here you can customize a border by choosing line thickness and the line position in and around the cell. When you are finished building a custom border, click OK to implement it on the selected cells.

Here is the selected data after borders have been applied.

Changing the Size of Rows or Columns

Sometimes it will be necessary to change the size of a row or column to fit the data contained in it. Or, you may want to change the size of a row or column just for the change in appearance. In either case, changing the size of a row or column is quite easy.

To change the size of a column, place your mouse pointer on the line that divides the column letters at the top of the column you want to change. For example, if you wanted to change the size of column B, you would place your mouse pointer on the line separating B and C. Your mouse pointer will turn into a vertical line with a small arrow on either side.
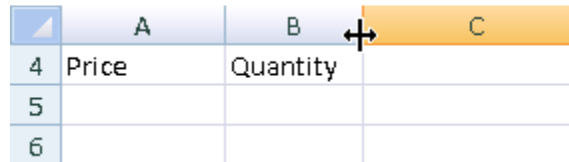
 When you see this pointer you can change the column size by holding the left mouse button and dragging the column edge to the left or right.
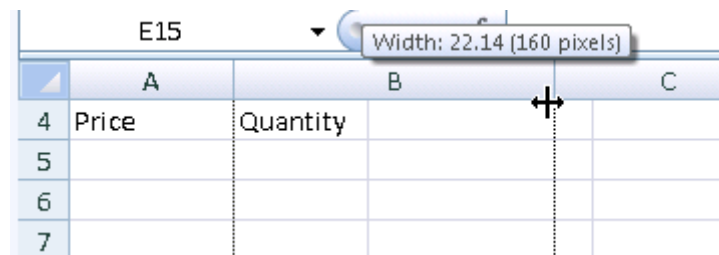
Now the size of column B has been changed.

To change the size of a row, place your pointer on the line separating the row numbers at the left of the worksheet. When you see the pointer with a vertical line and an arrow on either side, drag the edge of the row to change the size.
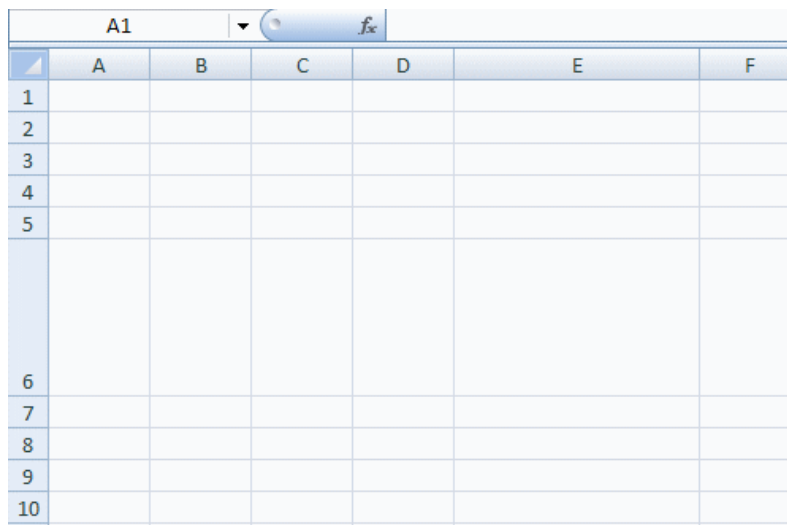
In this instance, the size of row 6 has been changed by dragging the column edge between the numbers 6 and 7 downward.

You can also change the size of rows or columns by clicking the small arrow at the right of the Format button in the Cell button group on the Home Ribbon. This will display a menu where you can choose a height or width option.
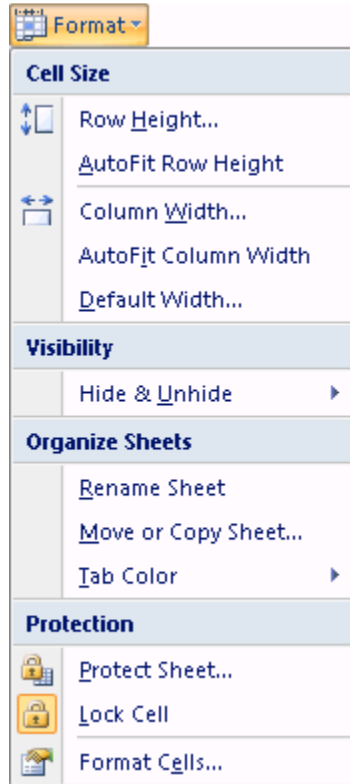
If you click the Row Height option, for example, you would see a Row eight dialogue box like this.

Changing the value in this box will change the height of the selected rows.

Format Painter

The Format Painter button on the Clipboard group will copy a specific format from one area, which can than be applied to another area. For example, you can select a group of cells and then click the format painter button to copy their format. You will then see a small paint brush next to your mouse pointer. When you select another different group of cells, the copied format will be applied (painted) to them

SECTION 6: Printing Workbooks

In this section you will learn how to:
- Use Print preview
- Use the print dialogue
- Use the Page Setup dialogue
- Use Quick Print

Printing your Workbook

It is often the case that printouts of your workbook (or parts of your workbook) will be required for one purpose or another. This is especially true for the workplace, where hard copies of data are often requested. Needless to say, knowing how to print data from your workbook is essential.
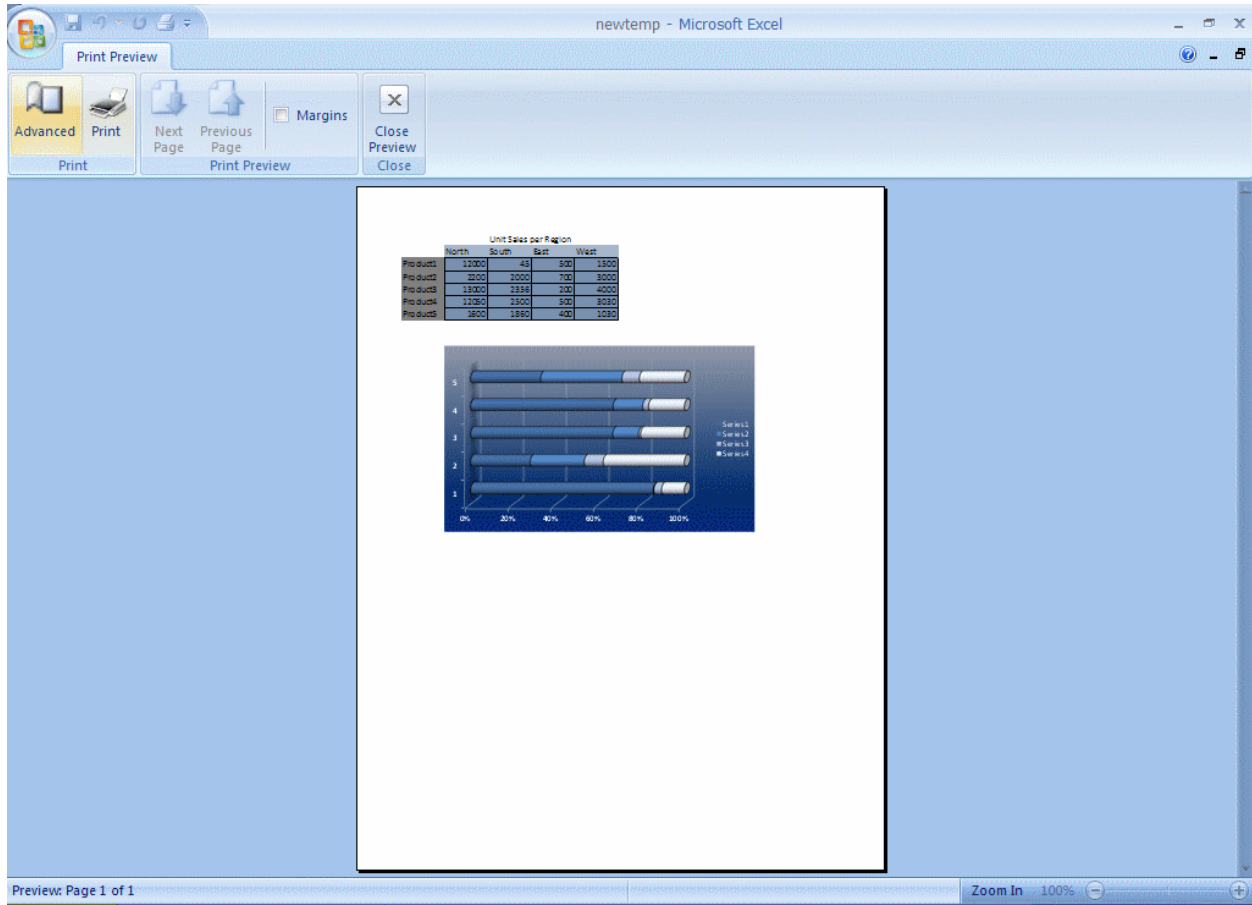
In this lesson, you will learn how to open Print Preview and how to use the print preview toolbar to set up print options. You will review the concept of quick printing and you will learn how to open and use the Page Setup dialogue box.

Opening Print Preview

To open Excel 2007's Print Preview screen, first expand the Office menu and click on the small arrow to the right of the Print menu item. This will display a Quick Print option (like the print option on the quick access toolbar) and a Print Preview option.
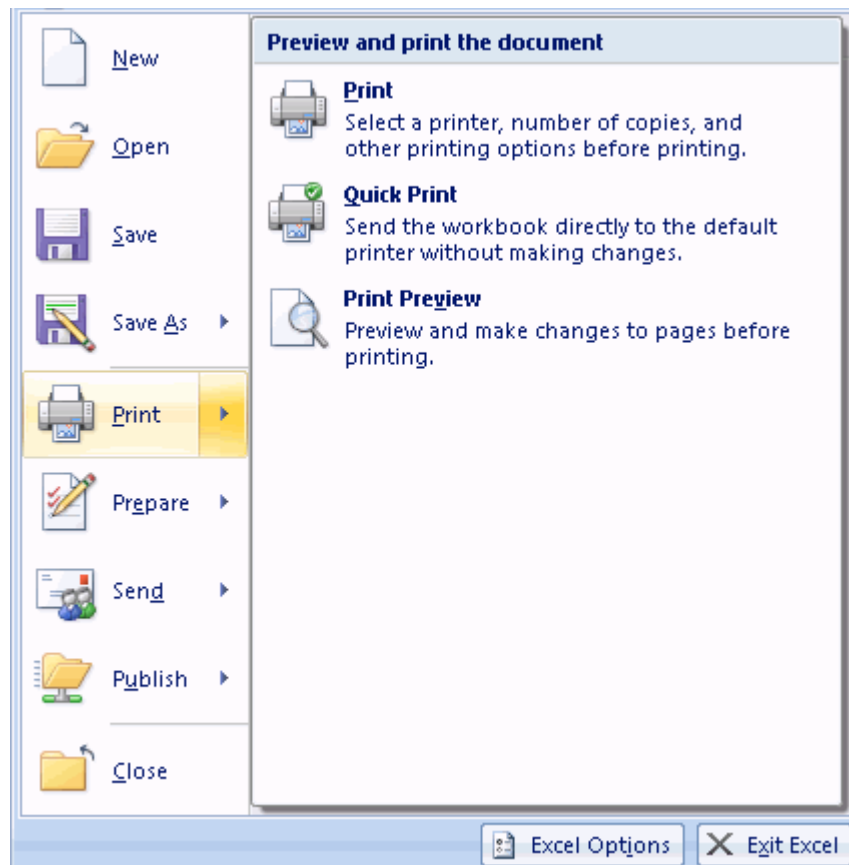
The Quick Print option will print a quick copy of your spreadsheets, without regard to page content, margins, or any other special print set up details.

For more control over your printing, click the Print Preview icon to open the Print Preview screen.
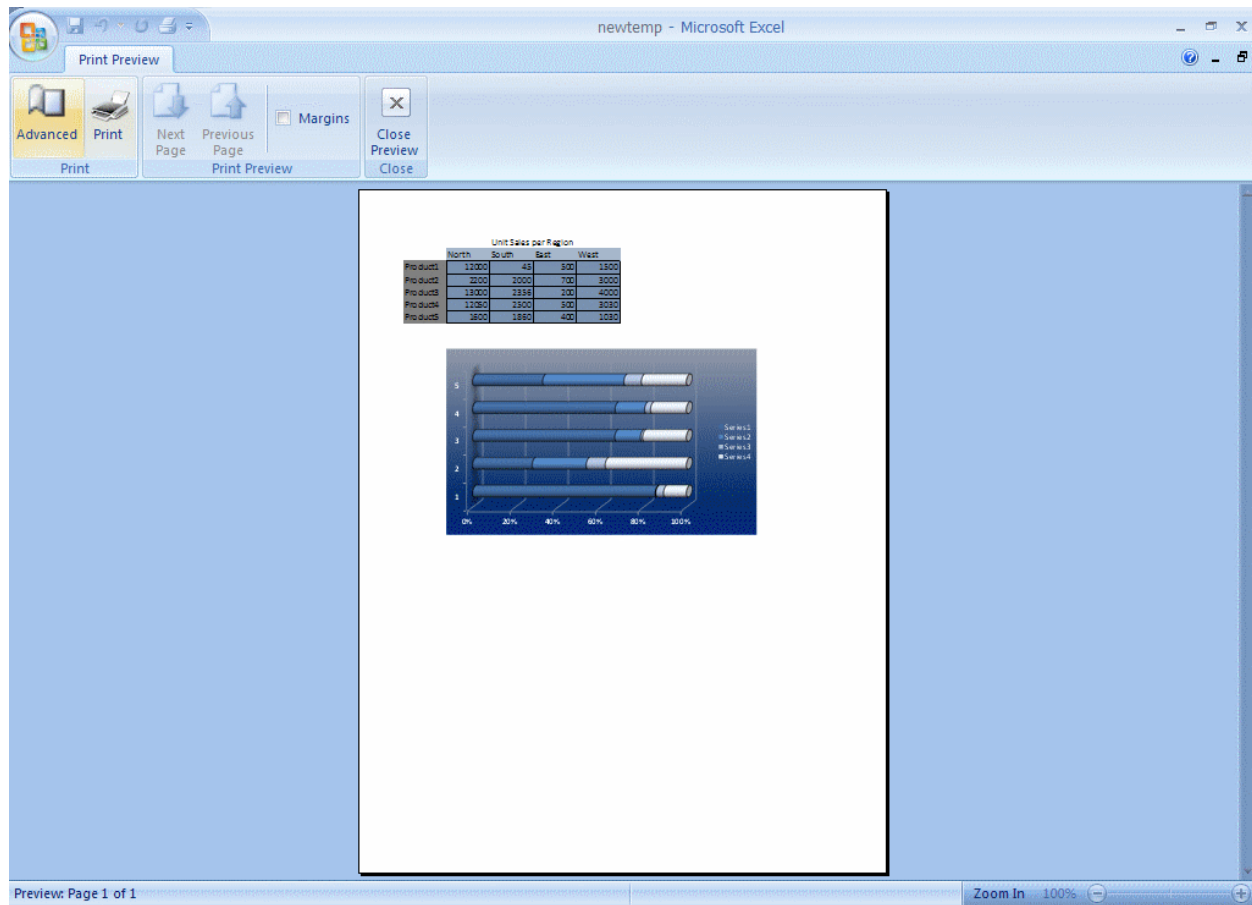
If you click directly on the Print button in the Office menu, or press the Ctrl + P keys, you will display the Print dialogue box. Here, you can click the Preview button in the lower left to invoke the Print Preview screen.
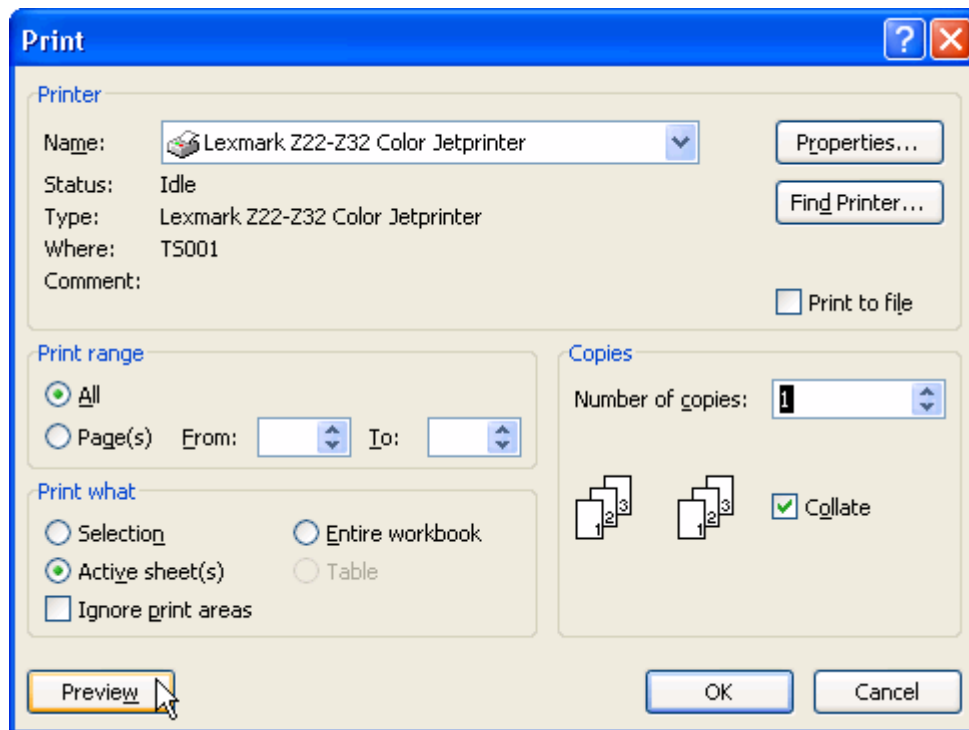
Using the Print Preview Ribbon

Along the top of the Print Preview screen, you can see the Print Preview Ribbon. On this Ribbon you can find a Print button, a Page Setup button, a Zoom button, Next and Previous Page buttons, a Show Margins button, and a Close Print Preview button.
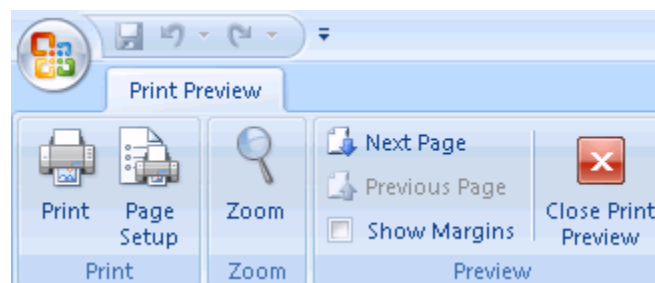
The Print button will print the document as it is shown in the Print Preview screen. The Page Setup button will display the Page Setup dialogue box, which you can use to further refine your printed copies.

If your spreadsheet has multiple pages to print, you can advance or go back through these pages using the Next and Previous page buttons. The Print Preview screen will display whatever page of your spreadsheet/workbook you are currently at.

At any time the preview page is zoomed out, clicking on it will zoom in. (You will see a magnifying glass mouse pointer when you do this). If the page is zoomed in, clicking on it will zoom out. Of course, you can also use the Zoom icon on the Ribbon.

Clicking the Margins button will display the page margins on the print preview. If you click again, the margins will disappear.
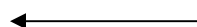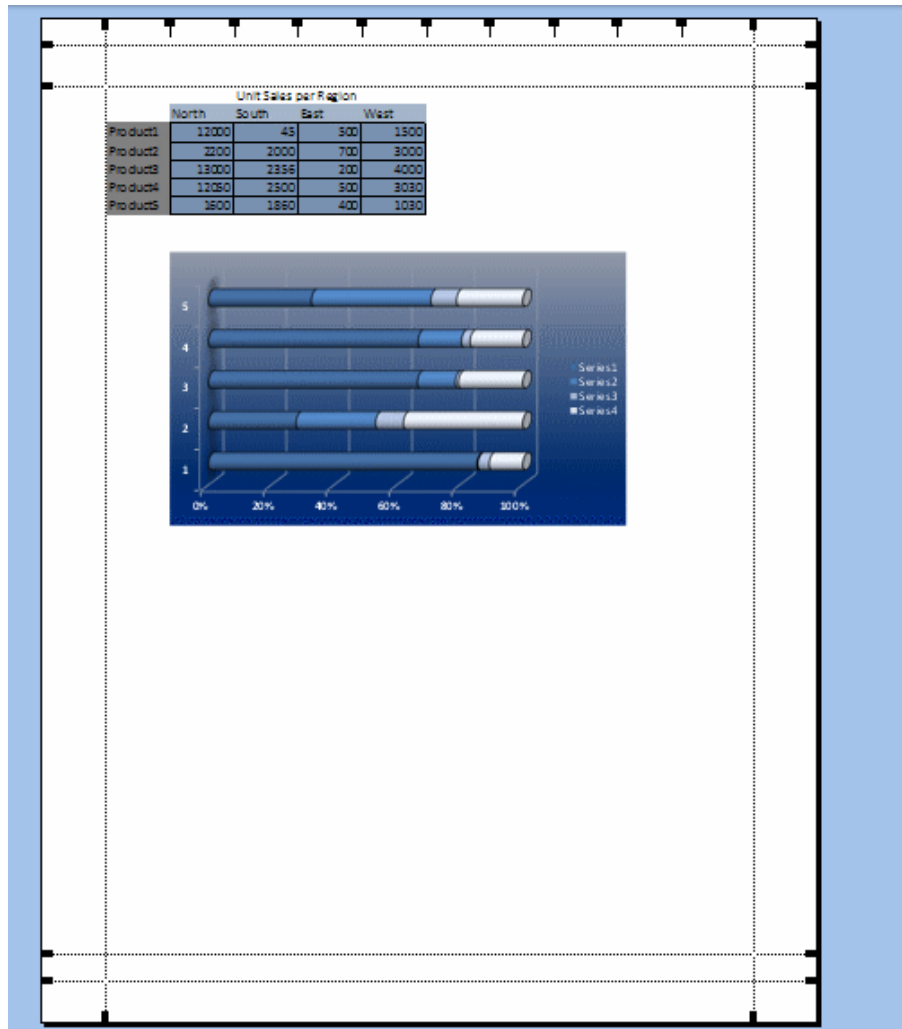
You can also place your mouse pointer on these margins and drag to reposition them. However, be careful when dragging margins. Keep in mind that repositioning the margins in this way may change the appearance of your printed page.

Clicking the Close Print Preview button will close the Print Preview screen.

Here is a print preview page after clicking on it to zoom in.
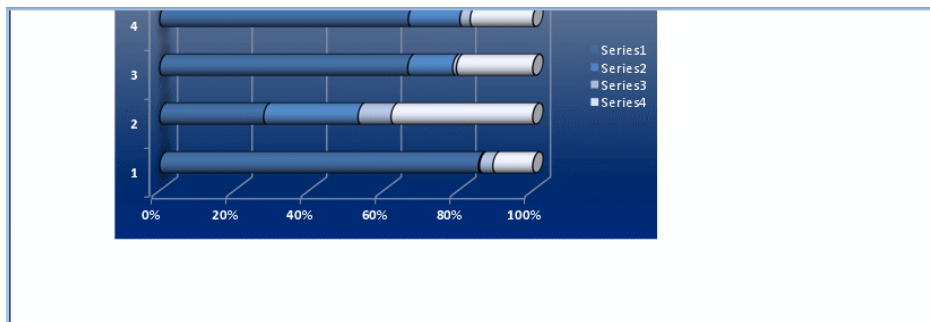
Here is the same page after clicking on it again. It is now once again zoomed out.
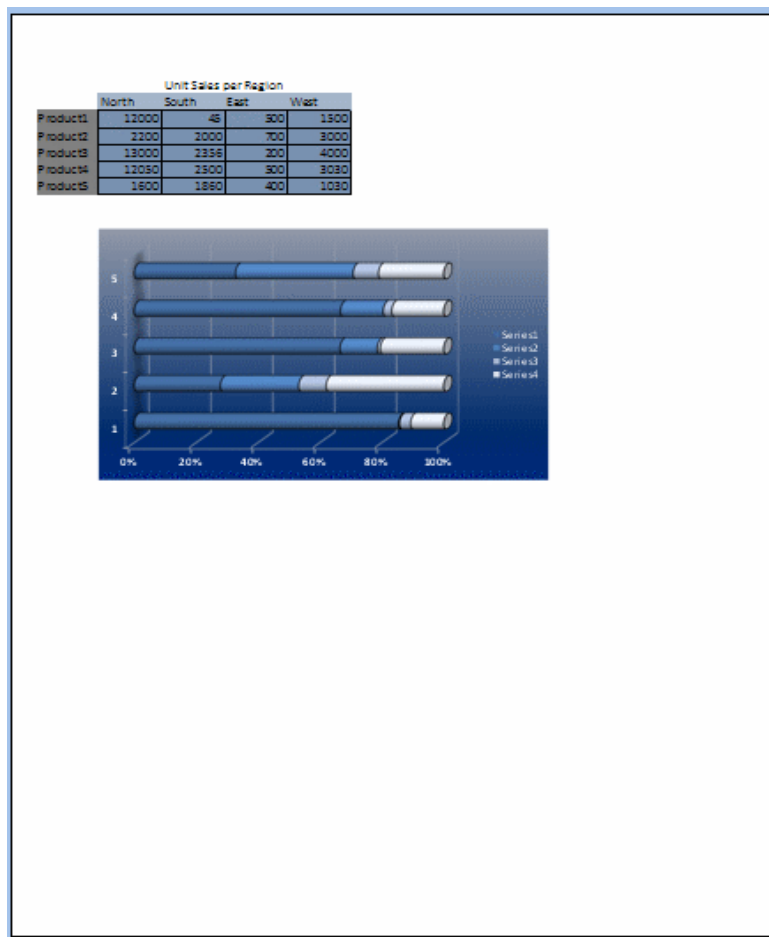
Quick Printing

If you click the Quick Print item under the print option in the Office menu, you will immediately send your workbook to the printer, with no special formatting or page setup.
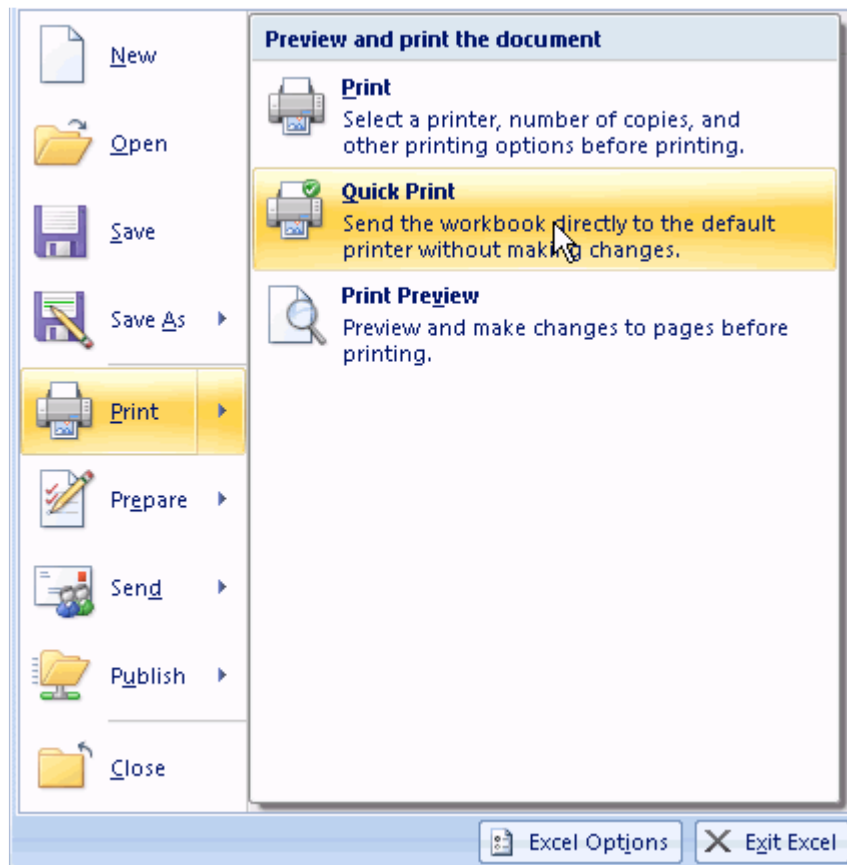
Because quick printing dos not allow you to set up page breaks, margins, or headers and footers, you may not be happy with the look of your printed pages. With this in mind, quick print is best suited for small spreadsheets with a relatively small number of rows and columns.

Quick printing is also quite appropriate for small selections or ranges from a larger spreadsheet. It may be the case that you have an expansive spreadsheet and only need to print a few columns from it. To do this, just select a print region (a selection of cells) by dragging your mouse and then click Quick Print. When you do this, only the region you selected will be printed.

The Print Dialogue

If you click the Printer icon on the Office menu or use the Ctrl + P keyboard shortcut, you will display the Print dialogue box.
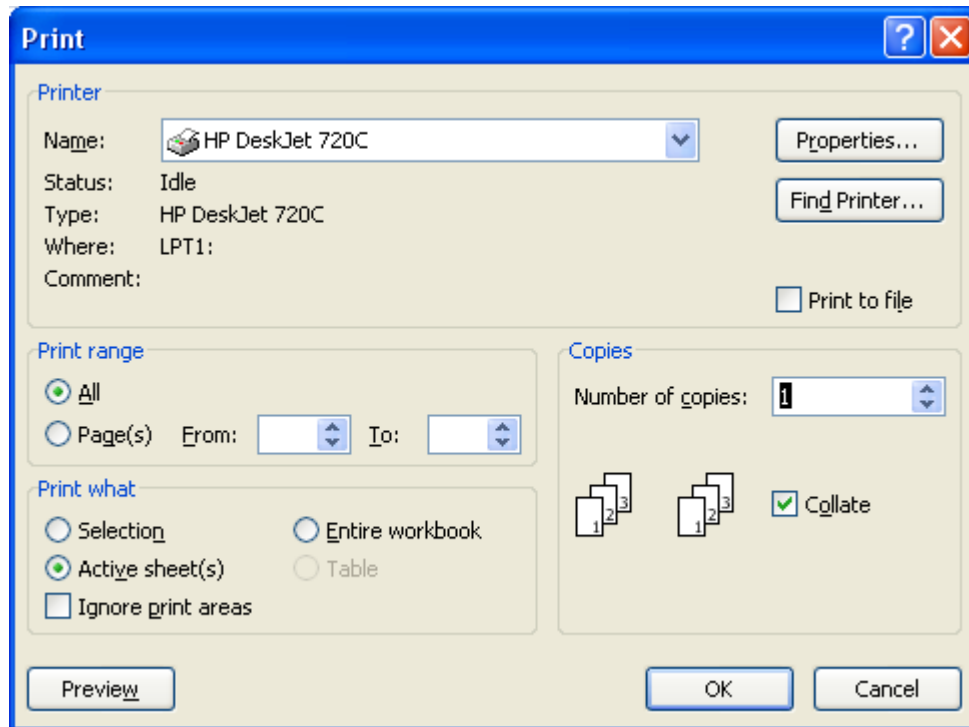
If this dialogue box looks familiar, it is because you have probably used it before with other Microsoft Office programs; it is not unique to Excel.

At the top of the dialogue box, you will see a dropdown list under the Printer heading.
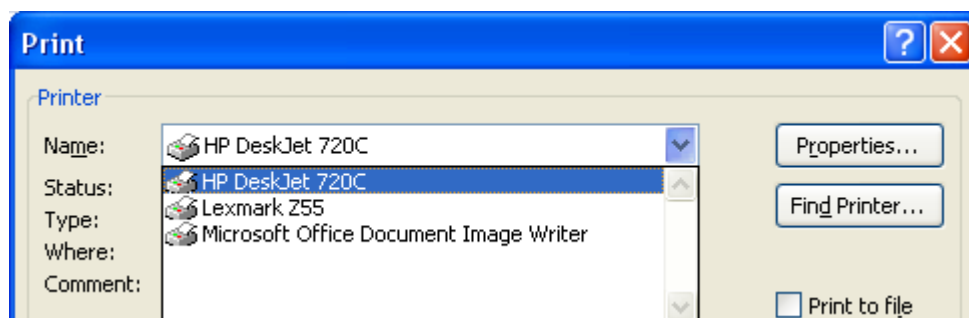
If you click the small down pointing arrow at the right of the drop list, you will display a group of printer options to choose from. Your printed output will be sent to the printer that you select. The printer that is shown in the list box when you first display the Print dialogue is your default printer.

In the Print range section of the Print dialogue, you can choose to print all pages or a specified number of pages. By default, the All radio button is selected. If you want to print a specific group of pages, select the Pages radio button and then specify the range of pages to be printed in the From and To boxes.

On the right side of this section you can specify the number of copies to be printed. (The default is one.) If, for instance, you specified three copies, then the page or range of pages you chose for printing will be printed three times.
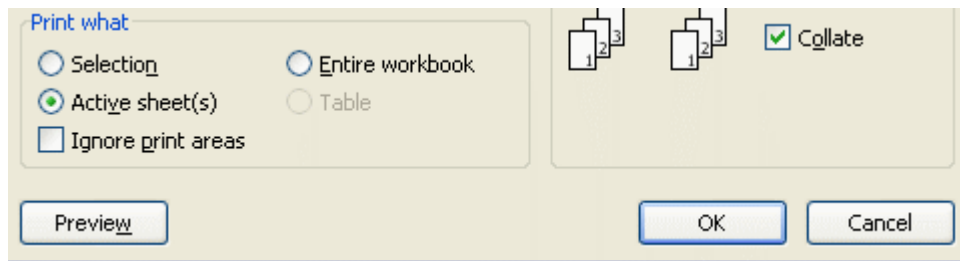
In the Print what section of the dialogue box, you can specify what part of the workbook will be printed. If you select a cell or cells in your spreadsheet and click the Selection Radio button, only the selected cell or cells will be printed. If you click the Entire Workbook button, the entire workbook will be printed. If you select the Active Sheet(s) option, only the active sheets will be printed. Remember, you can activate a sheet by clicking its tab at the bottom of the Excel screen.
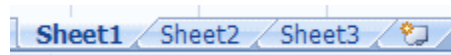
To activate multiple sheets, click the tab for the first sheet and then hold down the Ctrl button while you click the tabs for the other sheets you want to activate.

If you check the Ignore Print areas checkbox, the printout will not be restricted to only specific print areas (selections of cells).

If you are ready to print, just click the OK button to send your output to the printer.

Using Page Setup

If you click the Page Setup button in the upper left of the Print Preview screen you will see the Page Setup dialogue box. You can also open the Page Setup dialog by clicking the small arrow in the bottom left hand corner of the Page Setup button group on the Layout Ribbon.
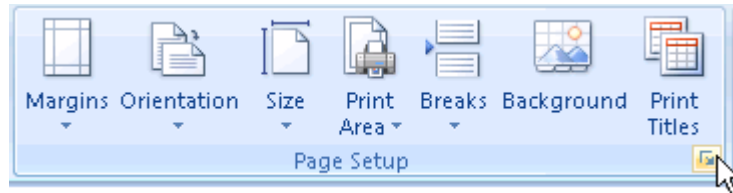
Here's what the Page Setup dialog looks like.
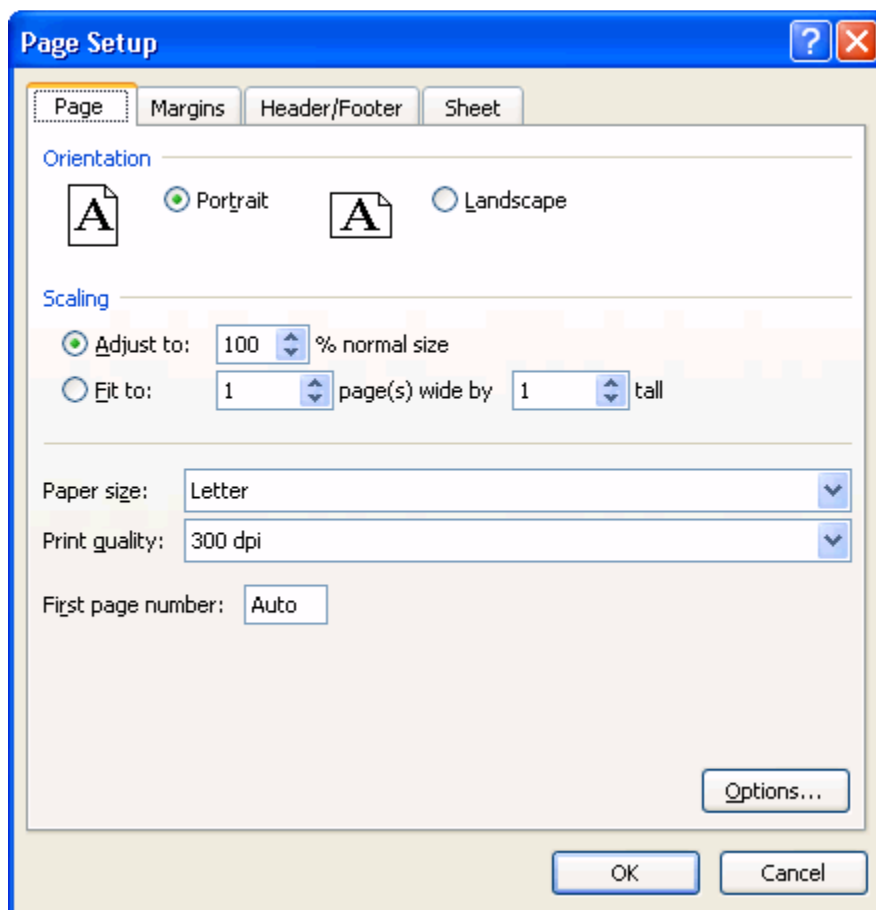
Under the Page tab, you can select page orientation, print scale, paper size and print quality settings. (Print quality is a kind of resolution, in dots per inch, for a printed document.) Basically, more dots per inch will mean more print quality.

Under the Margins tab, you can specify how to center your page (horizontally or vertically) and you can directly enter values for the margins in the fields provided. You can even click on a margin data field to place your cursor in it and then enter a margin value of your choice (as measured in inches). Another option is to use the arrow buttons at the side of the data fields to change the margin values incrementally.

As you may remember, Excel 2007's Margins button on the Page Layout Ribbon also let you change the margin to preset sizes.

Under the Header/Footer tab, you can choose headers and footers that will be visible on the top (header) and bottom (footer) of each printed page. You can select preset headers and footers by clicking on them in drop lists located beneath the header, and above the footer, preview fields.
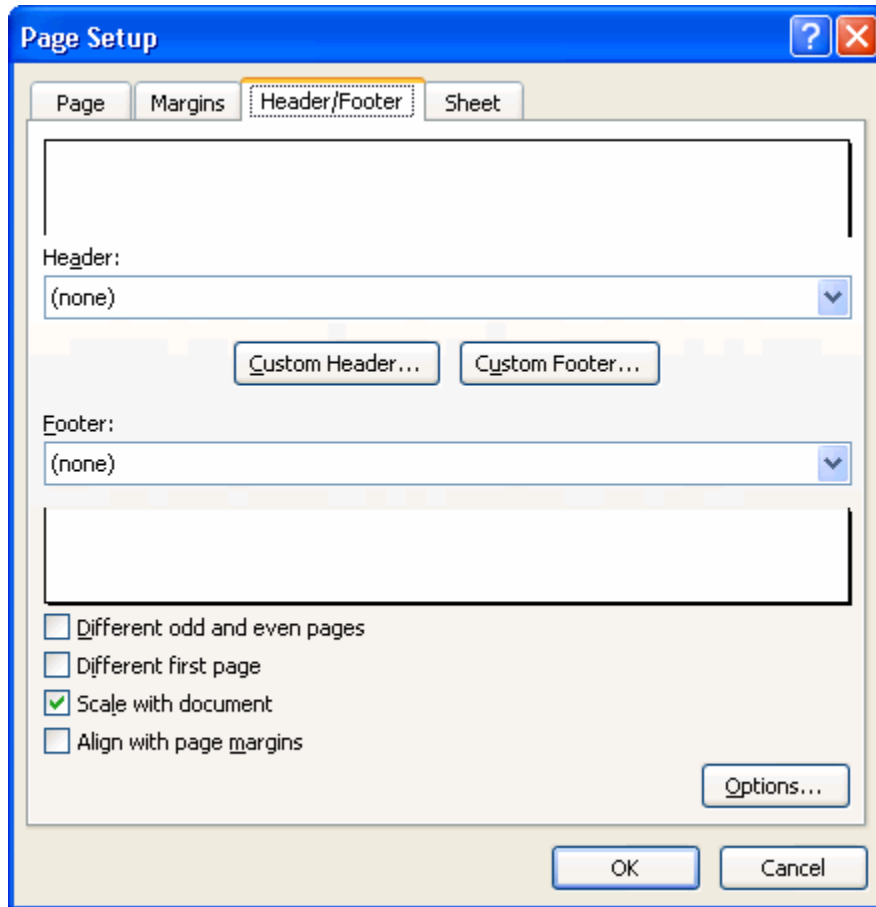
If you click the Custom Header or Custom Footer buttons, you will see a dialogue box like the one shown below.
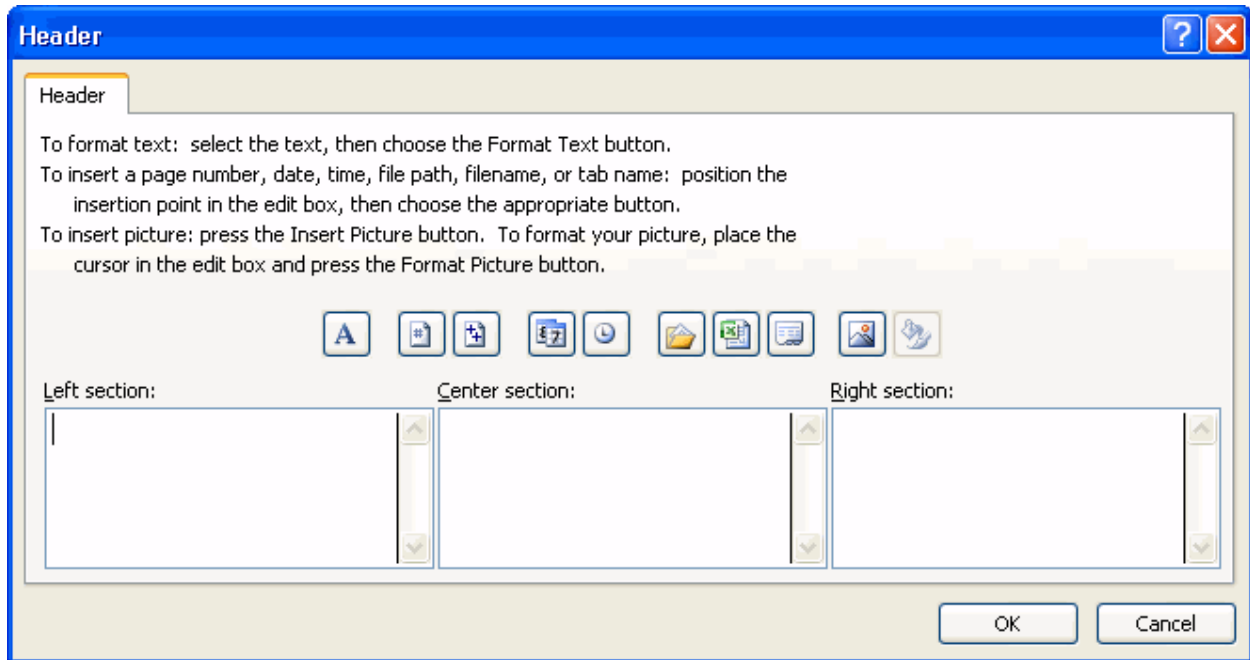
You can use this box to design a custom header by entering text in the provided fields. You can also format the text and enter page numbers, dates, and times by using the buttons above the text fields.

Under the Sheet tab you will find a control that will let you define a Print Area (a selection of cells from your workbook). You will also see controls to Specify Print Titles (row or column headings from your spreadsheet to repeat on each printed page). You can specify print areas or print titles by clicking in the appropriate field in the dialogue box (to give it focus) and then selecting the cells you want with your mouse from the spreadsheet in question. When you do this, the cell ranges will be entered into the dialogue box fields automatically.
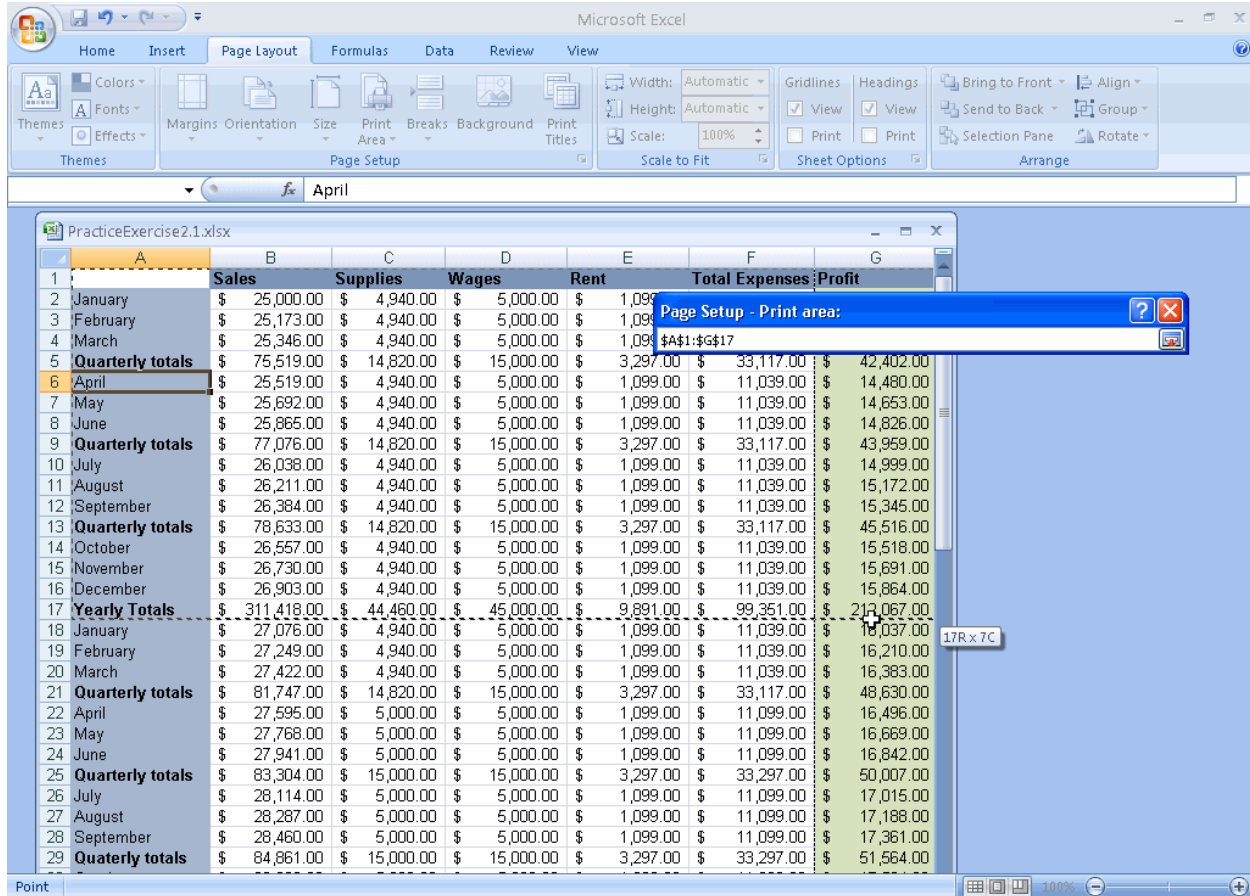
You can also place checkmarks in the Gridlines box so that the gridlines will be included in your printout. If you place a check in the Row and Column Headings checkbox, the row numbers and column letters will be included on your printed pages as well.

Finally, you can specify the Page Order for a large workbook or spreadsheet. "Down then over" will print pages from top to bottom and then move over in your spreadsheet one page width to start printing at the top again. "Over then down" will print pages in a row from left to right, move down one page length, and start printing at the next row of pages.

When you are finished adjusting you print settings, click the OK button in the lower right of the dialogue to save your changes and close the dialogue. When you are ready, you can then print your pages.

SECTION 7: Working With Charts

Sometimes it can be hard to discern patterns or relationships in your data from basic tables of numerical entries. Excel 2007's powerful chart tools can help you create a more meaningful representation of your data, by making it easy to build professional looking charts.

In this lesson you will learn how to create, format, and manipulate a chart. You will also learn how to enhance your chart with Excel's drawing tools and how to add titles and tables.
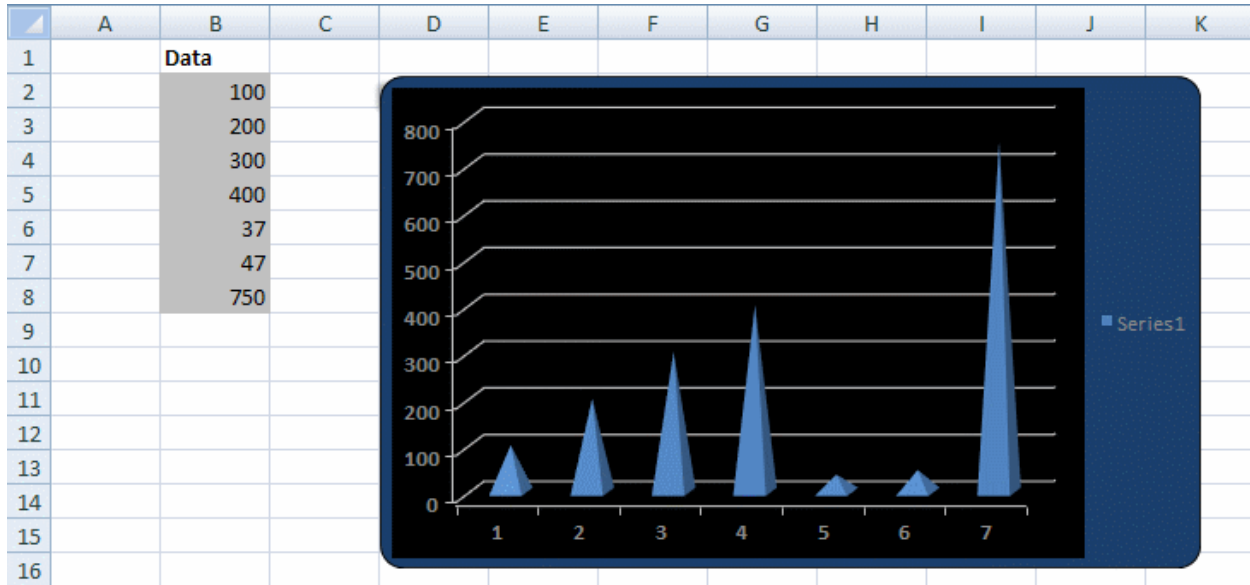
Creating a Chart

One of the major changes in Excel 2007 is the way that charts are created and handled. In previous versions of Excel, charts were often created with the chart wizard. In Excel 2007, a new approach is taken in hopes that a professional looking chart can be created in just a few clicks. Instead of a chart wizard, Excel 2007 provides a series of chart buttons and controls on the Insert Ribbon.
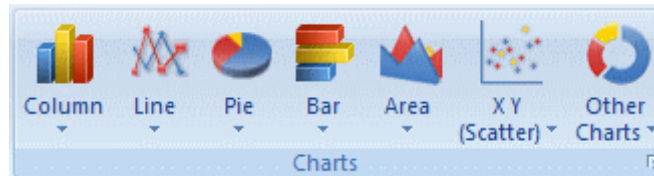
Before you create a chart, first consider the type of chart that you require. Pie charts and bar charts are good for showing comparisons. Line graphs can be useful for showing trends and plotting relationships between variables. If you want a really visually interesting chart, consider a three dimensional type.

To create a chart, first select the data that you want to base your chart on.

	A	B	C	D
3	Region	Sales	Profits	
4	North	$100,000.00	$25,000.00	
5	South	$150,000.00	$32,000.00	
6	East	$ 68,000.00	$12,000.00	
7	West	$176,000.00	$50,000.00	
8				

Our aim here is to create a pie chart. To do this, we have selected the region labels and the sales data. The region labels will give us category headings for our chart and the sales figures will comprise the actual data for our chart.

Once you select the data, you can proceed by clicking the Insert tab to display the Insert Ribbon. On the Insert Ribbon, click the Pie Charts button to display a menu of possible pie charts. For this example, we will click on the Exploding 3-D Pie Chart option.
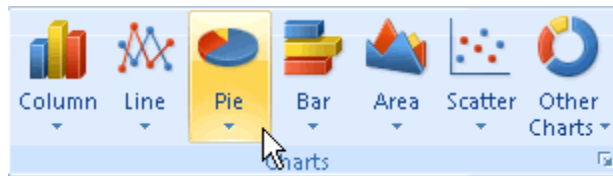
This action creates an exploding 3-D chart in the spreadsheet, showing comparative slices for the sales per region.

	A	B	C	D	E	F	G	H	I	J	K
1	Region	Sales	Profits								
2	North	$100,000.00	$25,000.00								
3	South	$150,000.00	$32,000.00								
4	East	$ 68,000.00	$12,000.00								
5	West	$176,000.00	$50,000.00								
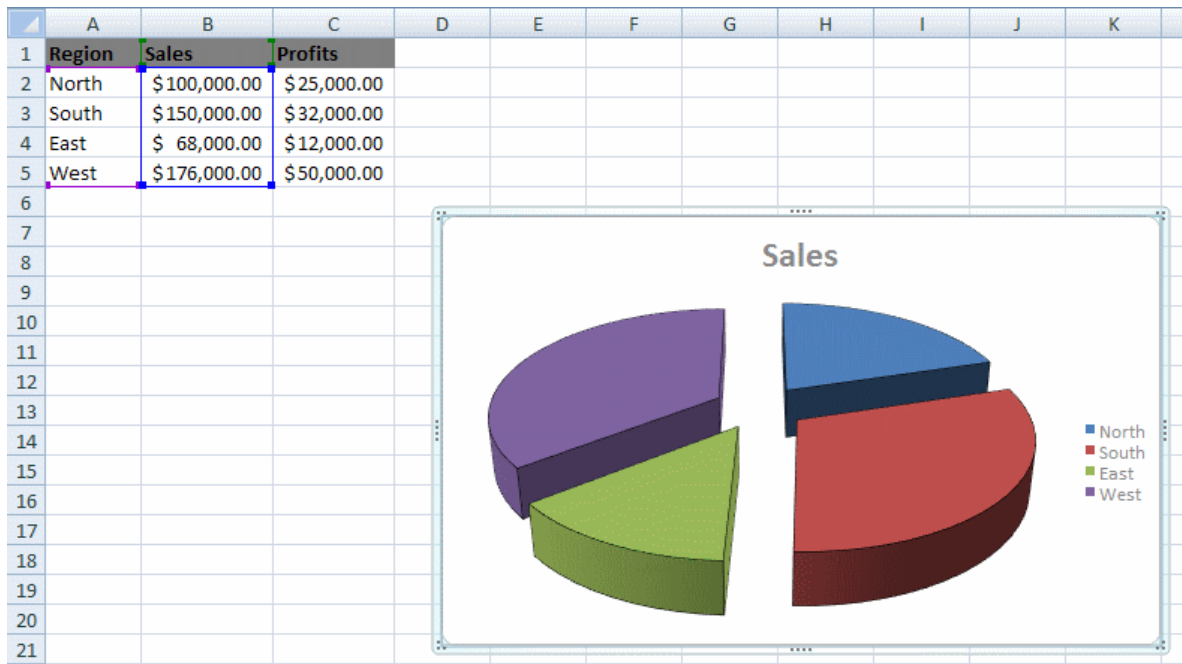
Manipulating a Chart

Sometimes it may be necessary to resize or even move your chart around in your spreadsheet. To do this, first single click in the chart area to display the chart area border.
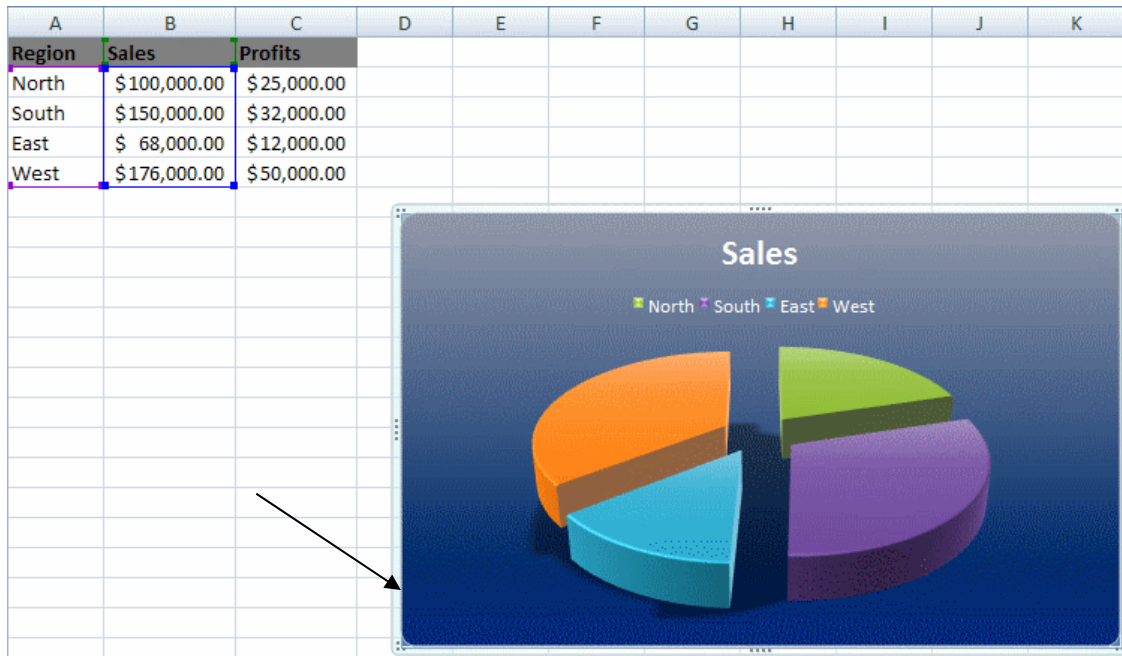
If you place your mouse pointer on the corner of the chart border and let it hover, you will see your pointer turn into a double headed arrow. If you drag the chart corner with your mouse, you can resize the chart.
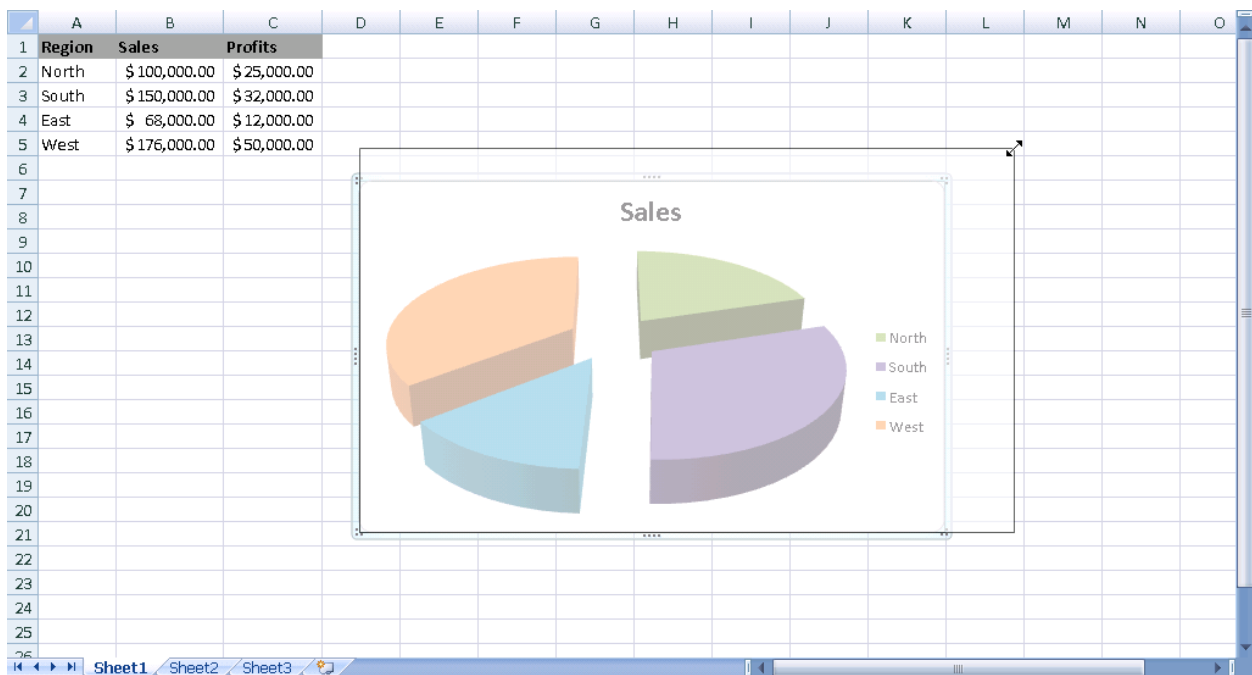
Dragging your mouse horizontally will resize the length of the chart. Dragging your mouse vertically will resize the height of the chart. Finally, dragging your mouse diagonally will resize both dimensions of the chart.

If you look carefully at the sides of the chart border, you will see a series of four dots. If you let your mouse pointer hover over these dots, you will see a double headed arrow. You can drag theses side edges (with the double headed arrow pointer) to increase the length or height of your chart.

	A	B	C
1	Region	Sales	Profits
2	North	$100,000.00	$25,000.00
3	South	$150,000.00	$32,000.00
4	East	$ 68,000.00	$12,000.00
5	West	$176,000.00	$50,000.00
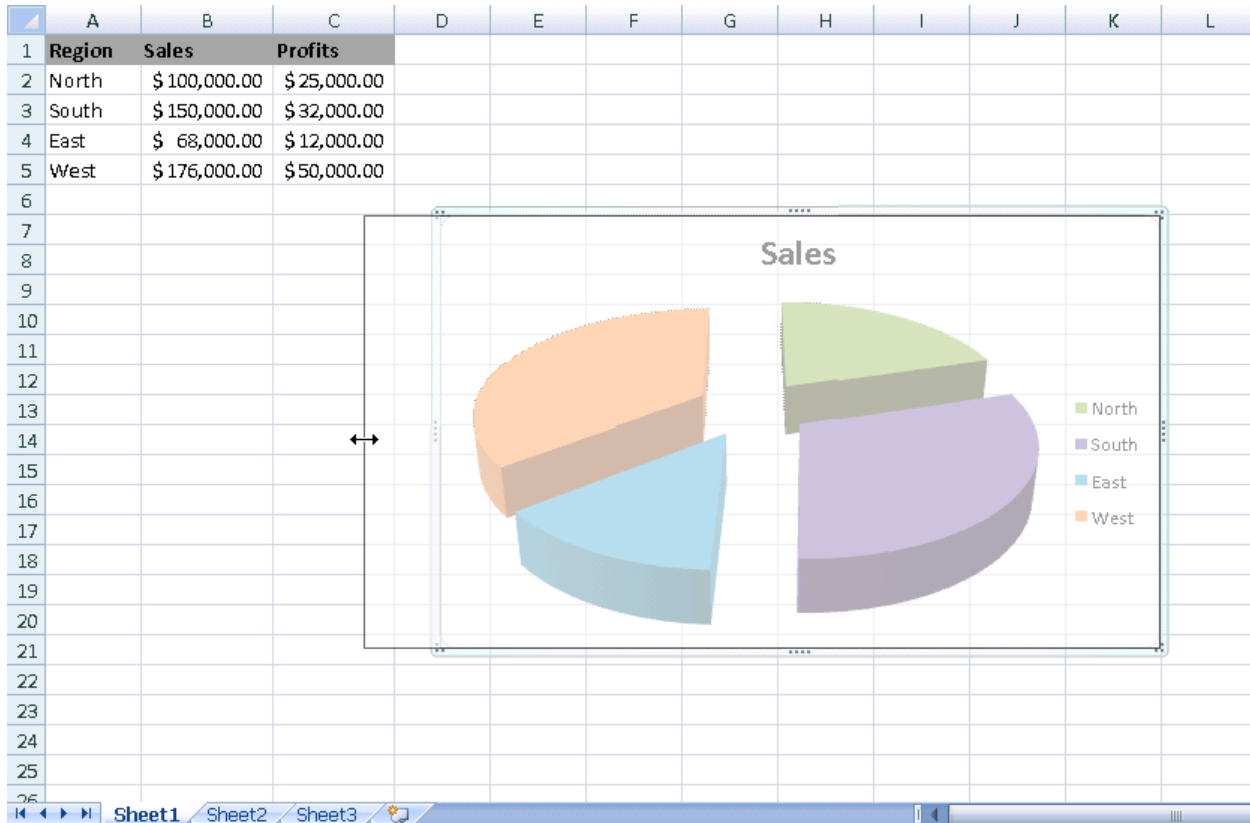
If you drag the corner of the chart inwards toward the center, you will make the chart smaller.

	A	B	C	D	E	F	G	H	I	J	K	L
1	Region	Sales	Profits									
2	North	$ 100,000.00	$ 25,000.00									
3	South	$ 150,000.00	$ 32,000.00									
4	East	$ 68,000.00	$ 12,000.00									
5	West	$ 176,000.00	$ 50,000.00									

Sales

- North
- South
- East
- West

Sheet1 Sheet2 Sheet3
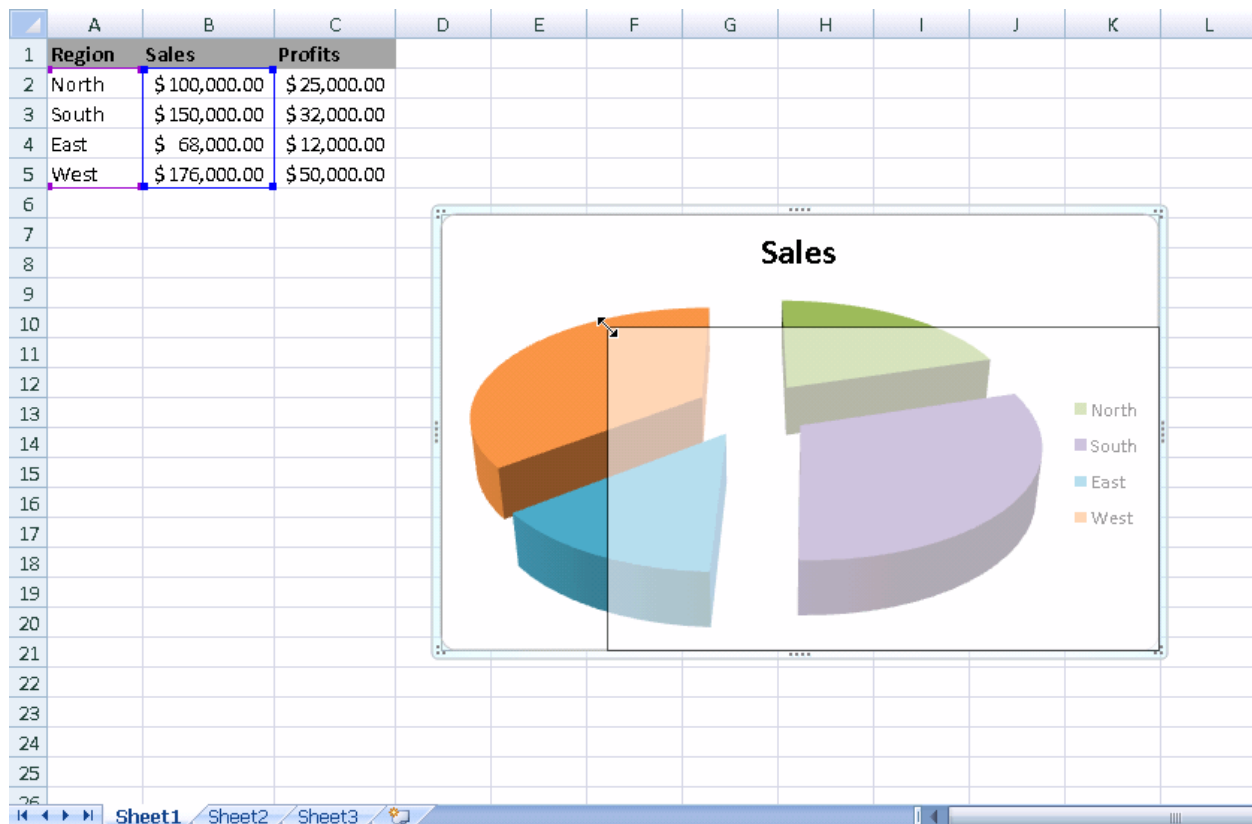
To move the chart, let your mouse pointer hover over the one of the sides of the border, or over the top or bottom edge of the border. When you see your mouse pointer turn into two crossed arrows, you will be able to move the chart around your screen by mouse dragging.
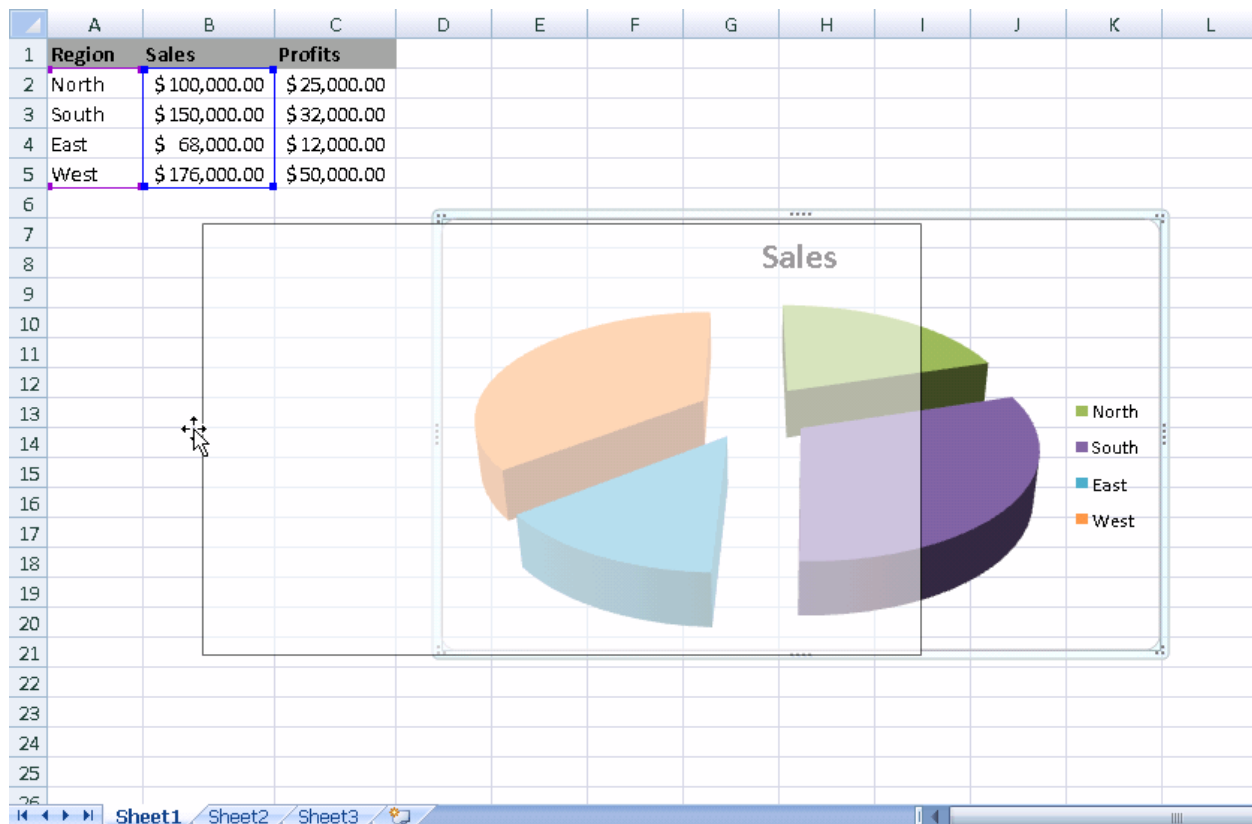
Here, the chart has been resized (smaller) and relocated (dragged) underneath the data.

If you want to make a chart an object in another worksheet, or move the chart to a sheet of its own, do the following.

First, right click on the chart and choose Move Chart from the drop down menu.
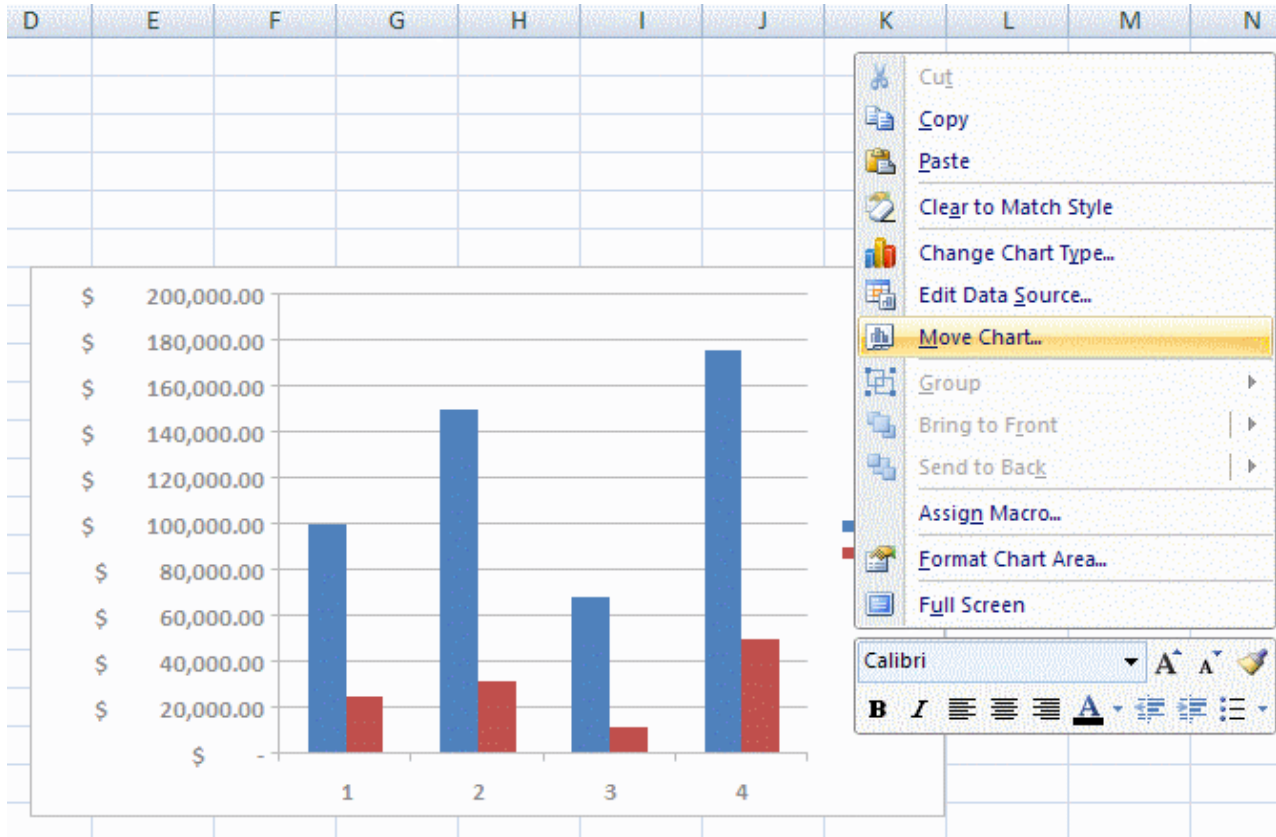
This will display the Move Chart dialogue box.
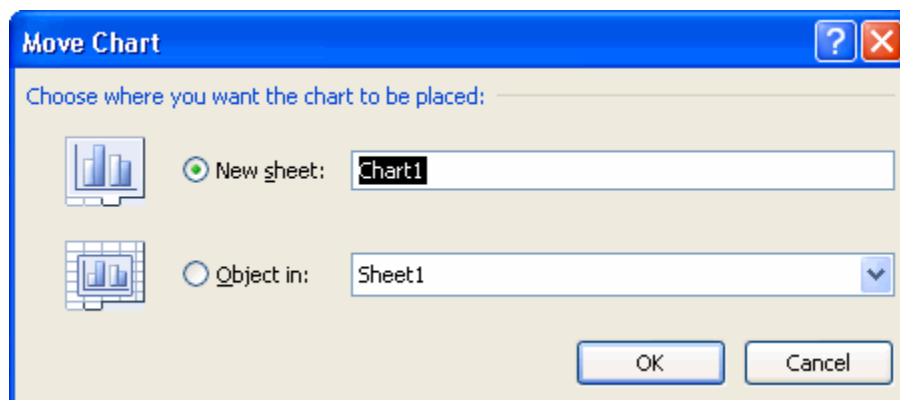
In this example, the New Sheet radio button has been selected, which will place the chart in a new sheet called Chart1. (You can enter whatever name you like for the new sheet.) After you are ready, click the OK button to move the chart.
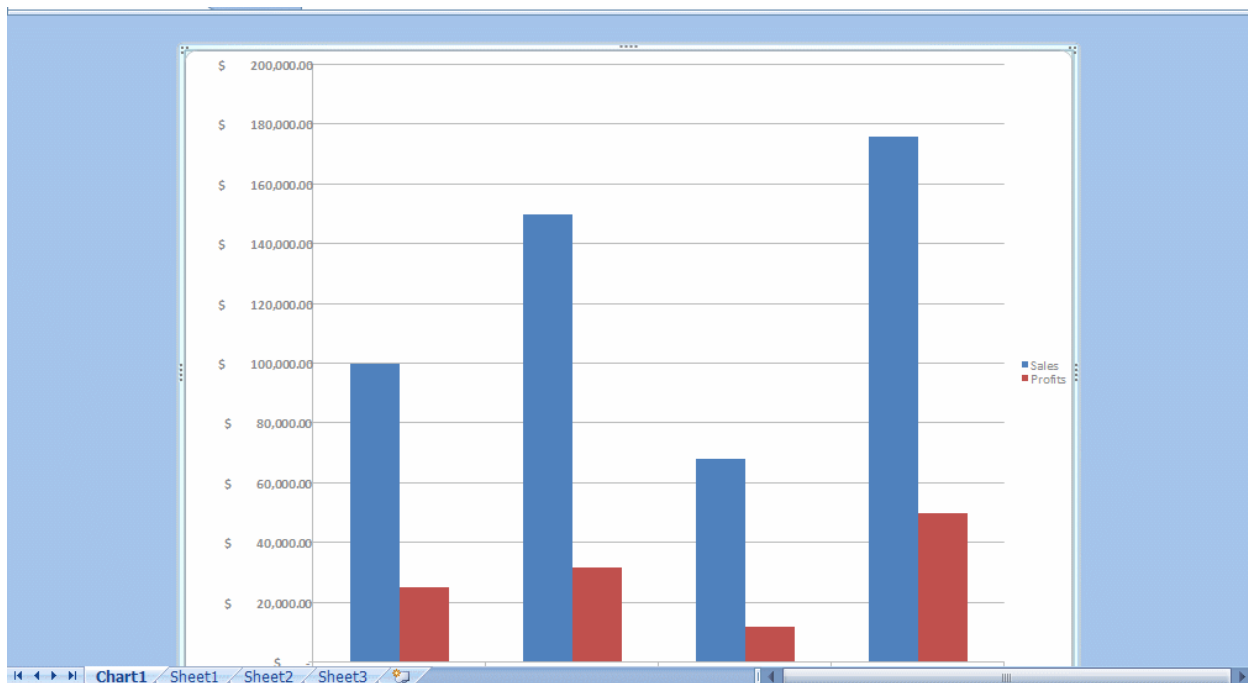
The chart has been now been moved to a sheet of its own.

Note that you can also click the Move Chart button in the Design Ribbon to display the Move Chart dialogue box.
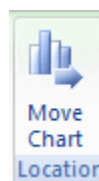
This time, if you select the Object In radio button, you can specify an existing sheet to place the chart in. In this case, we will use Sheet2.
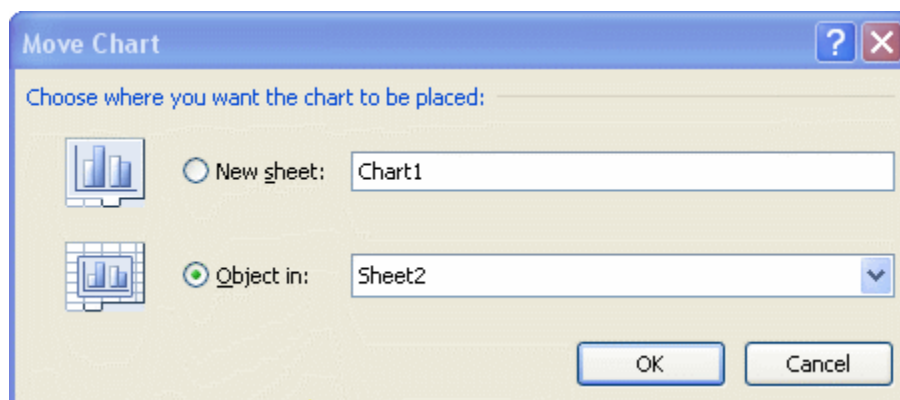
As soon as you are ready, click the OK button to move the chart.
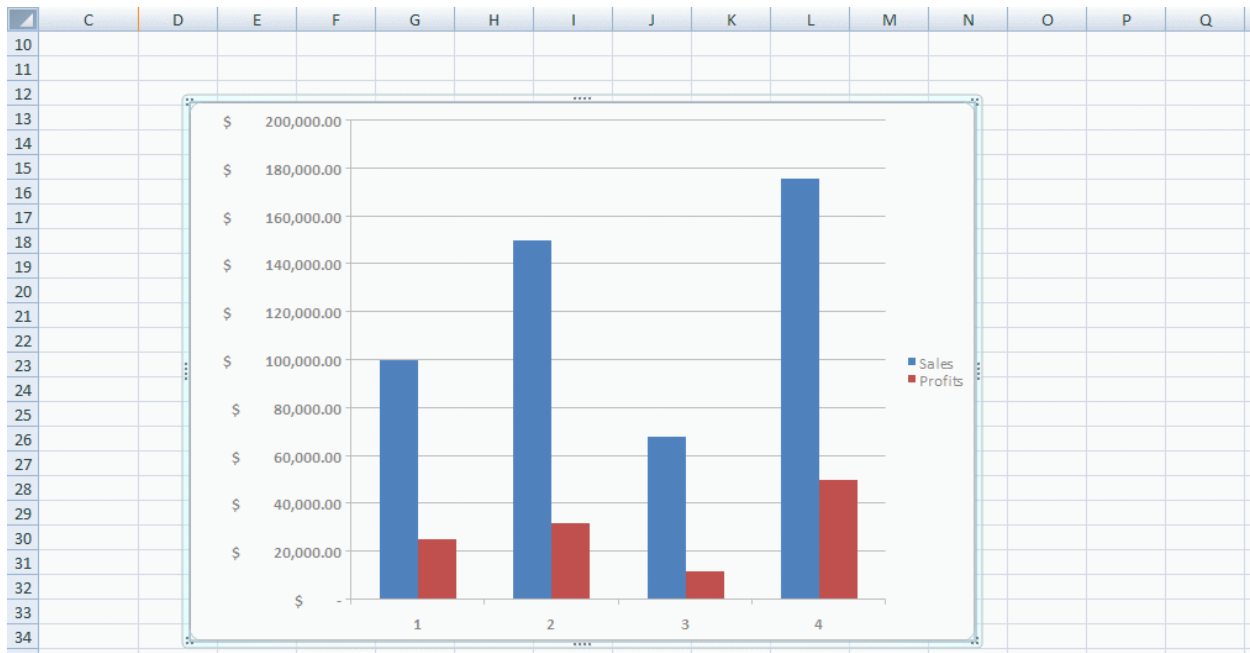
Now, the chart has been embedded as an object into the worksheet.

To remove a chart from your worksheet, click in the chart area, and press the Backspace or Delete key on your keyboard.

Changing the Type of Chart

What do you do if you create a chart based on your spreadsheet data and you find that it just isn't quite what you were hoping for? If you are using Excel 2007, it is a quick and simple matter to apply a new chart type to your data.

To change the chart type, first display the Design Ribbon by clicking on the chart area and then click the Design tab. Now, look for the Change Chart Type button.

If you click this button, you will display the Change Chart Type dialogue box.
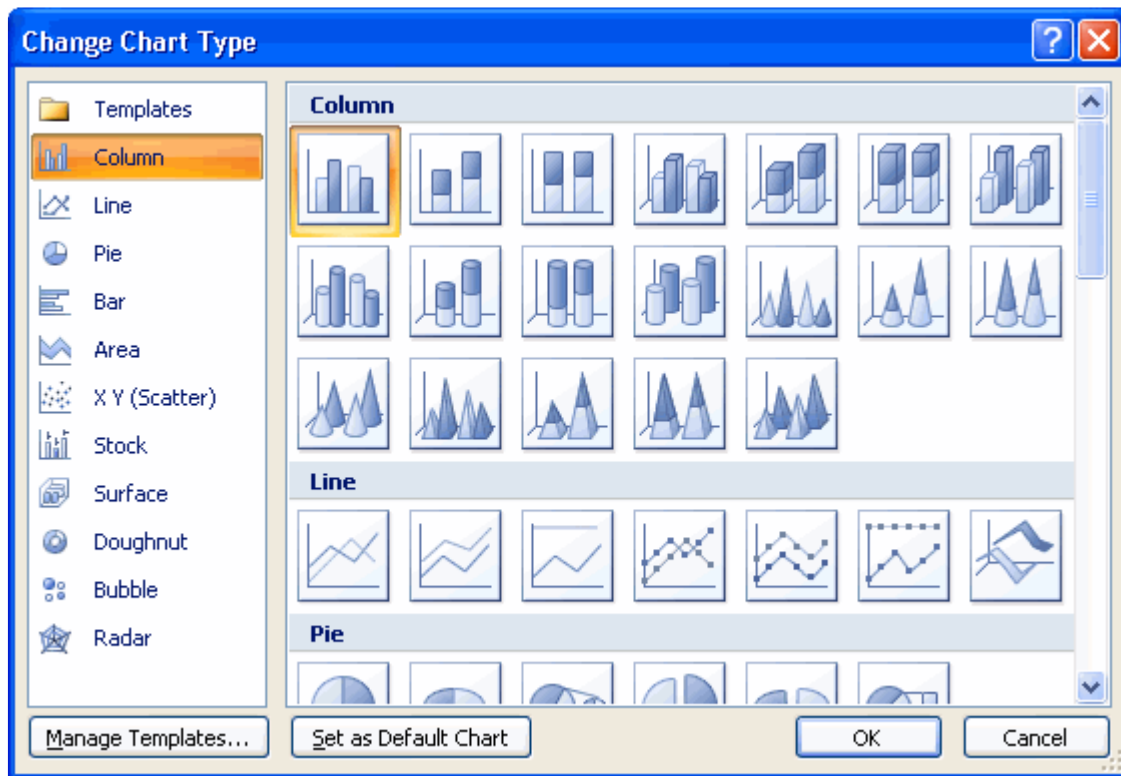
With this box, you can select a new chart type or variation, based on the data in the existing chart. For example, to change this chart to a clustered pyramid column chart, simply select
Column from the panel on the left, and then click the clustered pyramid chart type from the column chart options that are displayed. After you make your choices, click the OK button to change the chart type.
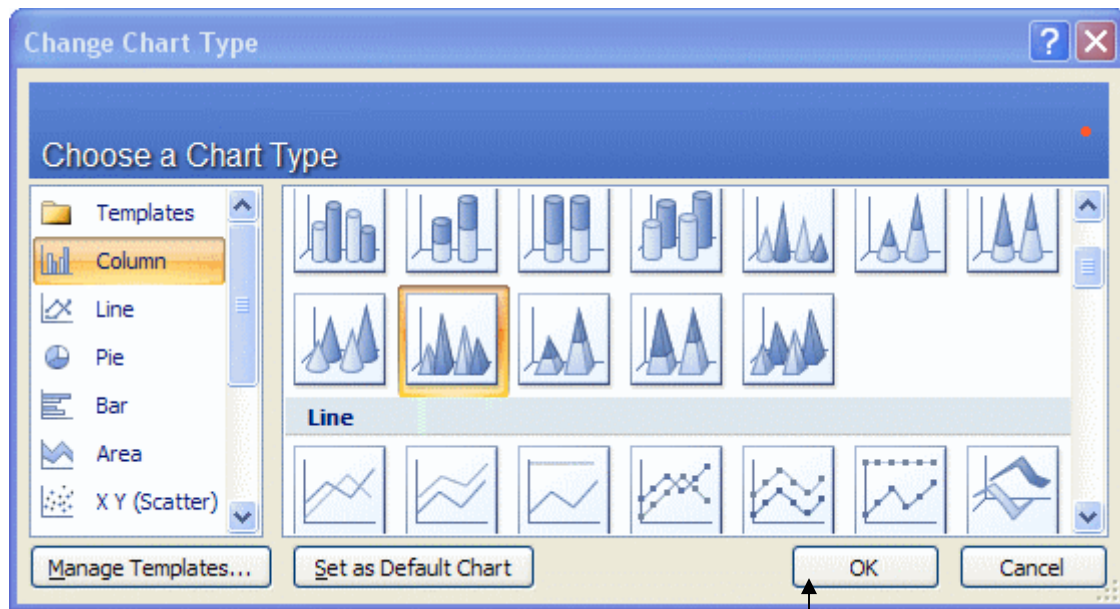
Your chart will be automatically changed according to the selections you make. Here is an example of the new chart type.
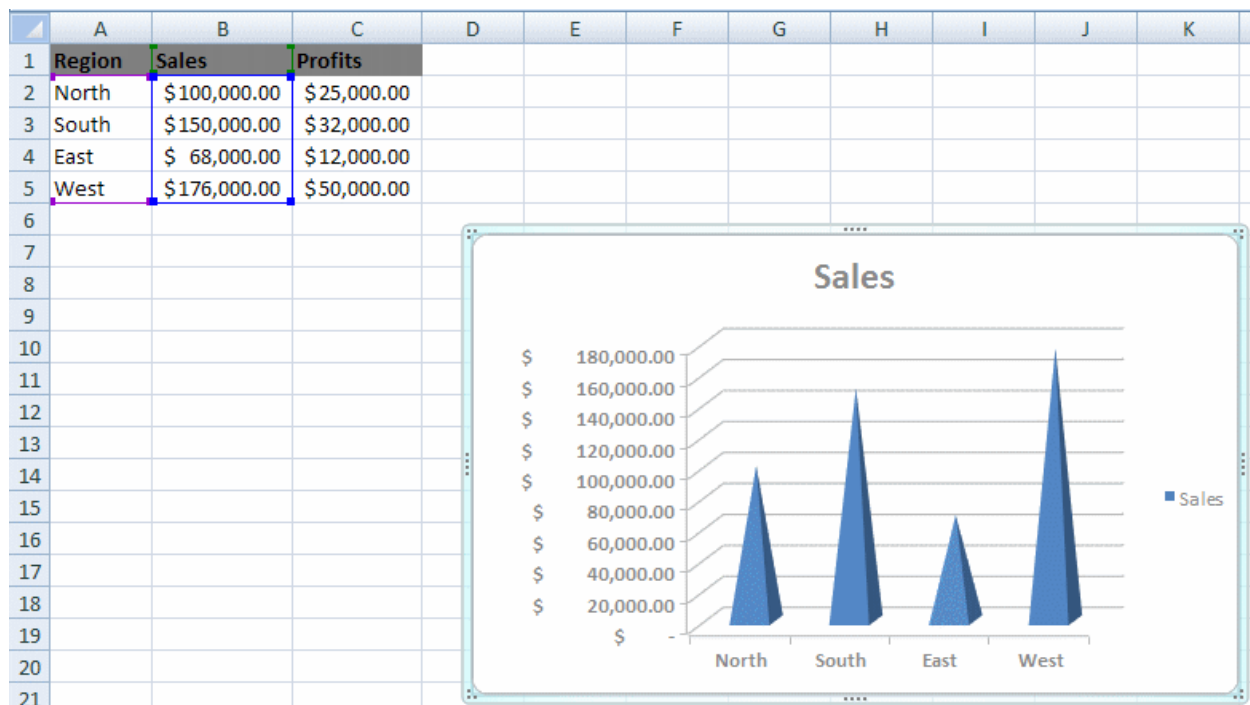
You can also display the Change Chart Type dialogue box by right clicking on the chart area and selecting Change Chart Type from the drop down menu that appears.

Changing the Source Data

As you have just seen, Excel 2007 makes it easy to change the chart type for a given set of chart data. The great thing is that Excel 2007 also makes it easy to change the source data for your chart while retaining the original chart type.
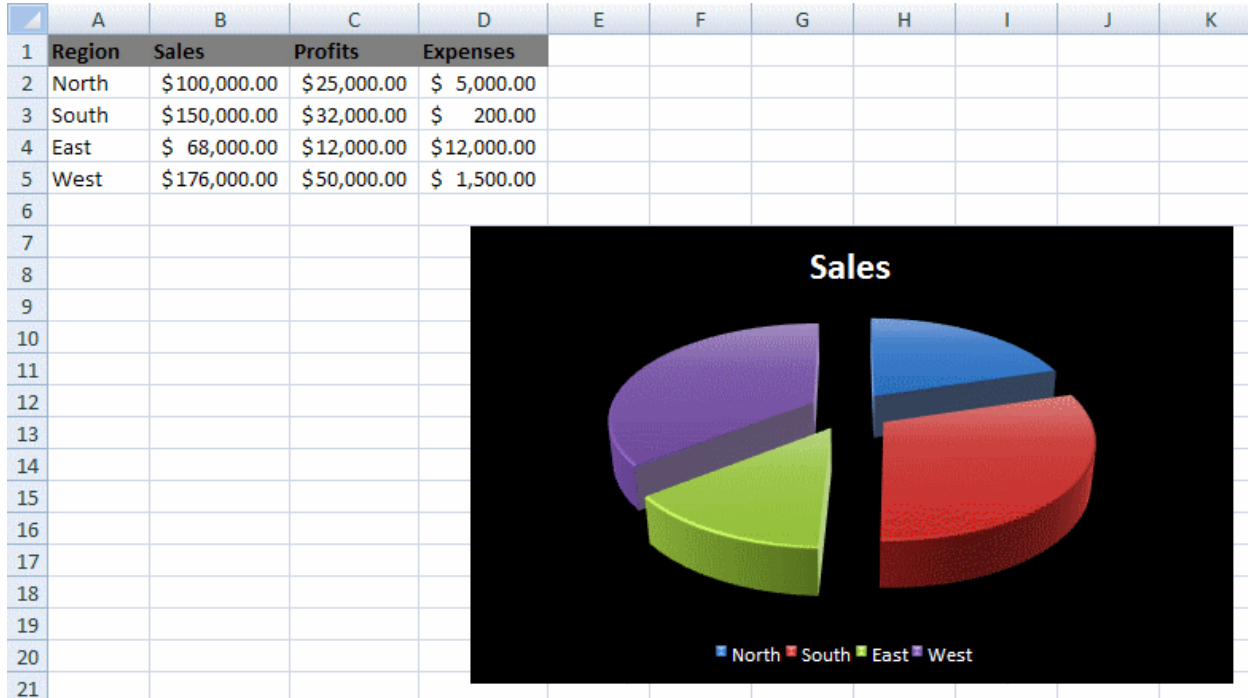
In this example, the pie chart above is based on sales data per region. If you wanted the chart to depict Expenses per Region, you would have to change the source data of the chart from the sales data (cells B2 through to B5), to the expenses data (cells D2 through to D5).

The first step in doing this is to right click on the chart area and click Select Data from the menu that appears.
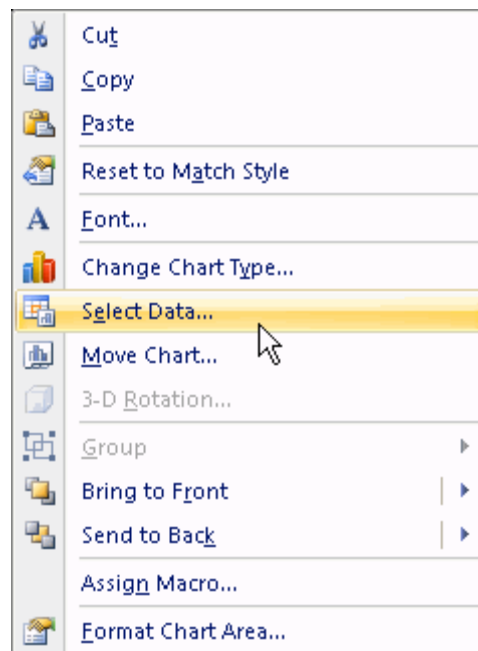
This action will display the Edit Data dialogue box.
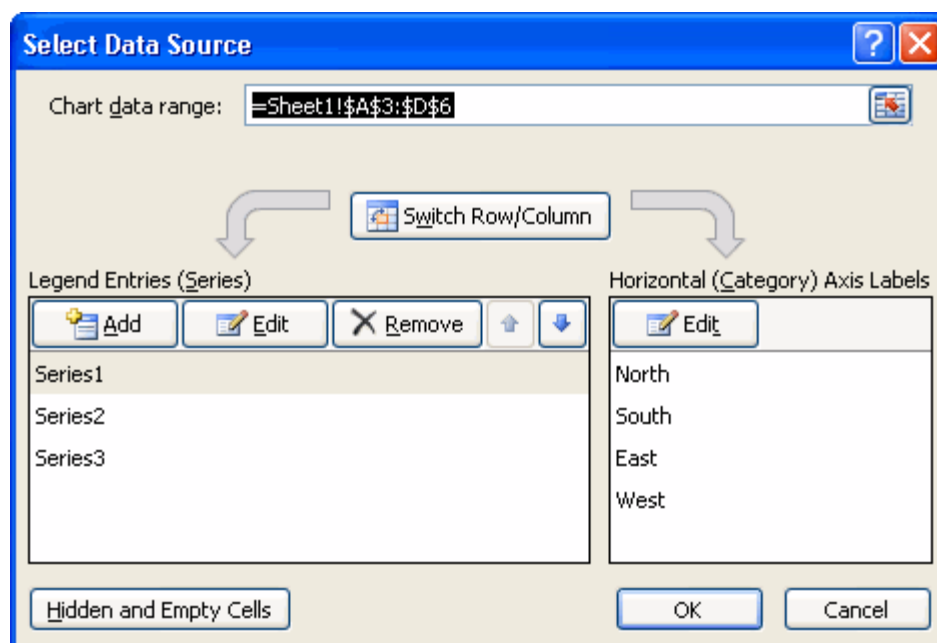
At the top of the dialogue box, you will see a long text field labeled Chart Data Range. This will show the range of cells that serve as the current data source for the chart. To change the data source, use your mouse to select the new data range from the spreadsheet. As you do this, you will see the new range entered into the data source field.

	A	B	C	D	E	F	G	H	I	J	K
1	Region	Sales	Profits	Expenses							
2	North	$100,000.00	$25,000.00	$ 5,000.00							
3	South	$150,000.00	$32,000.00	$ 200.00							
4	East	$ 68,000.00	$12,000.00	$12,000.00							
5	West	$176,000.00	$50,000.00	$ 1,500.00							

Edit Data Source
=Sheet1!$D$1:$D$5

5R x 1C

Sales

North South East West
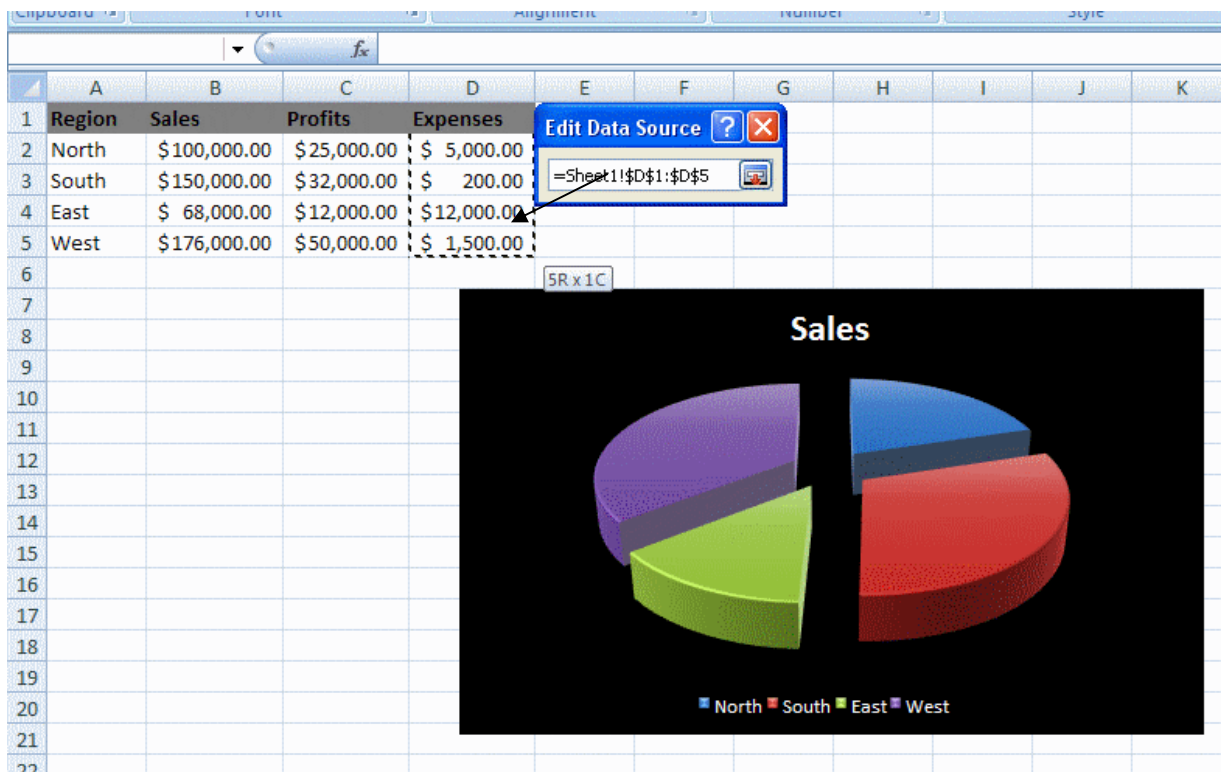
When you complete your data selection, you will see the new data range in the Edit Data Source dialogue box.

Select Data Source

Chart data range: =Sheet1!$D$3:$D$6

Switch Row/Column

Legend Entries (Series)   Horizontal (Category) Axis Labels

Add   Edit   Remove   ⬆   ⬇   Edit

Series1   1
                                           2
                                           3
                                           4

Hidden and Empty Cells   OK   Cancel

The next step is to click the OK button in the lower right of the box. Now, you can see that the size of the pie slices have changed to reflect the new data.

	A	B	C	D	E	F	G	H	I	J	K
1	Region	Sales	Profits	Expenses							
2	North	$100,000.00	$25,000.00	$ 5,000.00							
3	South	$150,000.00	$32,000.00	$ 200.00							
4	East	$ 68,000.00	$12,000.00	$12,000.00							
5	West	$176,000.00	$50,000.00	$ 1,500.00							
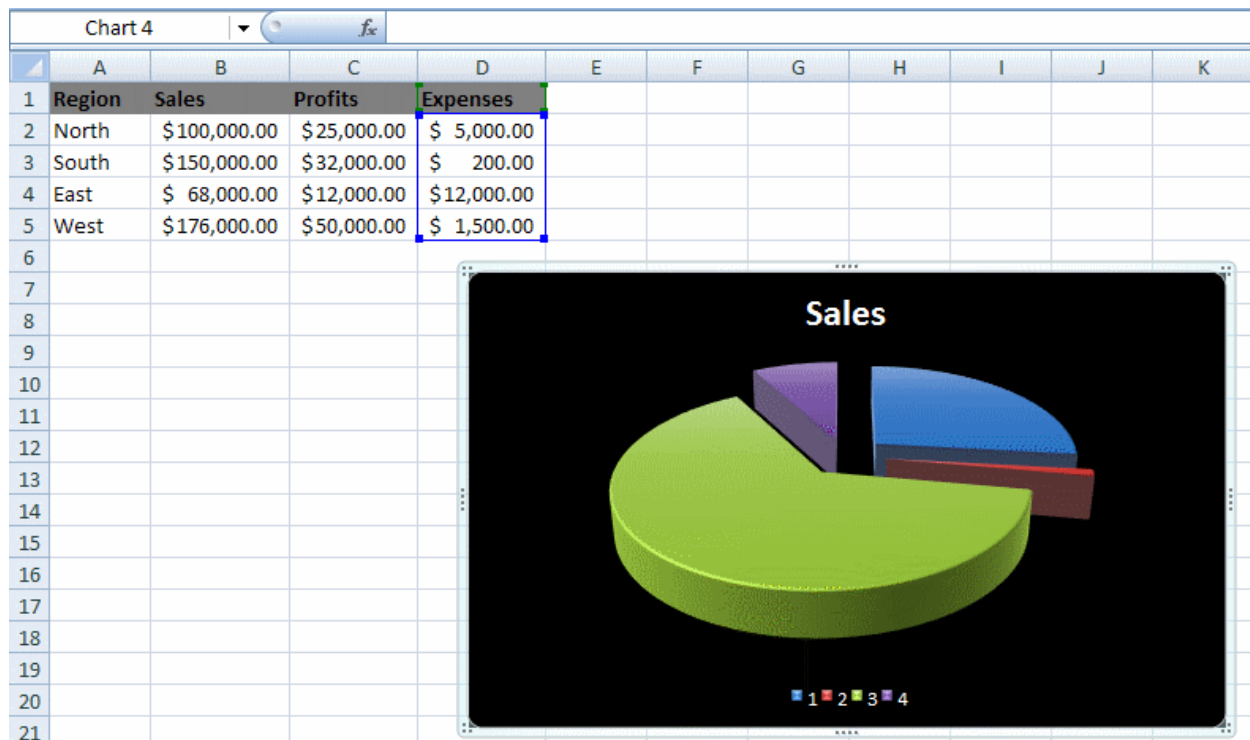
You may notice that now, having changed the source data, the title of the chart (Sales), is not accurate. To change the title, right click on it and select the Edit Text option from the drop down menu. You can now edit the text to change the title to whatever you wish. (In this case, the appropriate title choice is Expenses.)

	A	B	C	D	E	F	G	H	I	J	K
1	Region	Sales	Profits	Expenses							
2	North	$100,000.00	$25,000.00	$ 5,000.00							
3	South	$150,000.00	$32,000.00	$ 200.00							
4	East	$ 68,000.00	$12,000.00	$12,000.00							
5	West	$176,000.00	$50,000.00	$ 1,500.00							
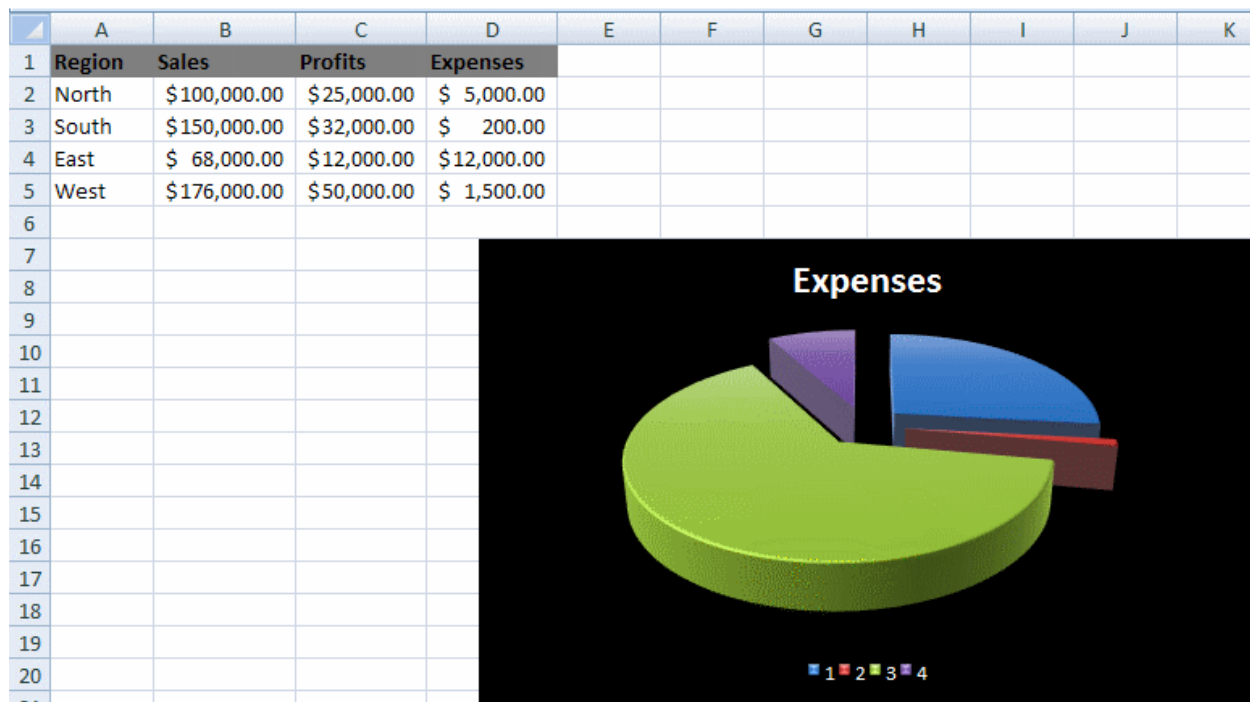
Keep in mind that if you enter new data directly into the spreadsheet cells that serve as the data source for the chart, the chart itself will be updated automatically to represent the changes. You do not have to do anything special to update direct modifications to the source data cells.

Formatting a Chart

Even after you create a chart, you can still alter its appearance. The easiest way to do this is to single click inside the box (chart area) that surrounds the chart. When you do this, you will see the words Chart Tools appear in the Excel title bar.
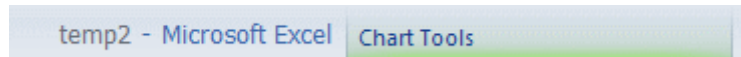
If you click on the words Chart Tools, you will see the Design Ribbon appear. (You can also make the design Ribbon appear by double clicking on the Design tab.)

This Ribbon provides you with a variety of quick and easy chart reformatting options. At the far left of the Ribbon, there is a button to completely change the chart type if you wish.

For now, we will only worry about changing the general format of the chart. To begin, if you right click on the chart legend and choose Format Legend from the pop up menu, you will see a box (with circles and squares) appear around it, and you will see a Format Legend dialogue box on your Excel screen.
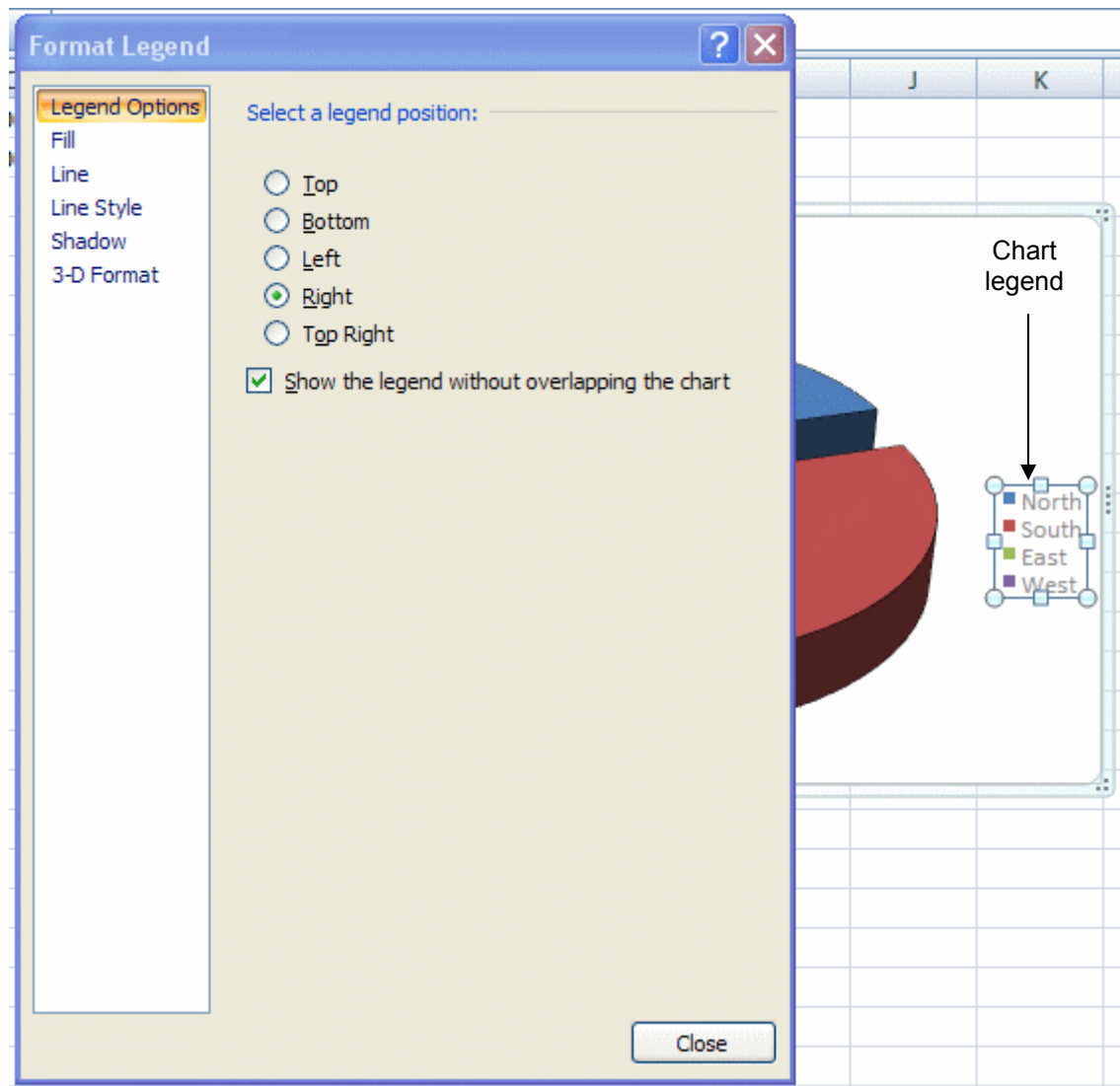
In this dialogue box, you can select any one of the legend position radio buttons to place the legend in the position specified. If you click the Fill option on the panel on the left, you will see options pertaining to the legend background fill color.

As an example, if you select the Gradient Fill radio button, you will see options for fill gradients.
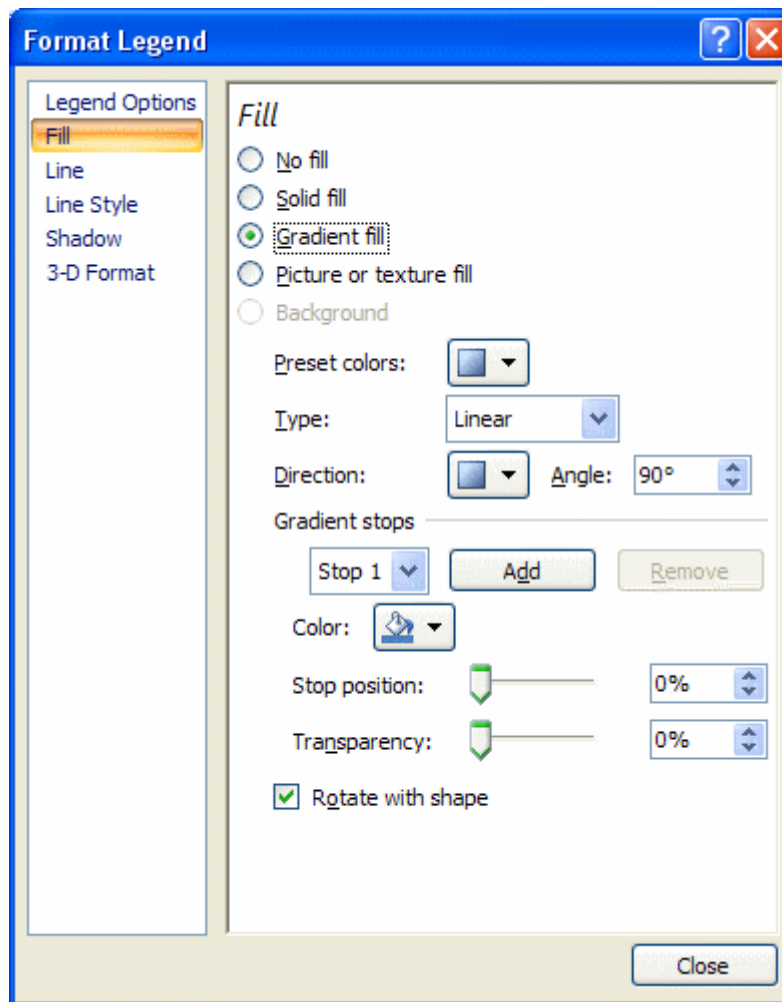
If you click the Presets arrow, you can choose a fill gradient for the legend background from a drop menu.
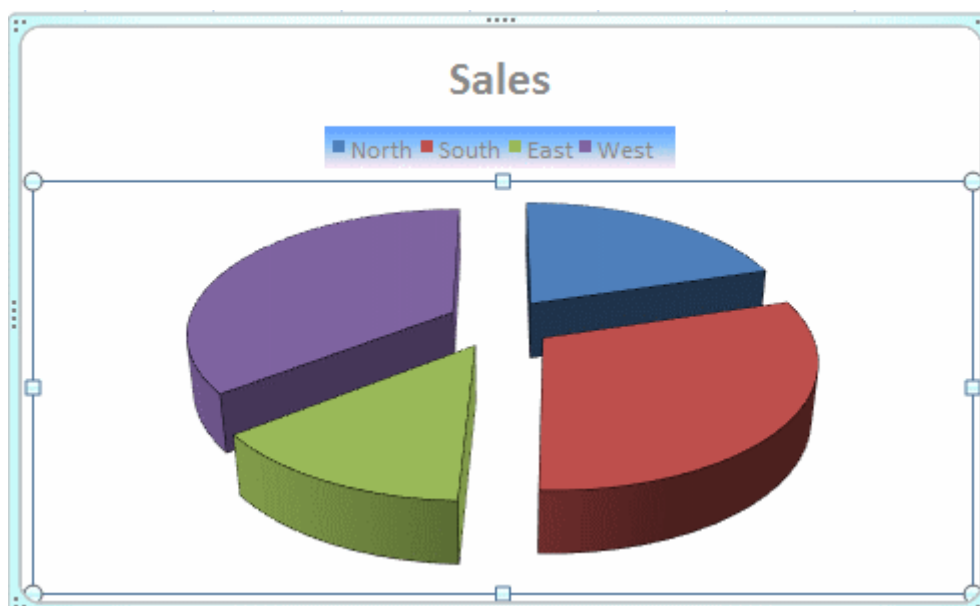
Here you can see the results of selecting the top radio button for the legend position, and a gradient fill for the legend background.

If you click in the area of the box that is close to the chart itself, you will see a second inner box surround the chart. This box defines the plot area of the chart. (In the image above, you can see a thin line forming a box that is inside the heavy outer box.)

If you right click inside the plot area and select Format Plot Area from the pop up menu, you will display a Format Plot area dialogue box.
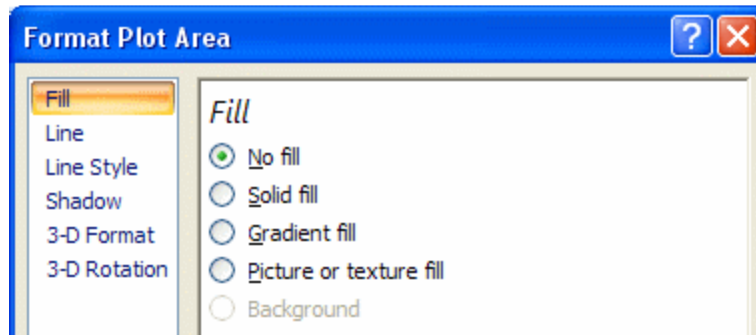
You can use the options in this dialogue in the same way as the Format Legend dialogue.

Here is the same chart with the plot area formatted as a parchment gradient.

Finally, if you right click on the blank white area of the chart (around the sales heading and legend) and then select Format Chart Area from the pop up menu, you will display the Format Chart Area dialogue box.

Format Chart Area

Fill
- Border Color
- Border Styles
- Shadow
- 3-D Format
- 3-D Rotation

Fill
- ○ No fill
- ○ Solid fill
- ○ Gradient fill
- ○ Picture or texture fill
- ⦿ Automatic
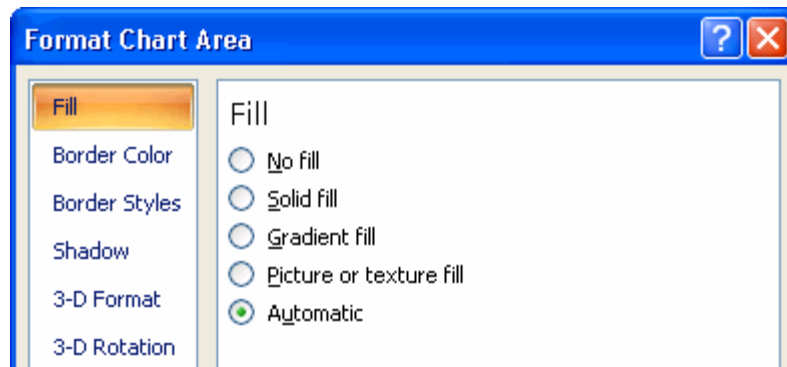
Just as in the previous two examples for the legend and plot area, you can use this dialogue box to format the Chart Area. Just select a radio button for Gradient fill, Solid fill, or No fill, and then choose from the available options.

The following image shows the pie chart from above with a solid fill color added to the chart area.
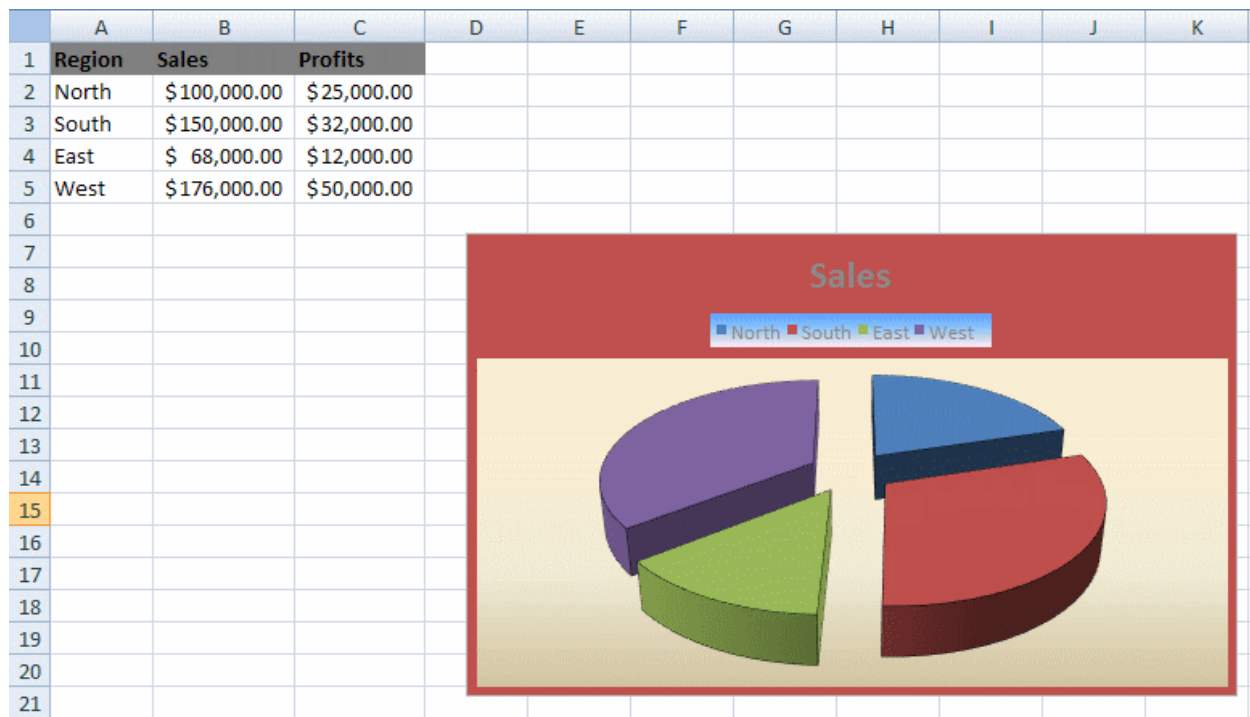
As mentioned at the beginning of this formatting discussion, clicking inside the box (chart area) around a chart will allow you to display the design Ribbon.

In the design Ribbon, you will see a button grouping that is fantastic for reformatting your chart. This grouping is called the Chart Styles grouping. With these style buttons, Excel 2007 can provide professional looking charts in just a few clicks.

The styles available in the Chart Styles button group have been carefully composed to use complementary colors, shading, and formatting. It is most often the case that a quick style will produce a better looking chart than manual formatting, and with less time and effort!

You can cycle through the quick styles by clicking the buttons and watching your chart's formatting change. You can use the scroll bar at the right of the button group to display several more style options. More often than not, the quick styles buttons will provide a formatting option that you will find quite satisfying.
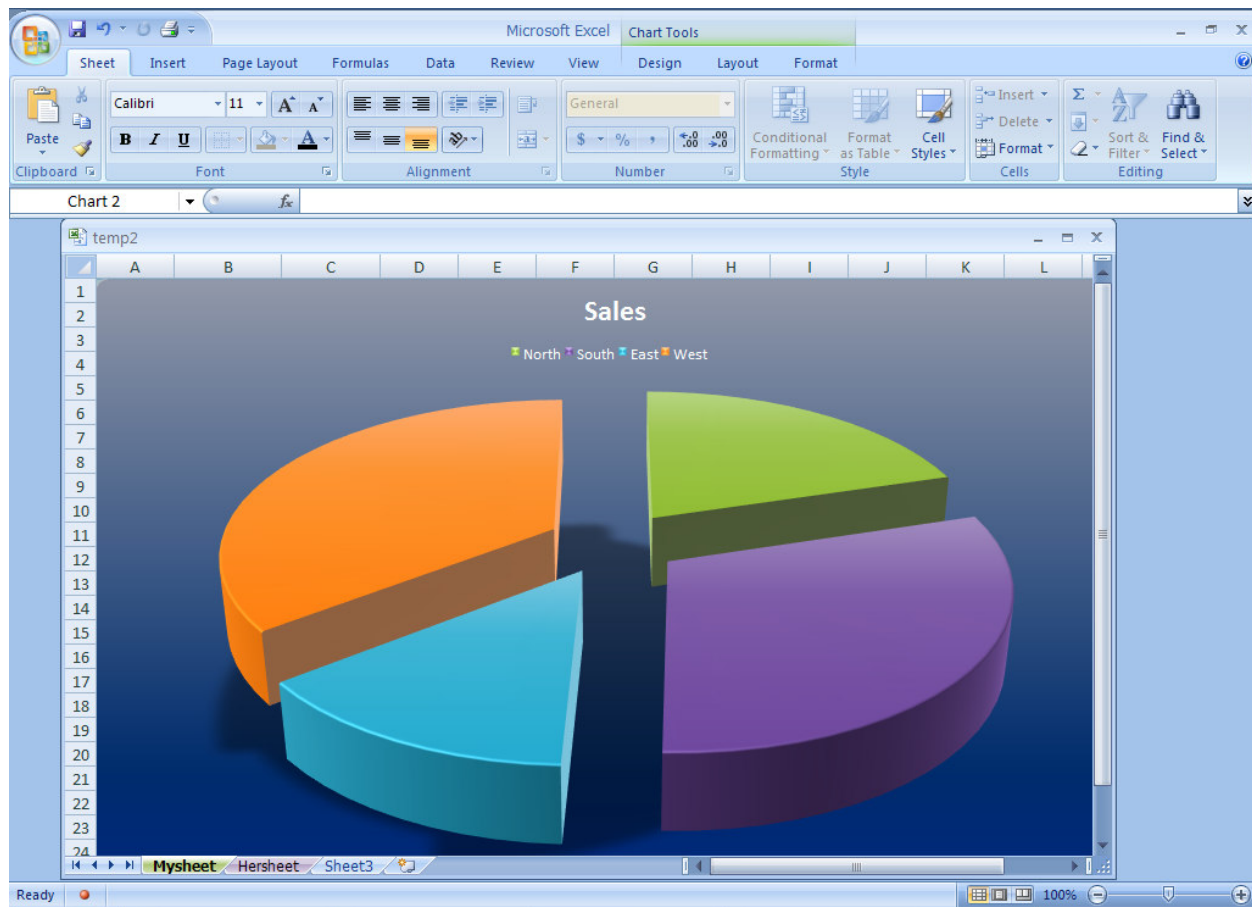
Here is the same chart that we have been using, after being formatted with a quick style.

If you single click on the title of the chart, a box with a thin border will form around the title. If you then double click on the title, formatting options will be displayed.
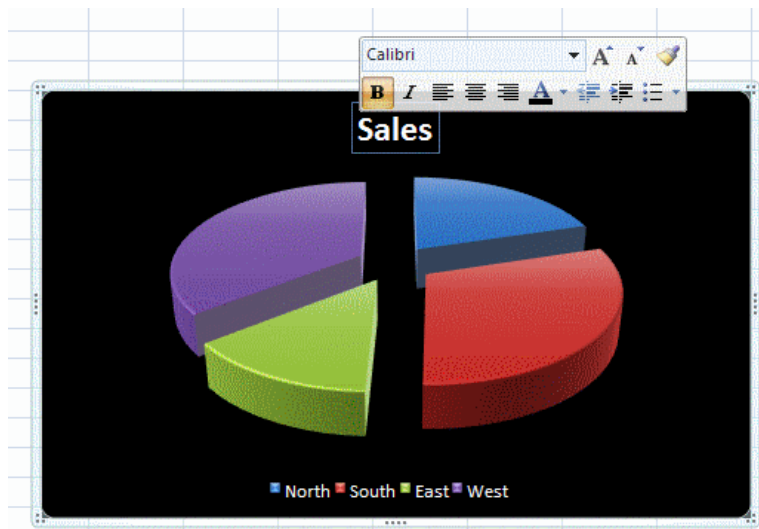
You can use these options to align your title, bold your title, italicize it, change the font color, and more.

Modifying Charts with the Layout Ribbon

As you already know, when you create a chart in Excel 2007, there will be new Ribbons introduced on the user interface. For example, the Design Ribbon (discussed previously) becomes available when you select the chart. You can use the buttons on the design Ribbon to quickly change the overall appearance and style of your chart.

Another Ribbon that can be very helpful when working with charts is the Layout Ribbon. When you create a chart, and select it by clicking on it, you should see a layout tab near the top of the Excel 2007 screen. If you click on this tab you will display the layout Ribbon.
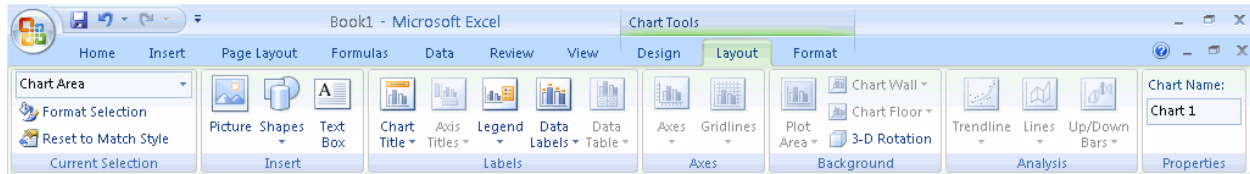
The most important sections of the layout Ribbon (in terms of charts) are the Labels button group, the Axes button group, the Background button group, and the Analysis button group.

To see how these tools work, take the following Excel chart as an example.
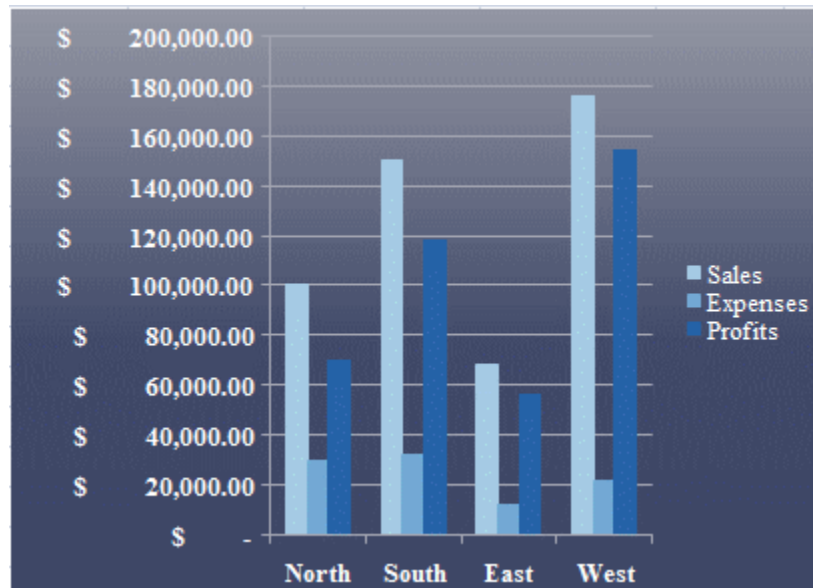
If we click on the chart to select it, we can then click the Layout Ribbon to see what layout options we have for this chart.

In the Layout Ribbon, if you click on the Chart Title Button (In the Labels button group), you will reveal a small menu of title options.
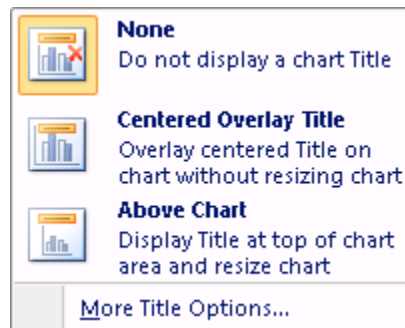
Currently the chart in this example has no title, so there are two options on this title menu that we can use. You can display a title above the chart by clicking the Above Chart option, or you can place a title over the chart by clicking the Centered Overlay option. Let's use the Centered Overlay title.
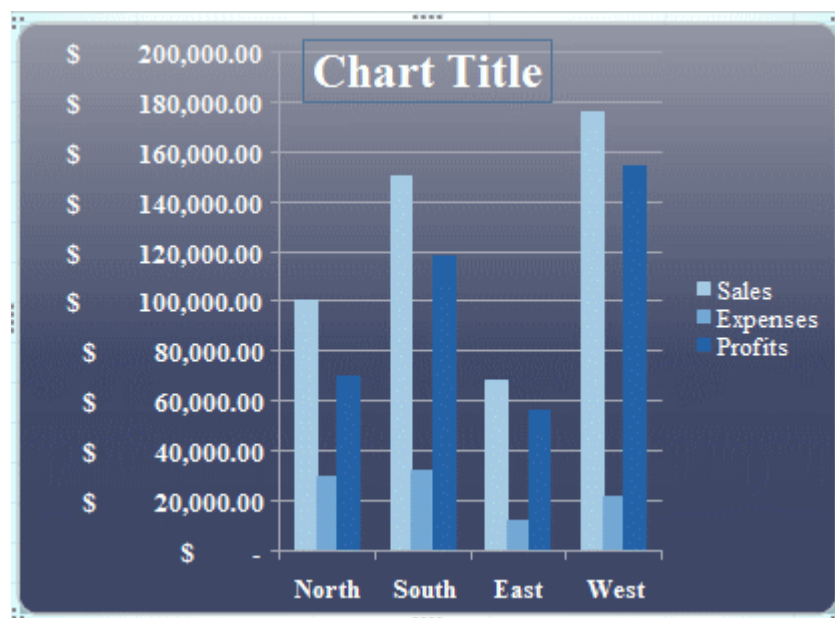
If we decide we don't like that one, we can easily switch to the Above Chart option.
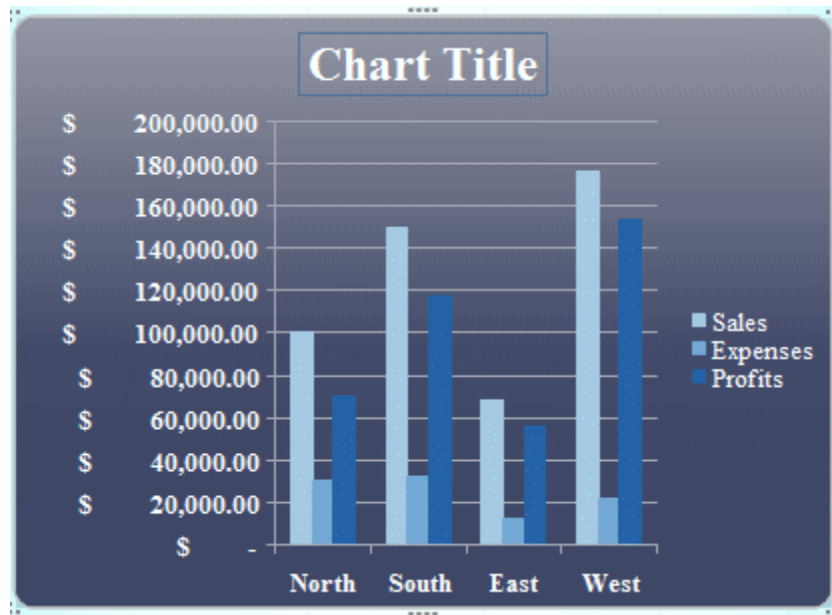
Once you have chosen a title option, you can click on the words Chart Title to display a cursor. When the cursor appears, you can type whatever text you want for your chart title.

You may have noticed a More Title Options item at the bottom of the title menu. If you click this item, a Format Chart Title dialogue box will appear. This will allow you to change virtually every aspect of your title.
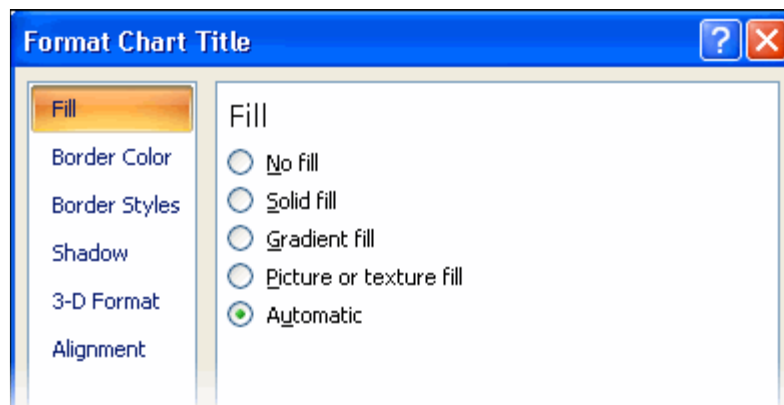
If you click the Legend button on the Layout Ribbon, a series of options for modifying the chart legend will appear.

None
Turn off Legend

Show Legend at Right
Show Legend and align right

Show Legend at Top
Show Legend and top align

Show Legend at Left
Show Legend and align left

Show Legend at Bottom
Show Legend and align bottom

Overlay Legend at Right
Show Legend at right of the chart without resizing

Overlay Legend at Left
Show Legend at left of the chart without resizing

More Legend Options...

Clicking on any of these options will implement the particular style of legend described.

You should notice that each legend option has a small image/icon showing the location of the legend in relation to the chart.

If you want to apply labels directly to the data in the chart, click the Data Labels button.

None
Turn off Data Labels for selection

Center
Display Data Labels and position centered on the data point(s)

Inside End
Display Data Labels and position inside the end of data point(s)

Outside End
Display Data Labels and position outside the end of data point(s)

Best Fit
Display Data Labels and position with Best Fit

More Data Label Options...

Once again, the small images that accompany each option will give you a rough idea of what the results of the given option will look like.

Here is the chart without data labels.
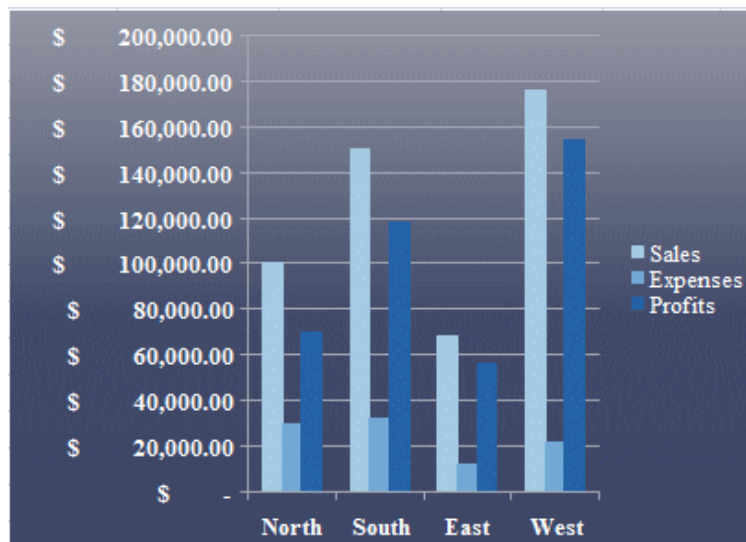
Here is the same chart after adding a title and data labels. The chart was also resized by dragging with the mouse in order to make the data labels legible.
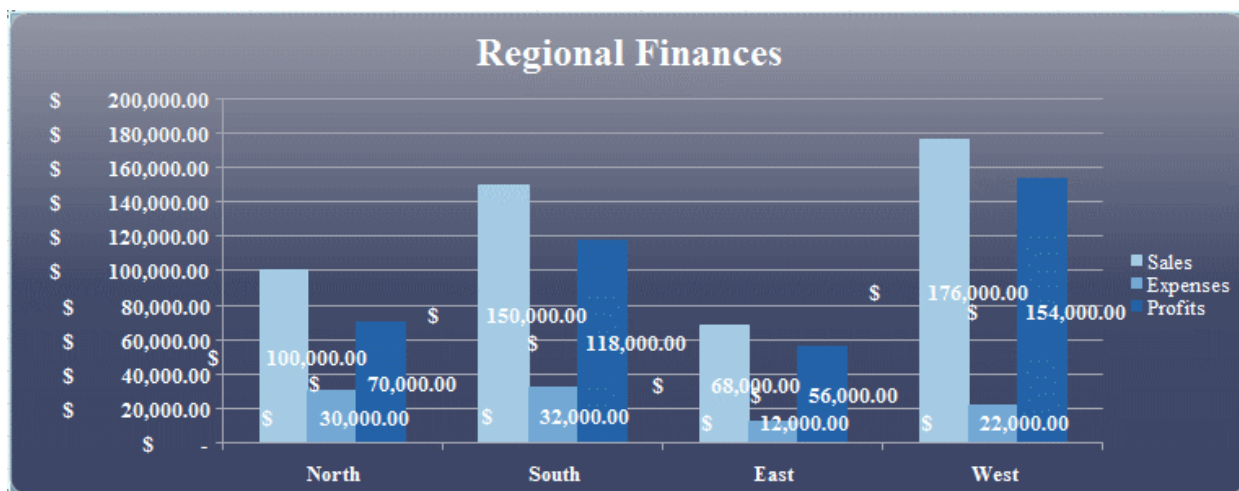
The Axes button will provide you with several options for modifying the chart axes.
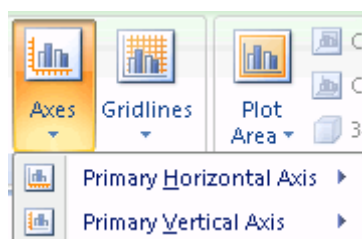
Notice that there are two main options labeled Primary Horizontal Axis and Primary Vertical Axis. Each of these two main options contains a submenu of modification options. These submenus allow you to change the scale and numerical values used on the axis to coordinate the data.
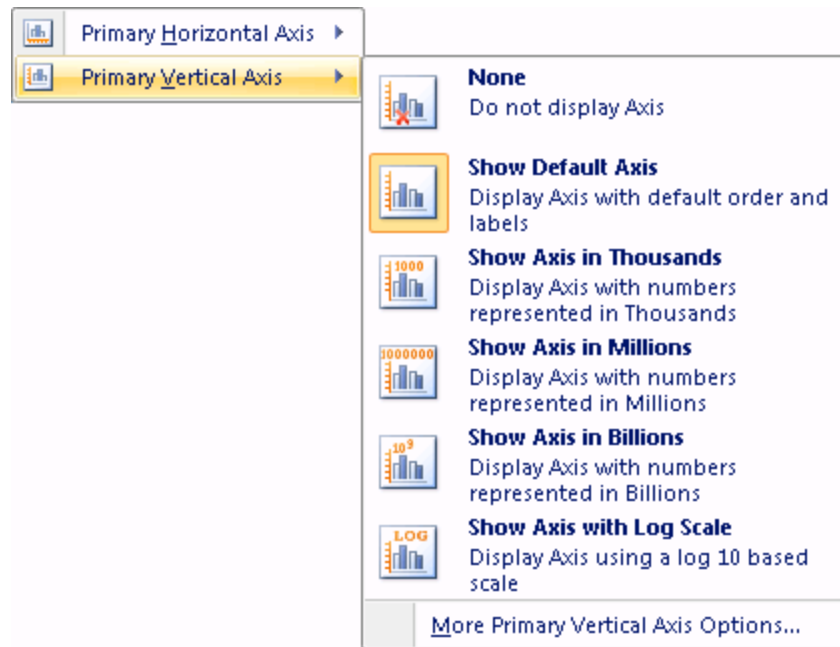
The Gridlines button (also found in the Axes button group) will allow you to add or remove Minor and Major Gridlines to and from your chart. You can add horizontal gridlines, vertical gridlines, or both if you wish. The gridlines will represent the axis units on the chart to give you a clearer picture of the specific value of the data at a given place in the chart.
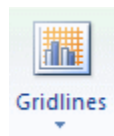
Here is the same chart as before, with minor horizontal gridlines added.
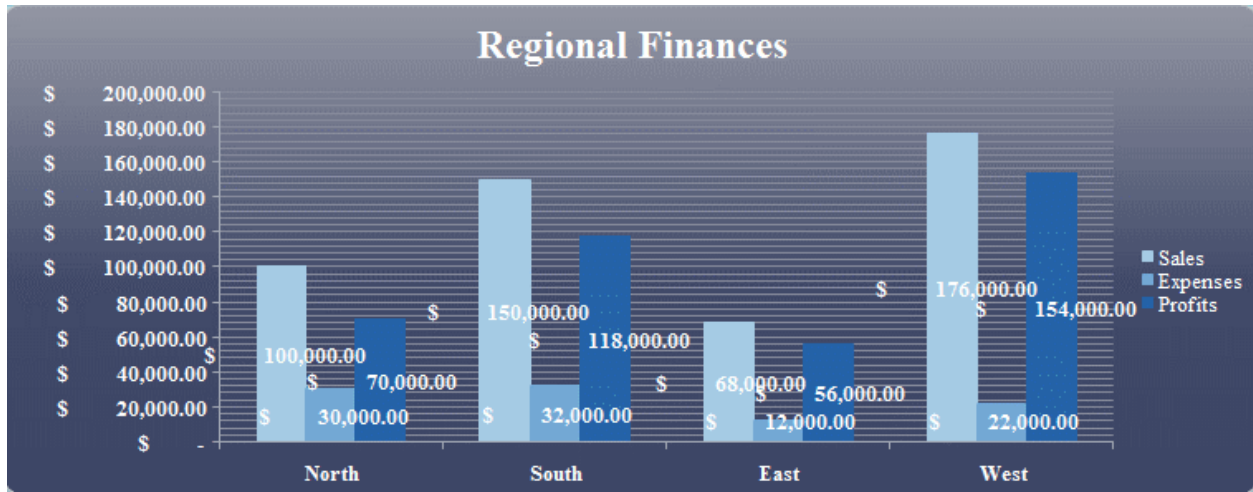
You can also add a data table to your chart by using the Data Table button on the Layout Ribbon in the Labels button group.
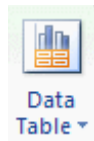
A data table will help to clarify the meaning of your chart by displaying the data groupings in your chart in tabular form.
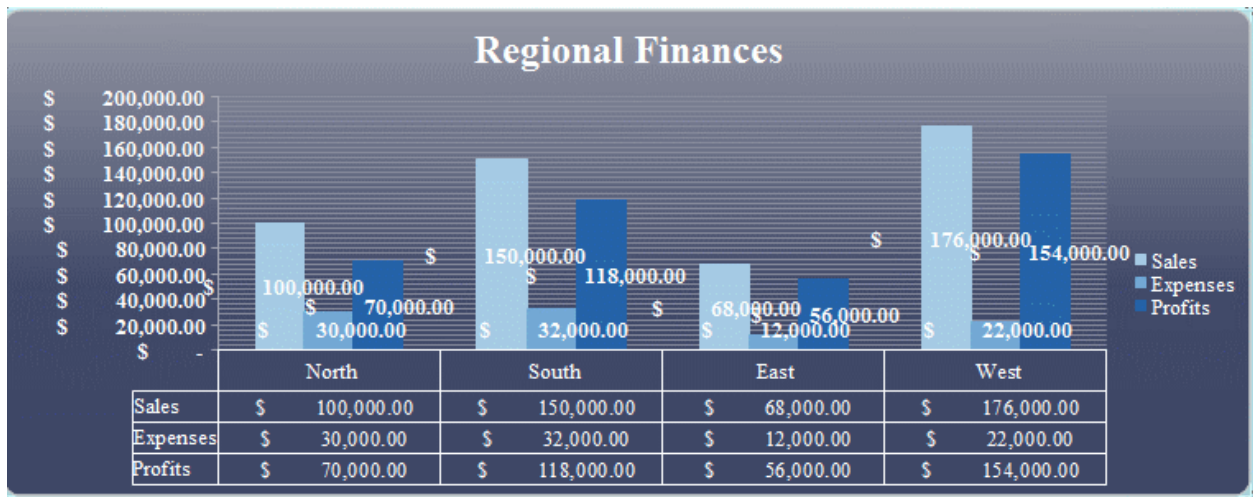
The Trendline button in the Analysis button group can be useful for pointing out a specific behavior or trend in your chart's data.

Under this button, you will see a number of trendline options.

Once again, the image accompanying a given option shows a preview of what the option may look like when implemented.

If you want to add error bars to your chart data (to show a range around the values depicted in the chart that the data may or may not assume) just click on the Error bars button to reveal the error bars options.
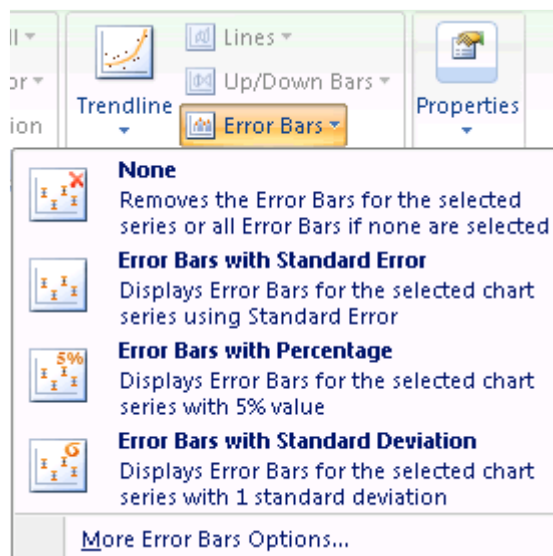
Here is the same chart as before with 5% error bars added to it. The error bars show the values that the data columns could assume, if we have an estimate of 5% error.
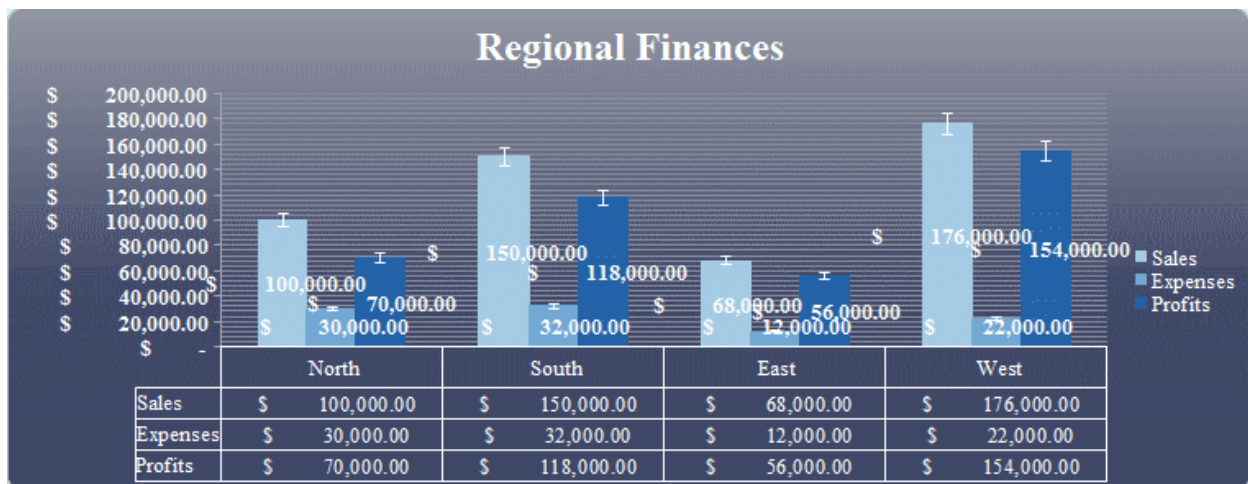
If you are working with 3-D charts, the Background Charts button group has some useful and convenient options.
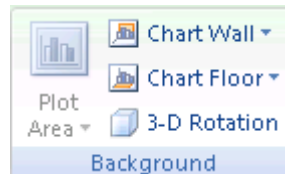
Let's take the following 3-D chart as an example.
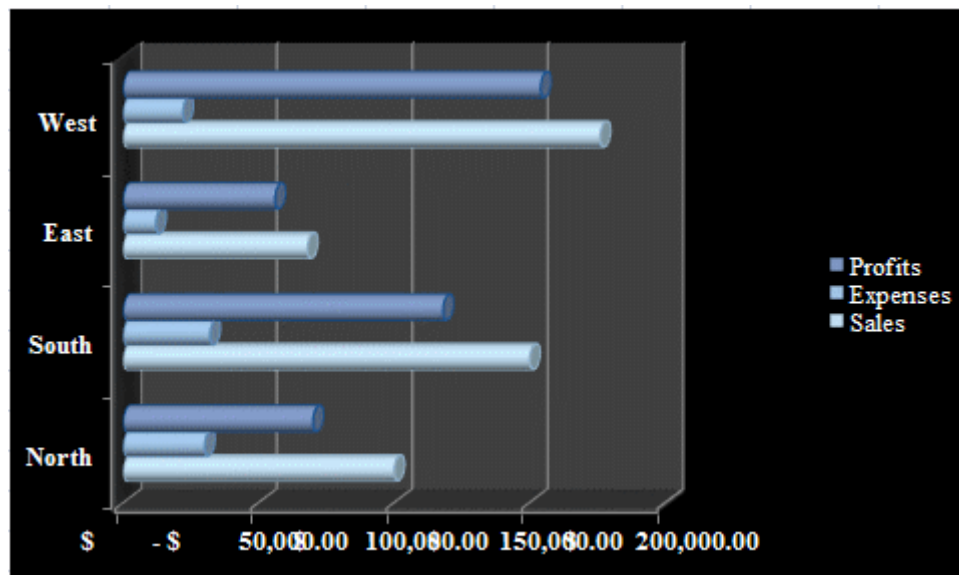
If you click the Chart Wall button on the Layout Ribbon in the Background group, you will see options for showing or clearing the chart wall. The following image shows the same chart as above, with the chart wall cleared.
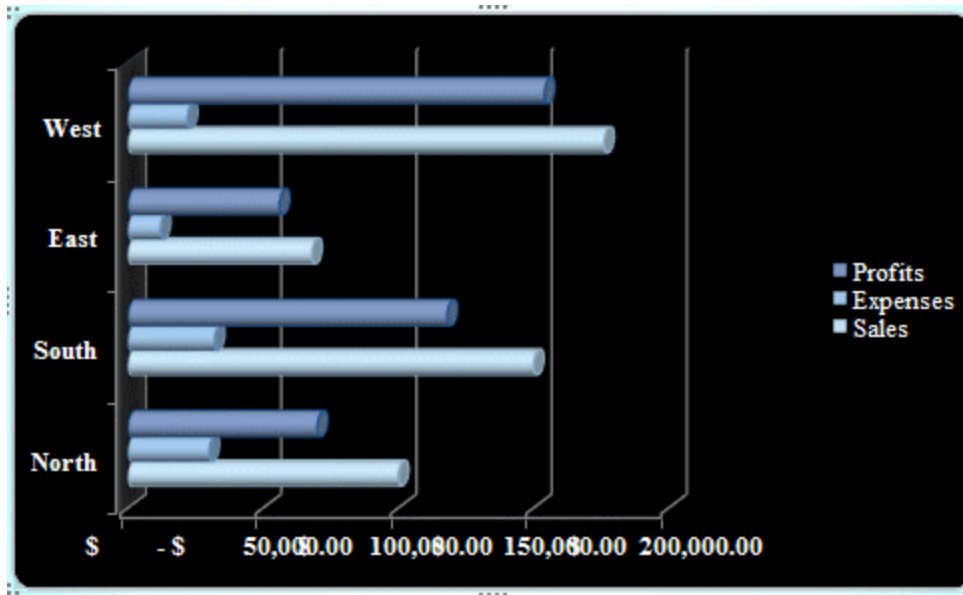
As you can see, the chart wall represents the back plane and bottom plane of the chart. These areas show the units that the chart data is measured by. (If you clear the chart wall, the data units and gridlines will remain, just the fill color will be removed.)

The chart floor, on the other hand, represents the bottom or side plane of the chart, where the data labels are shown. Here is the same chart with the wall fill color added and the floor fill color cleared. This was done with the Chart Floor button.
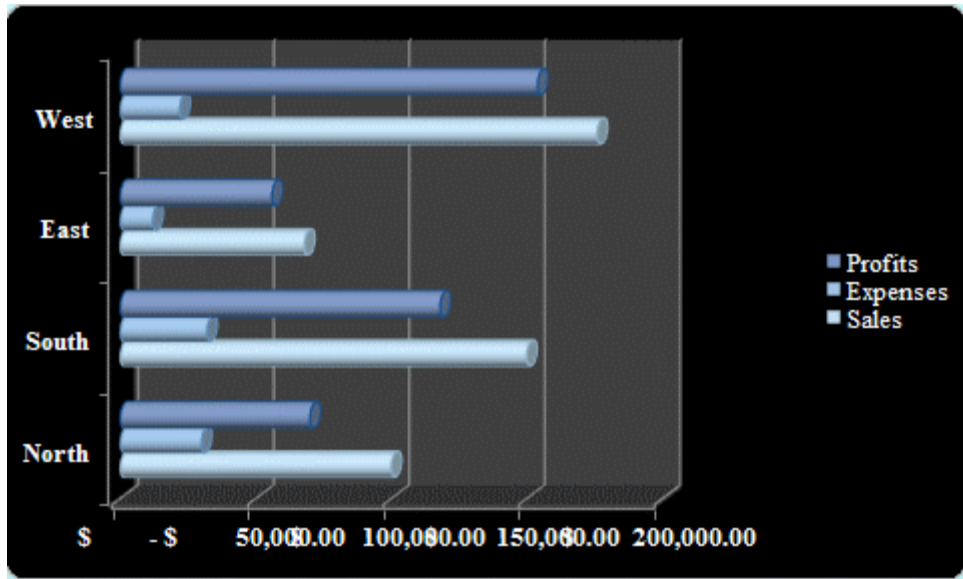
The orientation of the chart floor and chart wall may depend on the type of chart that you create. Here is a 3-D chart with the floor removed.
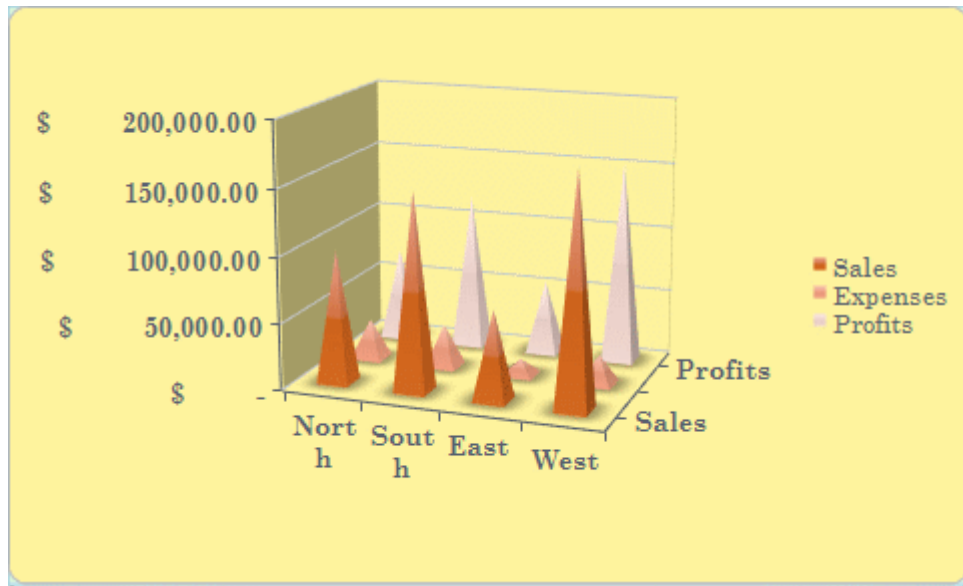
Here is the same chart with the floor added. As you can see, the orientation of the floor and wall of the chart differs from the chart in the previous example.
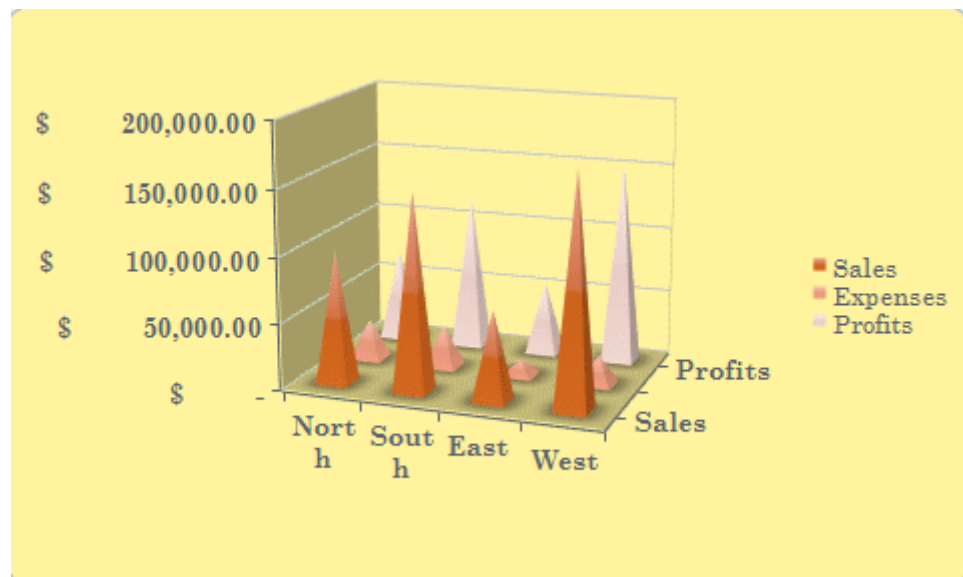
When you are working with 3-D charts, you can also use all of the options in the Labels button group and the Axes button group.
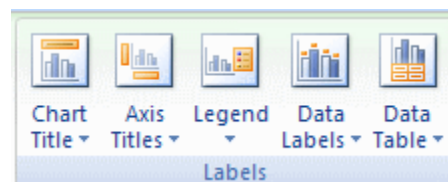
This Labels group was discussed previously in the context of 2-D charts. The buttons and menus work with 3-D charts in an exactly similar way. Here is a 3-D chart that has been modified with the Layout Ribbon and design Ribbon.
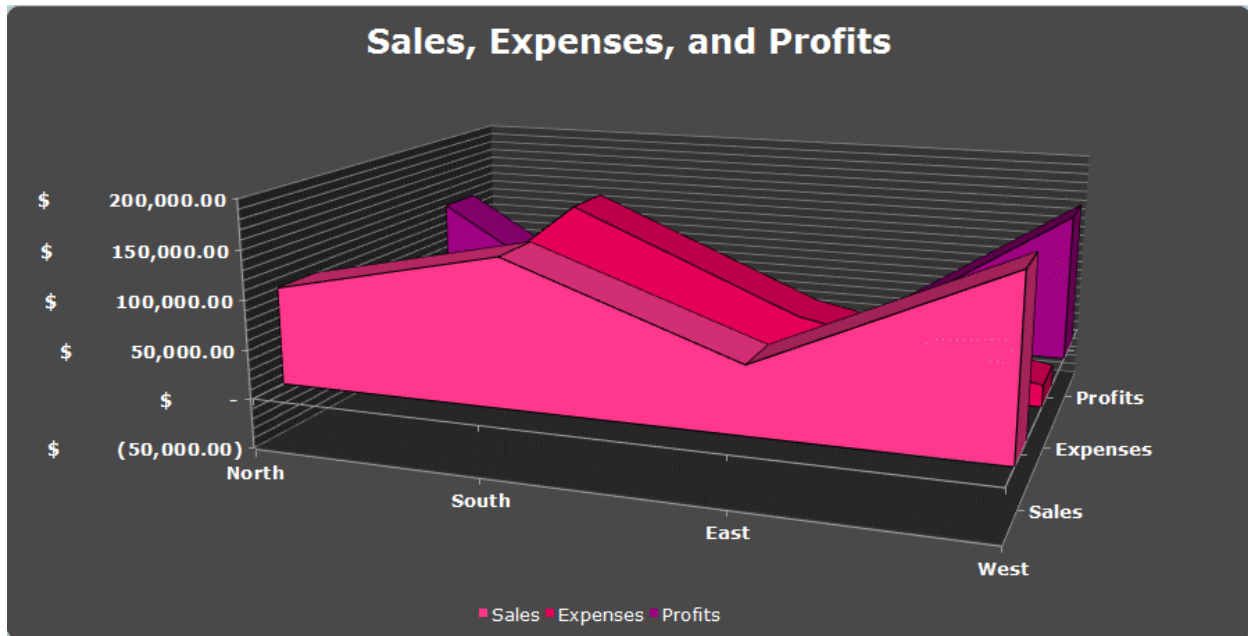
Remember, the results you get when you use the buttons on the Layout Ribbon may vary between chart types, different sized charts, and between 2-D and 3-D charts.

It is usually fairly easy to undo (   ) a change that you make to a chart, so don't be afraid to experiment with the Layout Ribbon.

Enhancing a Chart with Shapes and Graphics

There are times when you may want to add additional graphic elements to a chart, such as arrows or callouts, to point out and explain important features.

In a chart like the following, you may want to point out that cone number 4 shows the greatest percentage of profits.
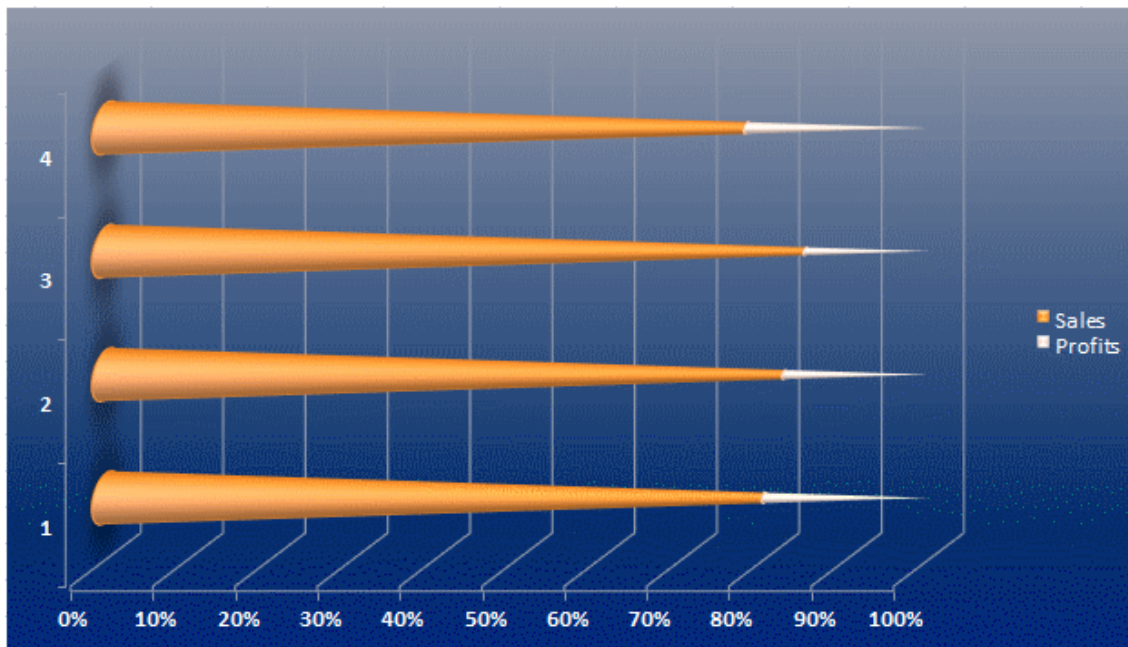
To add a callout to the chart, click the lowest down pointing arrow beside the Shapes button group on the Insert Ribbon.
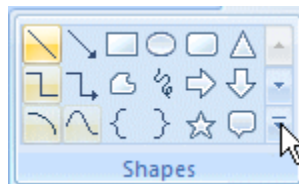
This action will display a large menu of preset shape options.
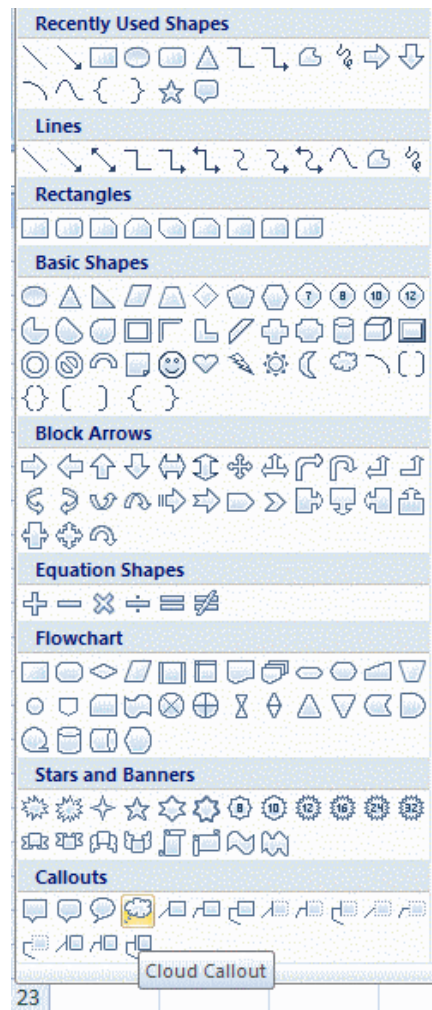
Find and select a callout from the bottom of the shapes menu, and then draw it out by dragging with the mouse over the chart. (For our purposes, we'll use the cloud callout.)
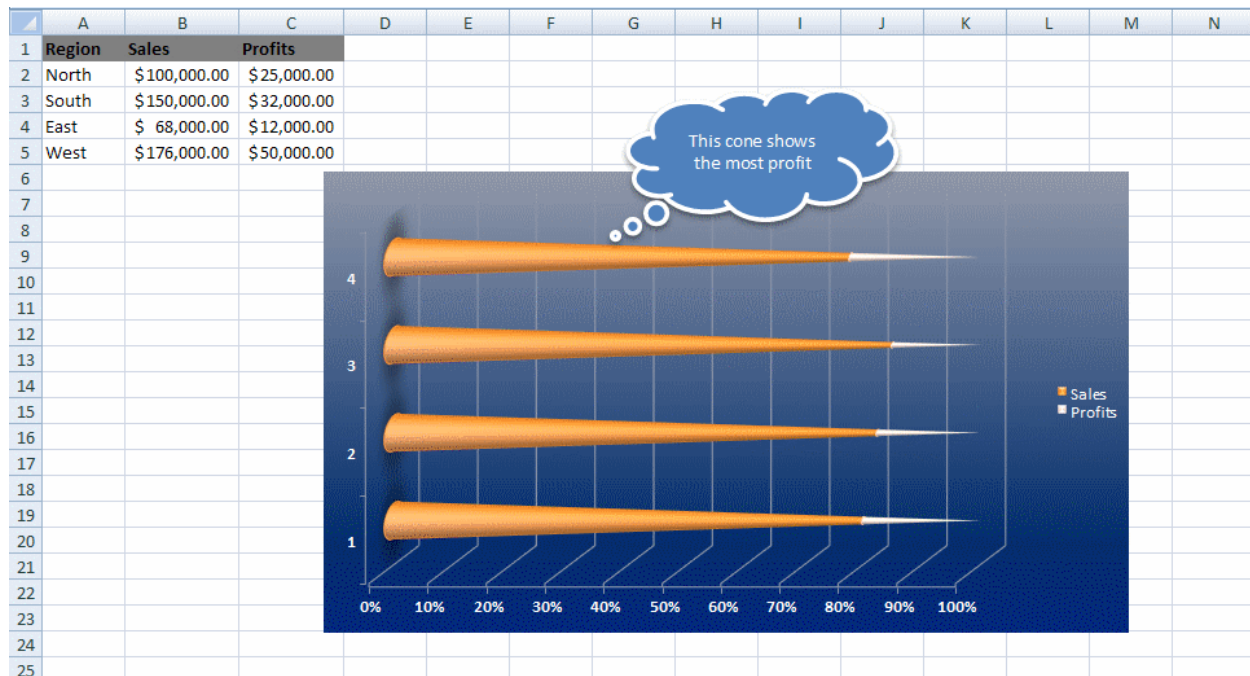
You can enter text into the callout by right clicking on it and selecting Edit Text from the drop down menu.

You can use this procedure to add as many shapes or graphic elements to your chart as you think are necessary.
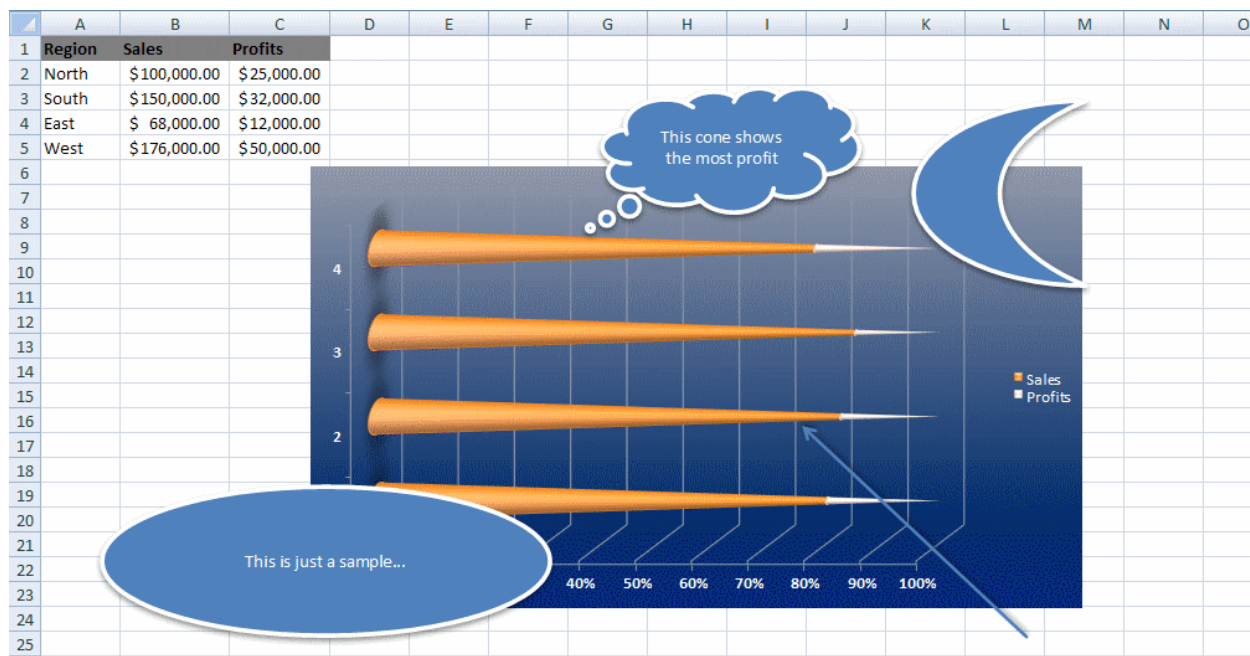
Working with the Chart Axis and Data Series

In a typical chart, the axes are the horizontal and vertical scales that you use to coordinate your data. Basically, data is charted with respect to its numerical position along an axis.

A series is a group of data (normally a selection of cells) that is to be charted against an axis. You can have more than one series represented in a chart to show how the different series (selections of data) compare to each other.

To add more than one series to a chart, right click on the chart and click Select Data from the menu that appears. This will display the Edit Data dialogue box. In this dialogue box you will see buttons for adding and removing a series.
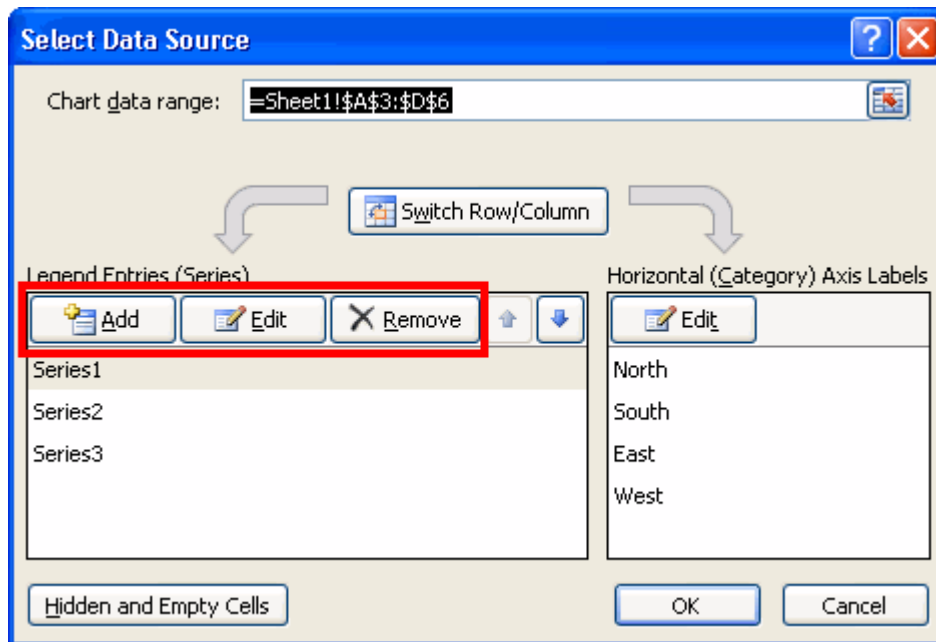
To add a new series to the chart click the Add button. This will display an Edit Series box where you can enter a name for the series in the name field that is provided.
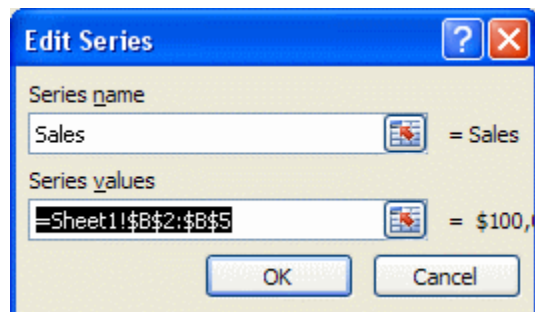
Next, you can enter a range of data for the series by dragging your mouse pointer to select a range from your spreadsheet. (In this example, we are adding the sales data to a column graph that shows expense data.) You can enter data sources and series by typing a range directly into its field in a dialogue box, but selecting with the mouse is usually simpler.

After you select the appropriate data, click the OK button on the Edit Series dialogue and then on the Edit Data Source dialogue.
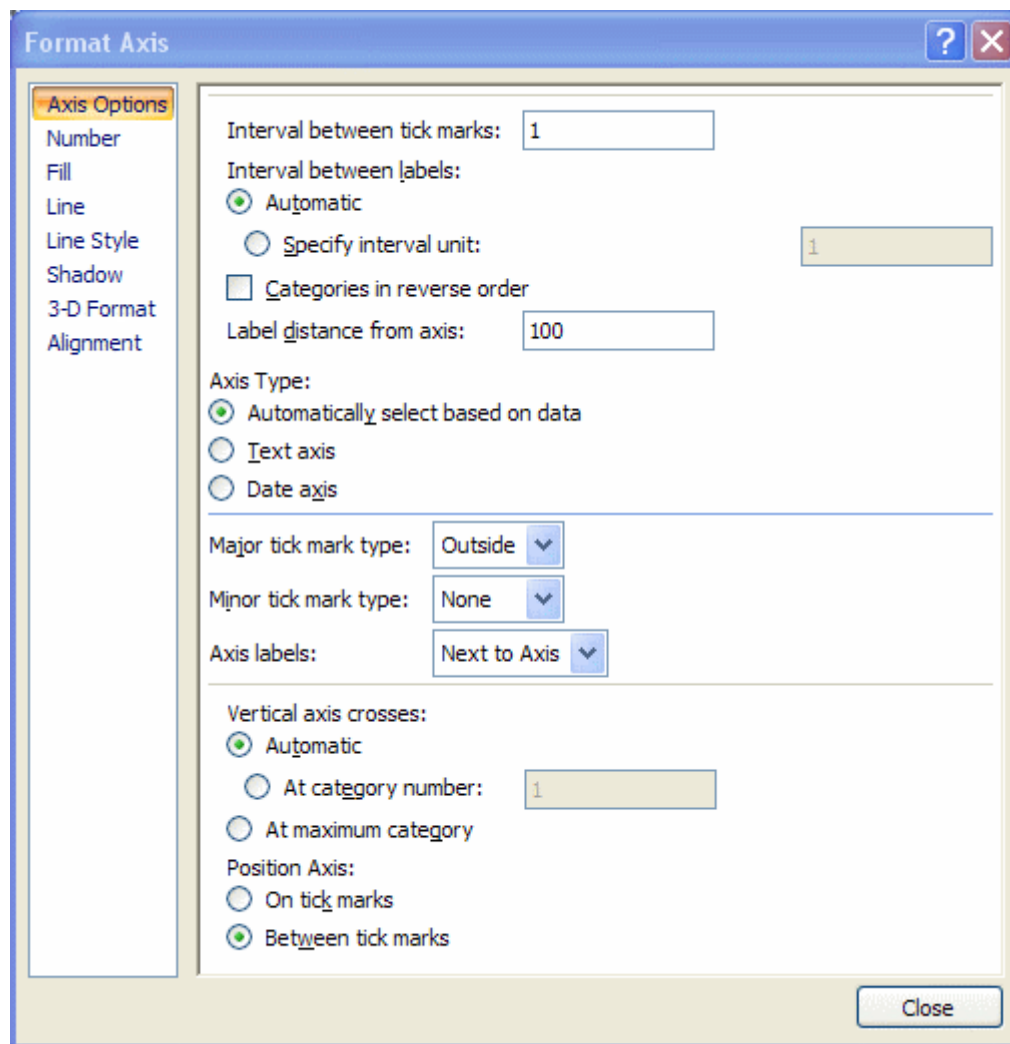
Here you can see that two series (Expenses and Sales) are represented in the chart.
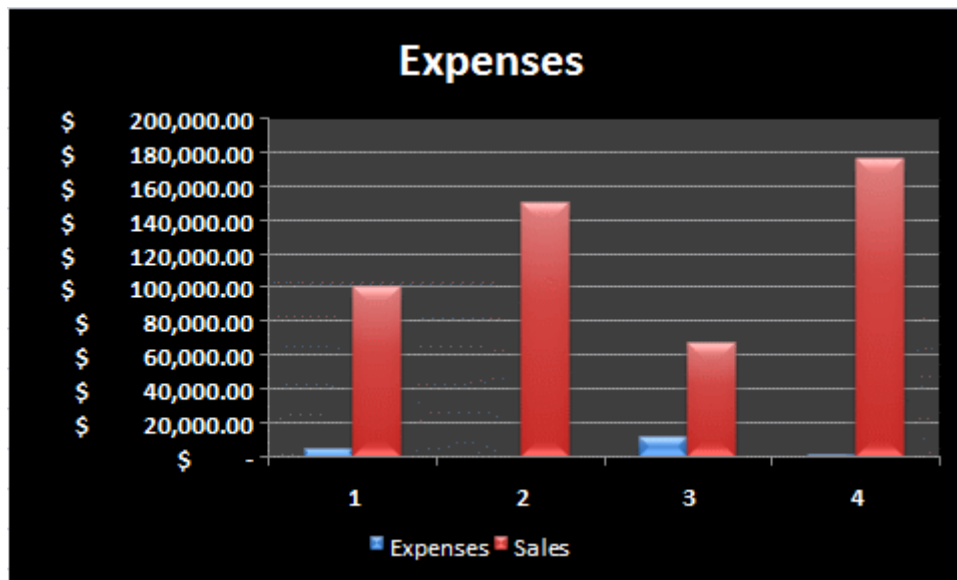
If you display the Edit Data Series dialogue, you will see two names in the series section of the dialogue box.
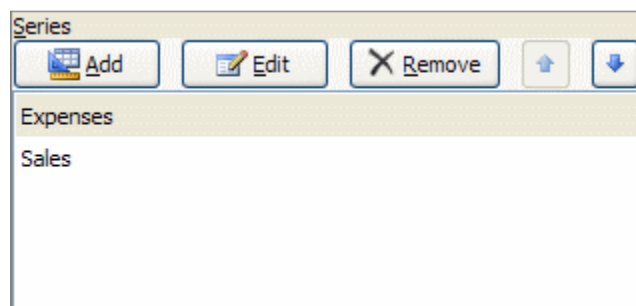
You can select either one of these series and click Remove to remove it from the chart. You can also click the Add button to add even more data series to the chart if you wish.

In the following stacked line chart, the Sales data and Profit data are represented against a Y axis consisting of dollar amounts.

If you right click on one of the dollar amounts on the Y axis, you will display a drop down menu. From this menu, you can choose a Format Axis option.


This will display a Format Axis dialogue box.

In this box, you will find controls to specify the units and adjust the scale, tick mark, and position of the Axis labels.

If you select a different heading from the panel on the left of the box (the heading highlighted in this image is Axis Options) you can change the line style of the axis, the shadow, and other aspects of its format.

If you want to change the labels on an axis, invoke the Select Data dialogue box.
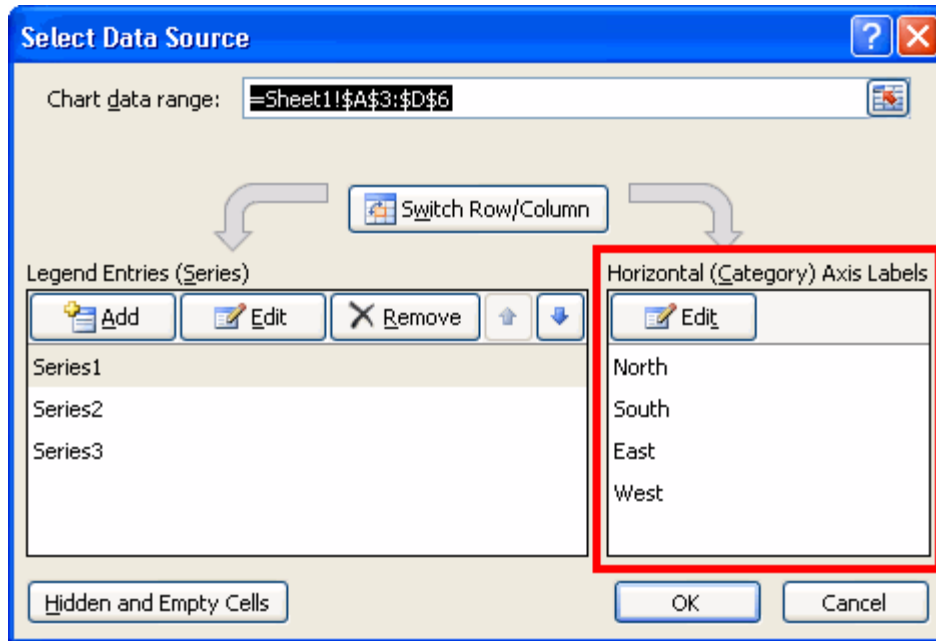
You can see an edit button in the Axis Labels area (on the left) of the dialogue box. If you click the Edit button, an Axis Labels box will appear, and you will be able to select the labels you want from the spreadsheet. Just drag your mouse to select the appropriate cells or manually type the cell range into the box provided.
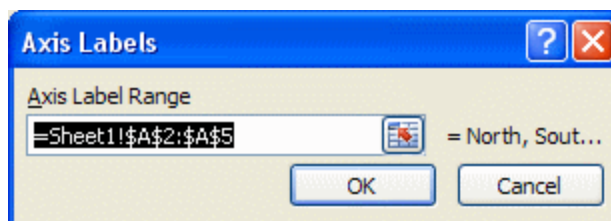
Her is the same chart that was shown previously, with its axis and labels changed.
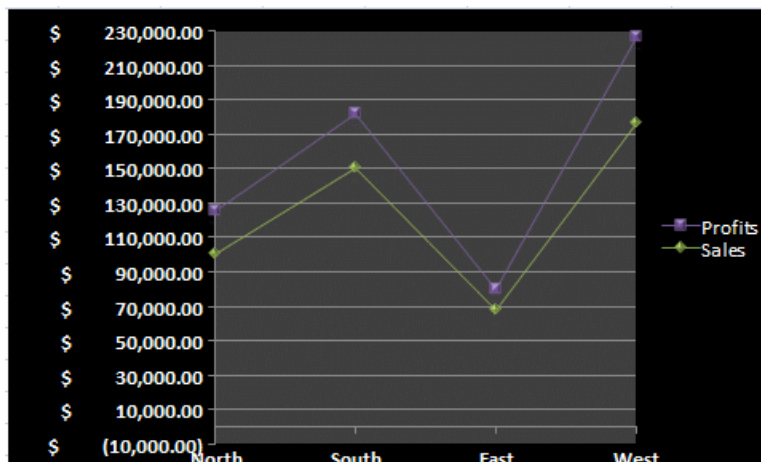
A more convenient way to quickly select a chart layout is to use the Chart Layout buttons available on the Design Ribbon.
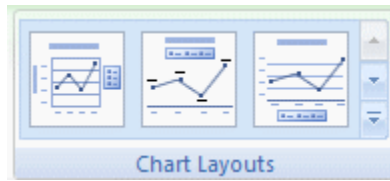
Chart Layouts

With these buttons, you can quickly apply numerous layouts to your chart by clicking. You can also use the scroll bar at the right of the button group to view more layout types.

Here are a couple of different layouts for the chart. Both were chosen with the chart layout buttons.
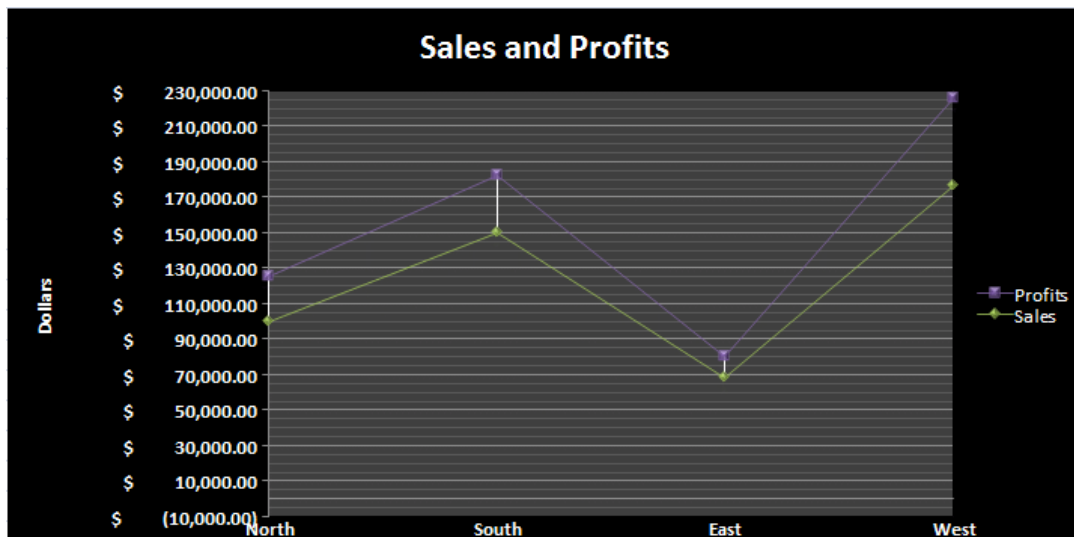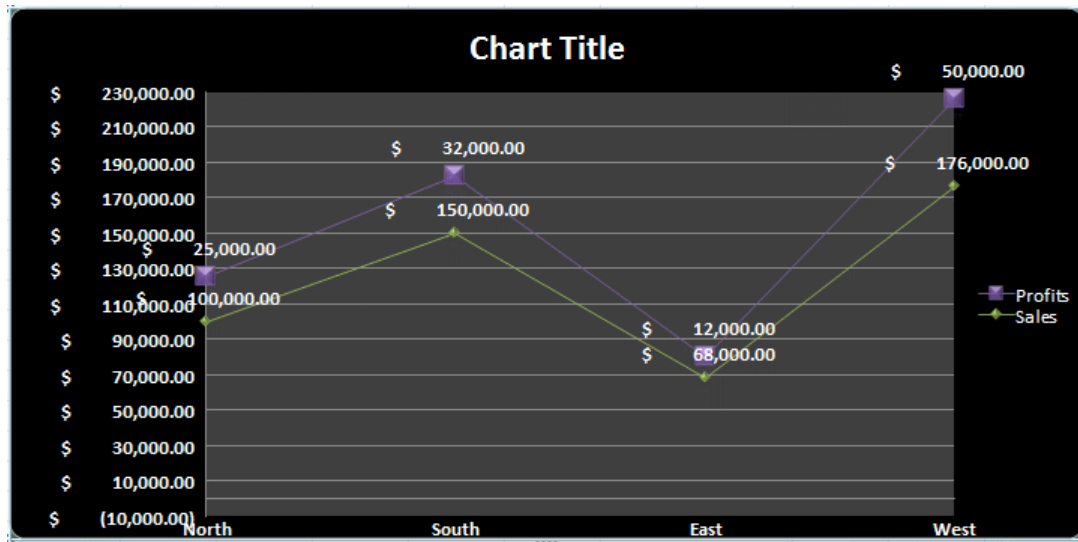
Saving a Chart as a Template

Once you get your chart looking just the way you like it, you can save the chart type, colors, and formatting as a template that can be reused to make on future charts.
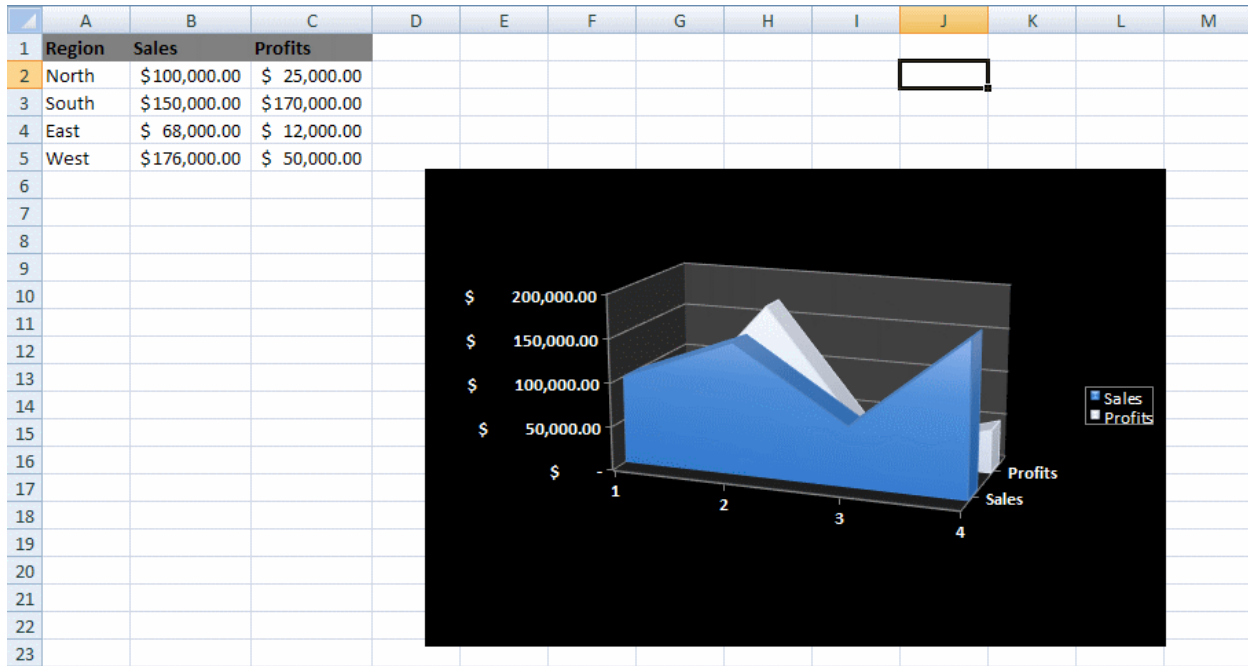
Assume that this image represents a chart style and format that we are happy with and that we would like to use in the future.

To save this chart as a template, display the Design Ribbon by clicking on the chart area. On the Design Ribbon, click the Save as Template button.

This will display a Save Chart Template dialogue box; it's virtually identical to the regular Save dialog. Just enter an appropriate name for your chart template and then click the Save button. By default, the templates will be saved in an Excel chart folder.

When you want to use the template, just select a data range for the new chart from whatever spreadsheet you are working on and then click the small arrow at the lower right of the Charts button group. This will display the Create Chart dialogue box.
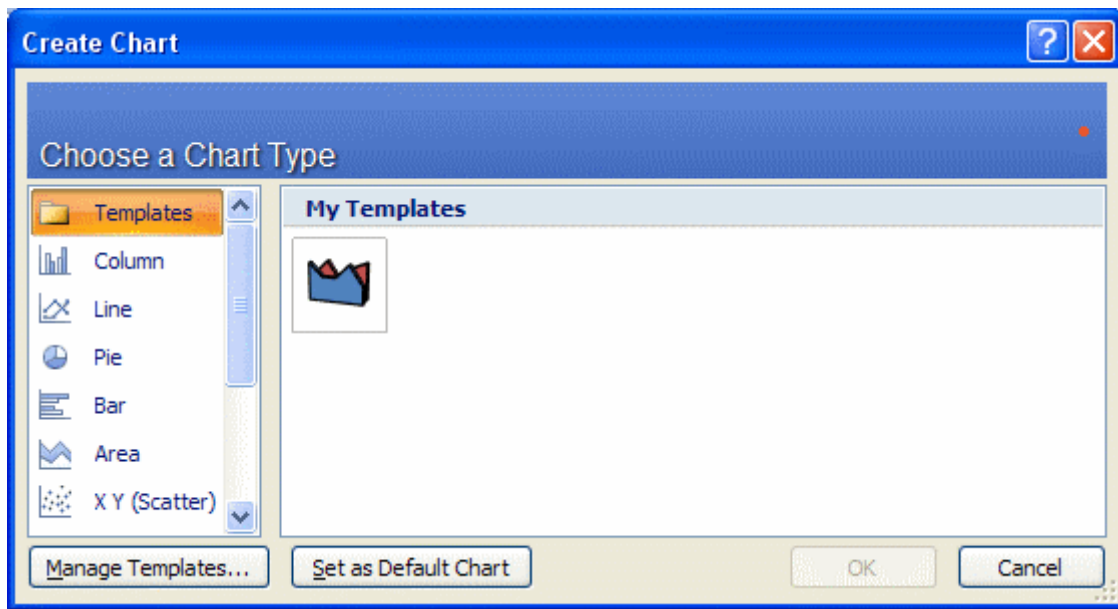
If you select Templates in the pane on the left of the box, you will see the chart template that you saved displayed on the right side. Just click the template icon to apply the template to the selected data.