



Excel Spreadsheets: Getting Started



Excel Review
Excel 97
1999-2000

Spreadsheets: Getting Started

Read through this guide for tips on some of the basic skills you need to get started building and using spreadsheets. Specific how-to instructions reference Excel 97.

If you're new to spreadsheets you might skim through this entire guide for an overview. Then return to particular sections as you need them while you work on your own spreadsheets.

*For additional information on designing and troubleshooting spreadsheets, see the handout called **Spreadsheet Design & Audit Tips**. For an introduction to spreadsheet modeling, see **Practice with Excel Modeling: The Oak Products Project**.*

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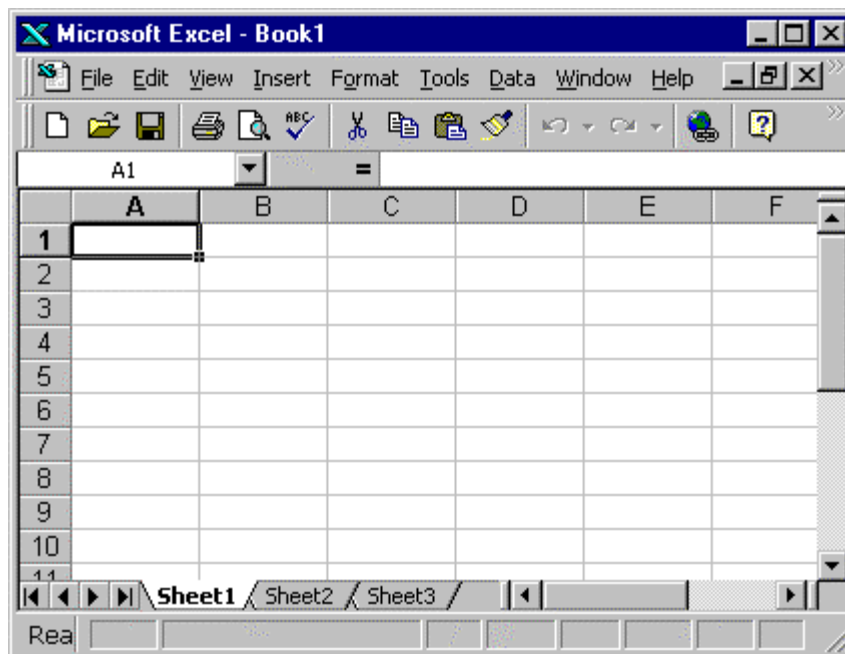
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I. Overview of the Excel Work Space

◆ *Titles, Windows, and Worksheets*

The title bar at the very top of your Excel screen reminds you that you're in Excel. If your workbook is expanded to take up the maximum amount of screen space, its title bar is merged with Excel's title bar to look like this: **Microsoft Excel - Book1**. If your workbook is taking up less than the maximum amount of screen space it's displayed in its own moveable window with its own separate title: **Book1**.

Book1 is the default name for an Excel workbook until you assign it another name. Book1 is composed of multiple worksheets. Take a look at the bottom of the Book1 window to see the tabs labeled *Sheet1*, *Sheet2*, *Sheet3*, etc. Use the mouse to click any one of these tabs to move that worksheet to the top of the display.

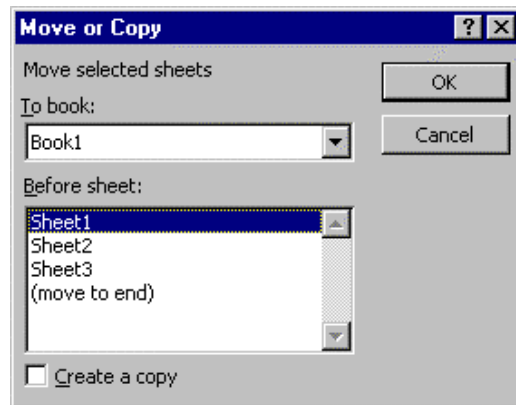


Right-click any tab to get a “pop-up menu” of options specific to the tab. For example, one of the options is “Rename”. Click the Rename option to put the selected tab’s name in reverse video. Type a different name and hit the enter key to change the tab’s name.

Change the order of worksheets by dragging and dropping a tab from one location to another. Delete a tab by clicking the tab to select it, right clicking, and selecting “Delete” from the pop-up menu that displays.

Tip

Move or copy a worksheet with the commands *Edit, Move or Copy Sheet*.



Indicate what workbook you want the sheet to be in.

Click the “Create a copy” box at the bottom of the dialog if you want to copy and not move the sheet.

◆ *Menus*

Excel's menu appears across the top of the workspace. The menu is a part of Excel's workspace and is separate from the workbook in which you create worksheets, charts, and other objects.

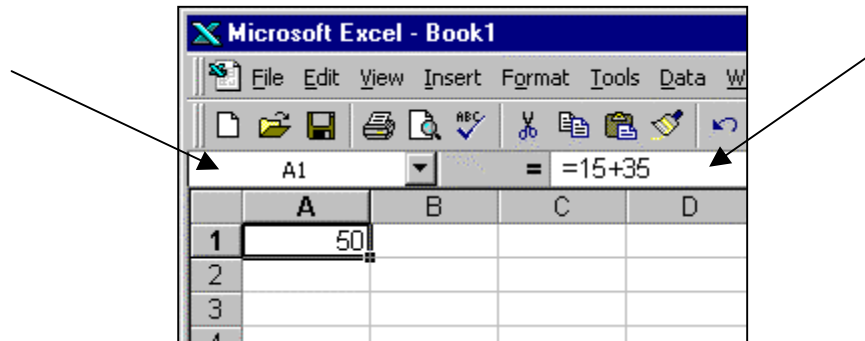
The menus are arranged to lead you to the option you need. Select any top-level menu entry by clicking it with the mouse or holding down the ALT key and tapping the underlined letter for your choice. Excel displays a further set of options using a drop-down menu list. Selections with a diamond to the right of them lead to other drop-down lists. Menu selections with ellipses after them lead to a dialog box that collects information Excel needs to carry out your command.

There are times when the menu contents may change. For example, if you're working with a chart the menus reflect choices relevant to the InfoWindow or the charting environment.

◆ *Formula Bar*

The formula bar appears under the menus and any toolbars you might have open at the top of the screen. It reflects the contents of whatever cell is the current cell in the worksheet. The left of the formula bar shows the cell reference or the cell name if the cell has been assigned a name. At right is a display of the cell's contents. If your cell contains

a formula, the worksheet displays the *value* of the evaluated formula while the formula bar displays the *contents* (the formula itself).



◆ *Toolbars*

Excel has a thirteen preconfigured toolbars. The icons on a toolbar are generally shortcuts to commands you might otherwise issue using the menus or with keystrokes. Toolbars appear as strips or boxes of icons located around the edge of your worksheet or floating on the surface.

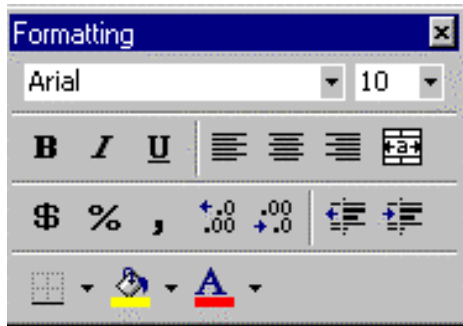
When you start Excel you see the *Standard* toolbar, with icons for frequently-used tasks such as file management, printing, copying and pasting, formatting, functions, charting, etc. To open up more toolbars, use the commands *View, Toolbars* and then select the toolbars you want displayed from the dialog box that appears. Turn off toolbars the same way.

Shortcut

If you have at least one toolbar displayed, here's a shortcut to displaying and hiding toolbars: Click anywhere on the displayed toolbar (but not directly on a tool button) with the *right* mouse button. Excel then displays a drop-down list of all the toolbars. Click on any toolbar in this list to display it (if hidden) or to hide it (if displayed).

Move the mouse pointer to the top edge of an icon on a toolbar to have Excel display a "tooltip", or a short description of what that icon does.

“Grab” a toolbar by holding the left-hand mouse button on a space on the toolbar but not directly on a tool button. Drag to any location in the workspace where you want the toolbar to be.

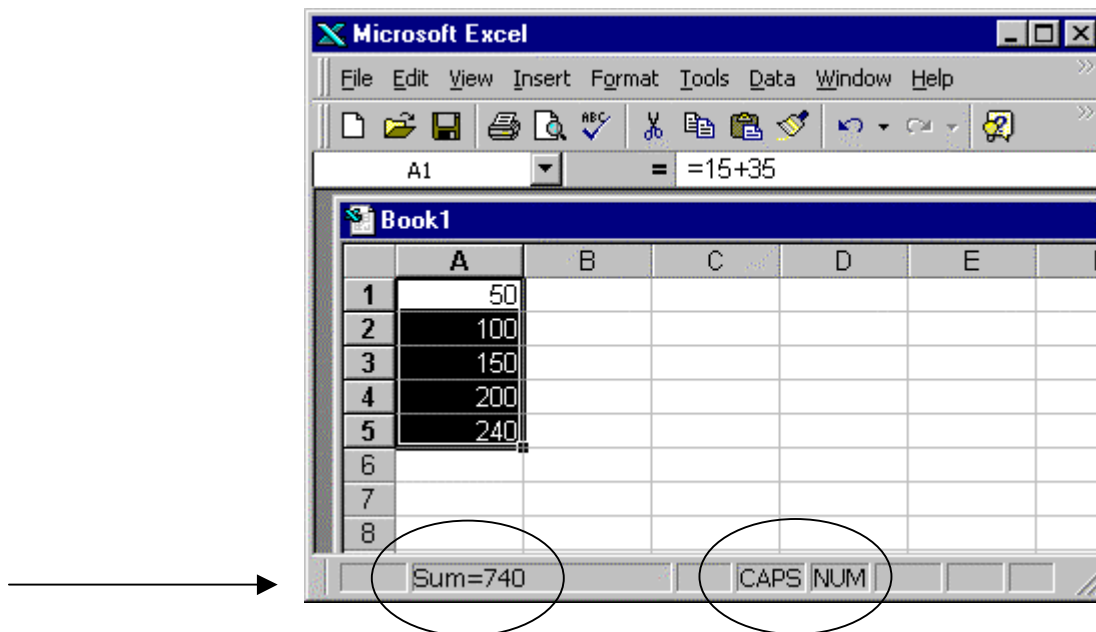


Reshape any toolbar by dragging with the mouse on an end or side. For example, you may prefer to have all the tools in a toolbar in a box, like the one at left.

◆ *Status Bar*

At the very bottom of the Excel workspace is the status bar. Keep an eye on the status bar for information about the status of your session or a particular operation. For example, if you have the num lock key on and the caps lock key on, Excel displays the words NUM and CAPS in the status bar.

The status bar is also useful for getting on-the-fly calculations about spreadsheet values. In the example below, highlighting the range of numbers in column A displays their sum (the default) in the status bar.



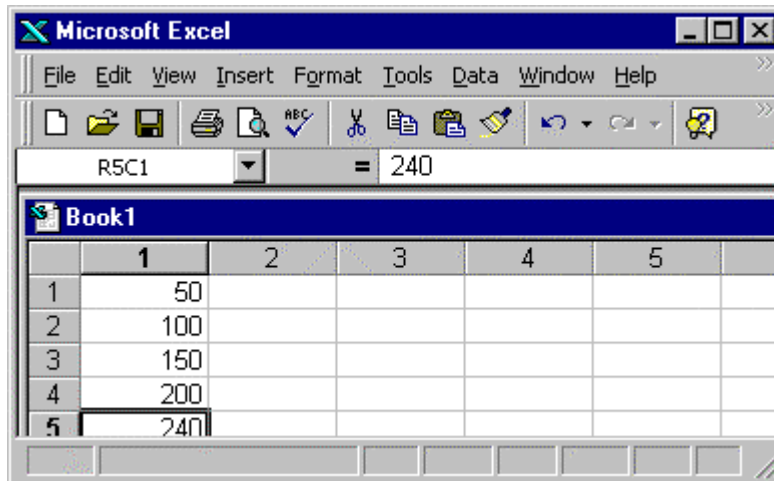
Right-click the “Sum” report in the status bar to change the status bar calculation to one of the other options: Average, Count, Count Nums, Max, or Min.

◆ *Worksheet Referencing Scheme*

The worksheet part of the screen is arranged as a grid of rows and columns. An individual cell in the grid is named by the intersection of the numbered rows and lettered columns. For example, starting at the upper left-hand corner (the worksheet “home” position) a cell two columns over and four columns down is named cell **B4**.

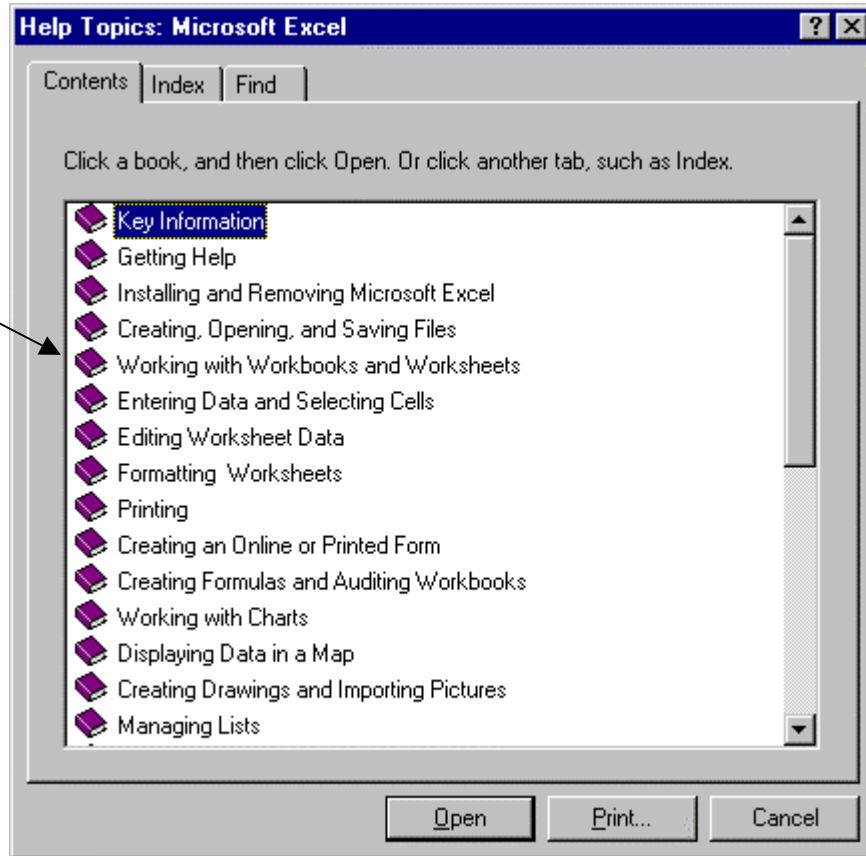
If you prefer, you can turn on an alternative “R1C1” style of referencing where both rows and columns are numbered. To do this, select *Tools, Options, General* and select the “R1C1 reference style” under “Settings”.

If you make this selection, both rows and columns have numbers as names. For example, with this scheme, the name for cell A5 becomes R5C1.



◆ *For More Information*

- Click *Help* on the top-level menu and select *Contents*. Select the item *Working with Workbooks and Worksheets*.



- Turn on the Office Assistant by selecting *Help* from the main menu and then *Microsoft Excel Help*.¹ Click assistant. When prompted, enter the term or topic you want help with.



the
you

¹ The Assistant can take many forms. Change the form of your Assistant by right-clicking the Assistant and selecting *Choose Assistant* from the pop-up menu that appears. You may need to have your MS Office installation CD available to select a different Assistant.

II. Basic Data Entry

◆ *Entering Text and Numbers*

Click with the mouse on the cell in which you want to enter data to make that cell the current cell. Begin typing the entry for that cell. When your entry is complete, hit the enter key.

Excel automatically left justifies text and right justifies numbers, but you can easily override these defaults with formatting commands.

Notice that while you're typing an entry into a cell, the entry also displays in the formula bar. Any time you make that cell the current cell, the cell's contents display in the formula bar. If you enter a formula in the cell, the formula itself displays in the formula bar while the evaluated result of the formula displays in the worksheet.

◆ *Editing an Entry*

To edit the contents of a cell double-click the cell with the mouse. Excel changes the mouse pointer to a vertical edit bar within the cell. Change the cell contents and then hit the enter key to exit cell edit mode.

Alternatively, make the cell you want to edit the current cell. Then click the mouse in the formula bar and perform the edit operation in the formula bar instead of in the cell itself.

◆ *Deleting an Entry*

Make the cell whose entry you want to delete the current cell. Then hit the Delete key to delete the cell's contents.

Delete the contents of a range in the same way you'd delete the contents of a single cell.

◆ *Adding or Deleting a Row or Column*

It's easy to make changes to your spreadsheet layout by adding or deleting rows or columns.

For example, to add a single column, click the header of the column to the right of where you want the new column to be located. The entire selected column will appear in reverse video. Select *Insert, Columns* from the main menus and Excel adds a new column to your worksheet. To insert more than one column at a time select more than one column header before choosing the menu instructions. Inserting an additional row or rows works the same way. Select the row or rows below where you want the new row to be located.

Delete a row or column by selecting its header and clicking *Edit, Delete* or hitting the Delete key.

◆ *For More Information*

- Click *Help* on the top-level menu. Then select *Contents and Index*, select the *Index* tab and on the Contents tab select *Editing Worksheet Data*.

III. Mouse Basics

◆ *Point*

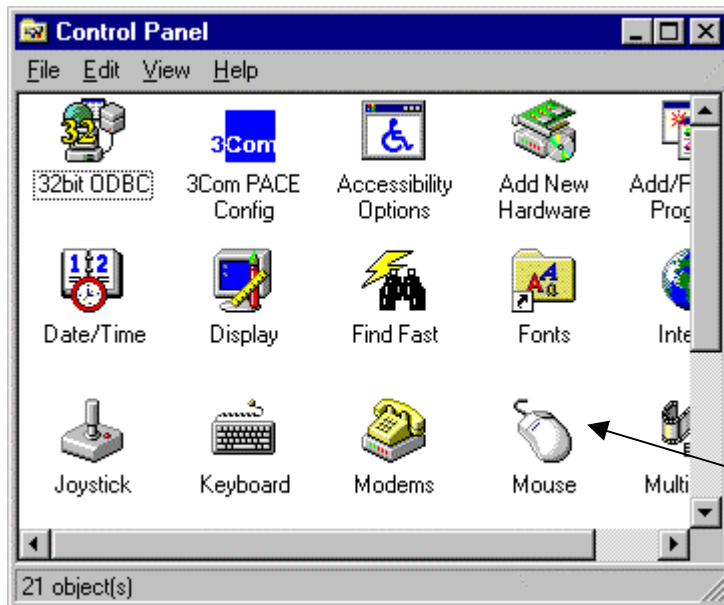
Use the mouse to point at objects in the workspace that you want to manipulate. The mouse pointer shape changes to give you a clue about what operations are available.

◆ *Left-Hand and Right-Hand Click*

The left-hand mouse button is most often used for selection. The right-hand mouse button is most often used to provide options by means of a pop-up shortcut menu. The shortcut menu is a subset of the menu system that shows only the options likely to apply to your selection. For example: Click with the right mouse button anywhere on an Excel toolbar to see a list of all available toolbars.

◆ *Double-click*

Some operations are available by *double-clicking* with the mouse. That is, giving two quick, light clicks on the left-hand mouse button. For example: Double-click a cell entry to begin editing the contents of that cell.

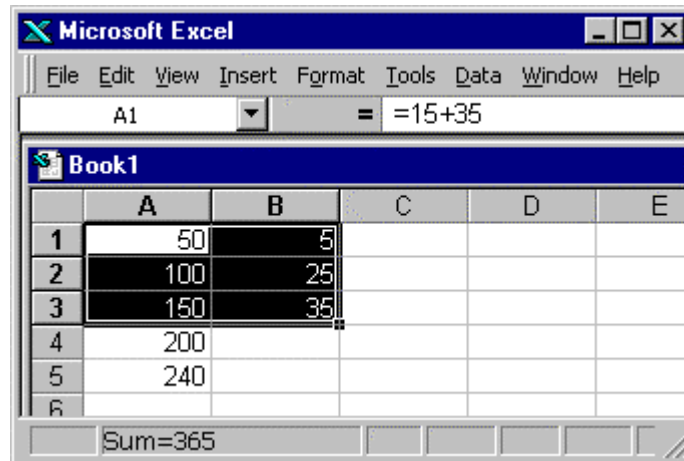


Technique is important in the double-click. If the interval between the two clicks is too long Excel interprets them as two single clicks.

You can change the way Windows interprets the speed of your mouse clicks by selecting *Start, Settings, Control Panel* and selecting the mouse icon.

◆ *Selecting More Than One (Contiguous) Cell*

You might want to select a range of cells to perform the same operation on all of them with a single command. To do this, click a cell at one corner of the range of cells you want to select. Make sure the mouse pointer is a wide crosshair shape (not an arrow). Then hold down the left mouse button and move the mouse over the worksheet to include the cells you want selected. Reverse-highlighting indicates which cells are selected. The cell you started out with is the only one that doesn't appear in reverse highlighting.



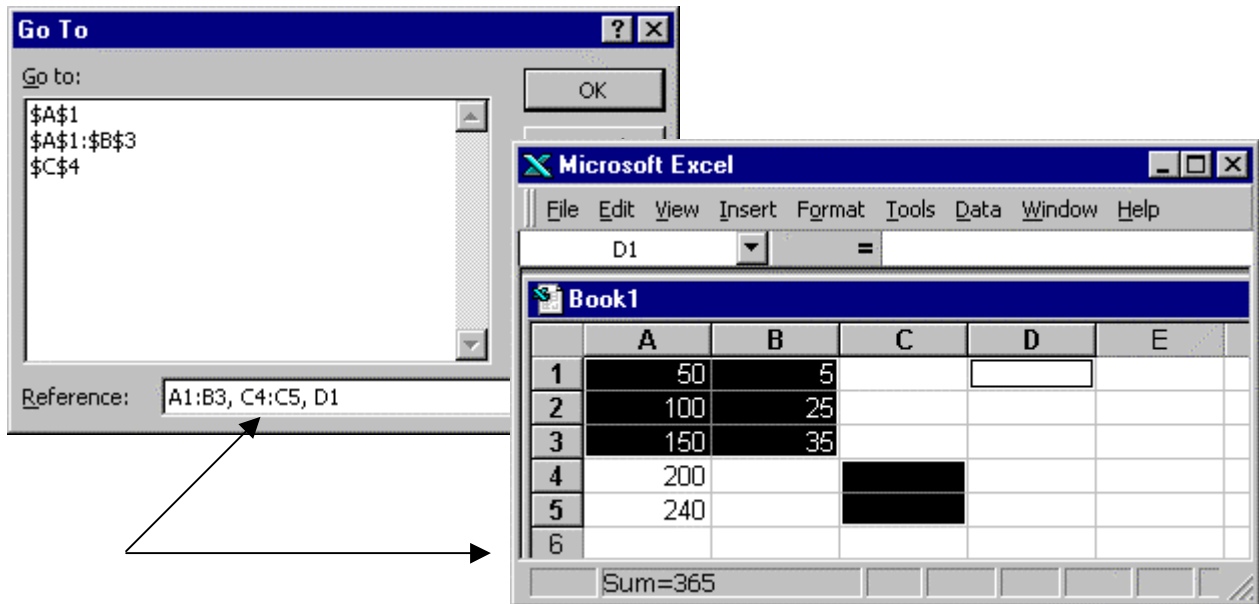
Tip

If you want to select a very large range, one that's not conveniently visible all at once on the screen, here's an easier way than dragging with the mouse. From the menus select *Edit, Go to*. In the dialog box that displays enter the address of the range you want to select in the "Reference" box. For example, A1:Q109. Click *OK* and Excel selects that range.

◆ *Selecting Non-contiguous Cells*

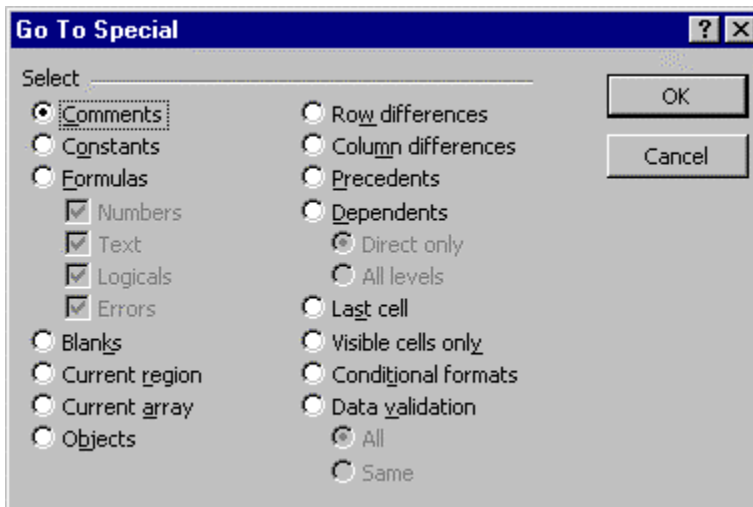
Excel makes it easy to select noncontiguous cells. Select the first cell or range of cells you want to include. Then hold down the CTRL key and move the mouse pointer to select a noncontiguous cell or range. Repeat as many times as necessary, holding down the CTRL key the entire time, to select all the cells/ranges you want.

You can also use the same *Edit, Go to* option described in the tip above. In this case, enter in the “Reference” box the addresses of all the ranges and cells you want to select, separated by commas. For example:



Tip

Click the *Special* button on the “Go To” dialog to select particular classes of cells or objects.



◆ *Mouse Pointer Shapes*

Mouse pointer shapes give you an indication of what's possible and what you're about to do. The pointer shapes you'll encounter most often are:



The basic pointer that displays while the mouse is on the worksheet itself. Use to click on a cell, row, or column to select it.



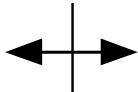
The shape the mouse takes when you move it off the worksheet to select from the menus or toolbars or to control the horizontal and vertical shift bars. The mouse pointer also takes on this arrow shape when you move the pointer close to the edge of a cell or range. This facilitates dragging the selection to another location in your worksheet.



The insertion point that appears when you're editing the contents of a cell.



The pointer turns into a crosshair shape when you position the mouse at the lower right-hand corner of a cell. It enables you to extend the contents of that cell to non-adjacent cell by holding down the left-hand mouse button and dragging.



The look of the pointer when it's on a row or column boundary. Enables you to hold down the left-hand mouse button and drag a row or column wider or narrower.

IV. Key Mouse Operations

◆ *Move a Cell or Range*

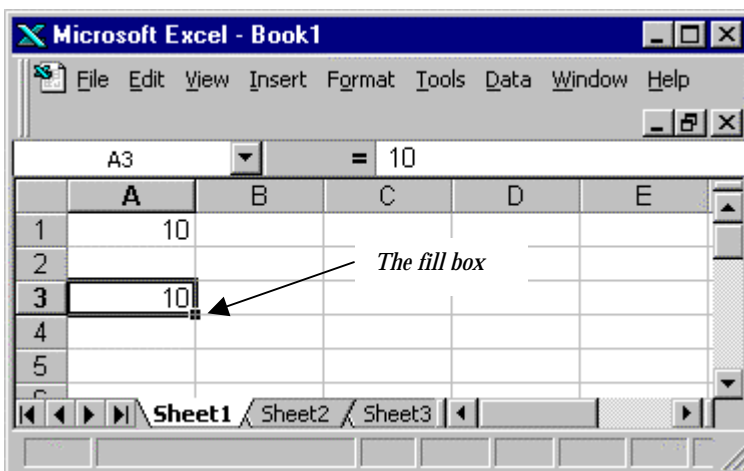
Select the cell or range you want to move. When selected, it should appear in reverse video. Position the mouse pointer at the edge of the cell or range so it turns into an arrow. Hold down the left-hand mouse button and drag the selection to its new location. Release the mouse button. The cell or range is still selected. Click anywhere out of the cell or range to de-select it.

◆ *Copy Data*

Similar to moving a cell or range. Select the cell or range you want to copy. Position the mouse pointer at the edge of the cell or range so it turns into an arrow. Hold down the CTRL key and hold down the left-hand mouse button. (Note the small plus sign displays above the mouse arrow pointer as a visual reminder that this is a copy operation, not just a move.) Drag the selection to create a copy in a new location. Release the mouse button. Then click anywhere out of the cell or range to de-select it.

◆ *Filling & Extending*

This section describes two variations on copying: Filling and Extending. Both methods start with a source cell or range to copy and copy to contiguous cells.

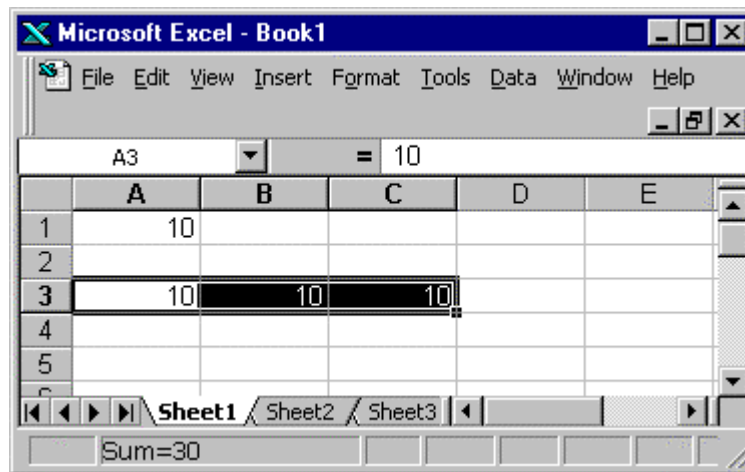


Filling is repeating cell contents. The results are most like the copy operation. To copy by filling:

1. - Select the source cell or range to copy.
2. - Position the mouse pointer on the fill box in the lower-right-hand corner of the cell or range. The pointer should turn into a thin filled crosshair.

3. - Hold down the left-hand mouse button and drag to the right so the range now extends to the next column (or columns).
4. - The contents of the source cell or range are repeated in the adjacent location you indicated.
5. - Click any cell to deselect and turn off reverse video.

In this example, the fill box at the lower right corner of cell A3 was dragged two columns to the right to extend the A3 entry.



Extending is similar to filling. It also starts with the source data but instead of copying it extends the data in a logical progression. That is:

1. - Select the source cell or range to extend.
2. - Position the mouse pointer on the fill box in the lower-right-hand corner of the cell or range. When positioned over the fill box the pointer will display as a thin filled crosshair.
3. - Hold down the left-hand mouse button and drag to the right² so the range now extends to the next column (or columns).

The difference between filling and extending is that after you extend the source cell or range the cells you've filled with data don't hold the same thing as the source cells. They're not just a copy because Excel *extends* the data in a logical fashion.

² You can also drag to the left or down, depending on what your source data looks like and what you want to do.

For example:

<i>If the source cell(s) hold(s):</i>	<i>The contiguous extended cells hold:</i>
Qtr1	Qtr2, Qtr3, Qtr4, Qtr1, Qtr2, etc.
Jan	Feb, Mar, Apr, May, Jun, Jul, etc.
1994, 1995	1996, 1997, 1998, 1999, 2000 etc.

In the third example in the table above we needed to give Excel at least two cells worth of source data so it would know how to extend the data. A variety of progressions are possible if you give Excel a sample of how you want it to proceed. For example:

<i>If the source cells hold:</i>	<i>The contiguous extended cells hold:</i>
2000, 1999	1998, 1997, 1996, 1995, 1994, etc.
.2, .4	.6, .8, 1.0, 1.2, 1.4, 1.6, etc.

V. Moving and Selecting

◆ *Moving Around the Worksheet*

Use the scroll bars at the right and bottom of the workbook window to move quickly around the worksheet.

To go to a specific cell, hit the **F5** key to get the *Go To* dialog box. In the *Reference* area, enter the reference of the cell you want to go to and click OK. Excel closes the dialog box and makes the cell you named the current cell.

In the *Go To:* area of the dialog box, Excel keeps track of the last locations you asked for, in case you want to return to them.

If you've named cells or ranges in your worksheet you can enter a name instead of a cell or range reference.

CTRL+Home puts you in the upper-left-hand corner of your worksheet: cell A1.

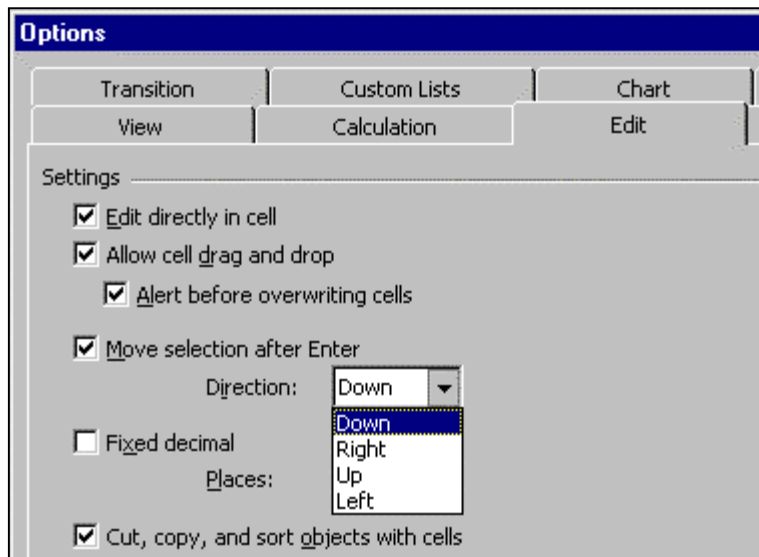
◆ *Specifying a Range*

You may need to specify a range by typing, and not just by selecting the range with the mouse. This is especially useful, for example, if the range is a large one extending past the borders of your display and so not easy to select by dragging. To specify a range by typing, indicate the cell reference of the cell at the top left corner of the range. Type a colon. Then indicate the cell at the bottom right corner of the range. Here's an example of typing in a range specification: **A1:B5**

You can also select a range by using the *Go To* dialog box (F5) and typing in a range specification instead of just a single cell reference.

◆ *Selecting a Range for Data Entry*

If you need to enter a lot of data in contiguous cells of your worksheet you can speed up operations by selecting the range where the data will be before you begin entering data. Then when you enter data in the first cell of the range you can just hit the enter key to move to the next cell instead of hitting the enter key *and* having to use an arrow key or the mouse to move to the next cell. Within the range you specify, Excel by default moves down each column and then across.



You can change the default setting for your installation of Excel by clicking *Tools, Options, Edit* and selecting an option from "Move Selection after Enter Direction".

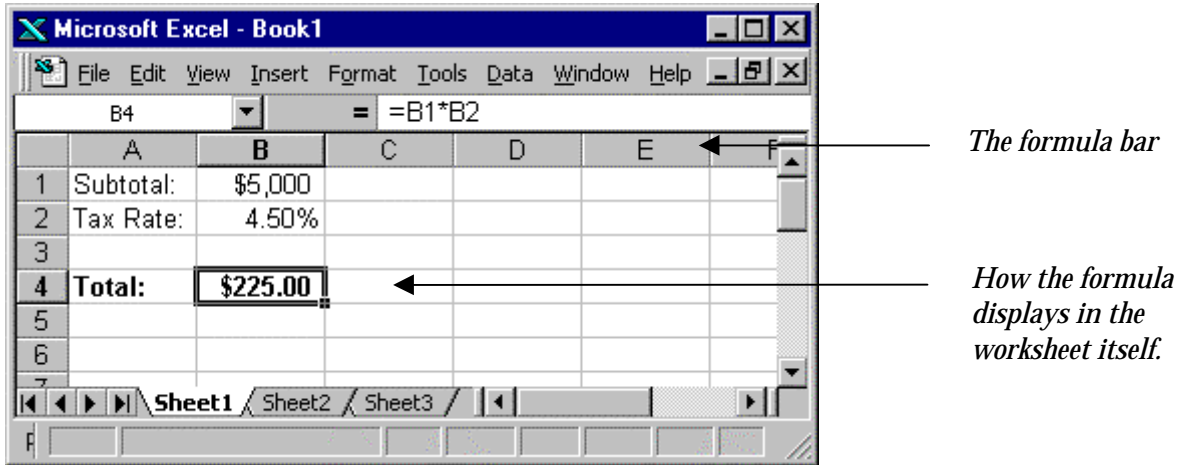
◆ *For More Information*

Click *Help* on the top-level menu. Select *Contents and Index*, select the *Contents* tab and click *Entering Data and Selecting Cells*.

VI. Formulas

◆ *Format*

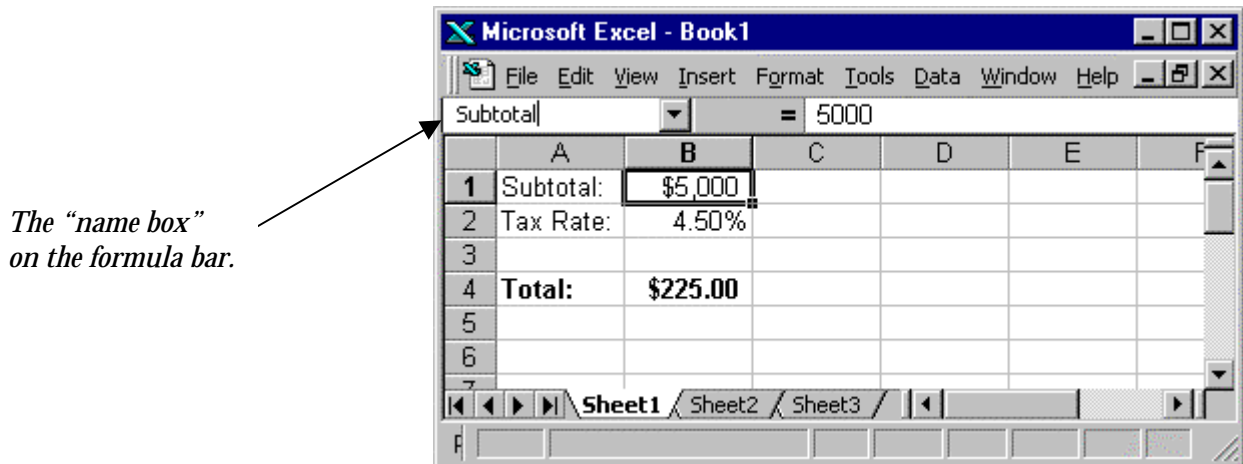
Select the cell where you want to enter a formula and type an equal sign to start the formula (and activate the formula bar). Type the formula into the cell and hit the enter key when you're finished. Use parentheses where necessary to make operations clear.



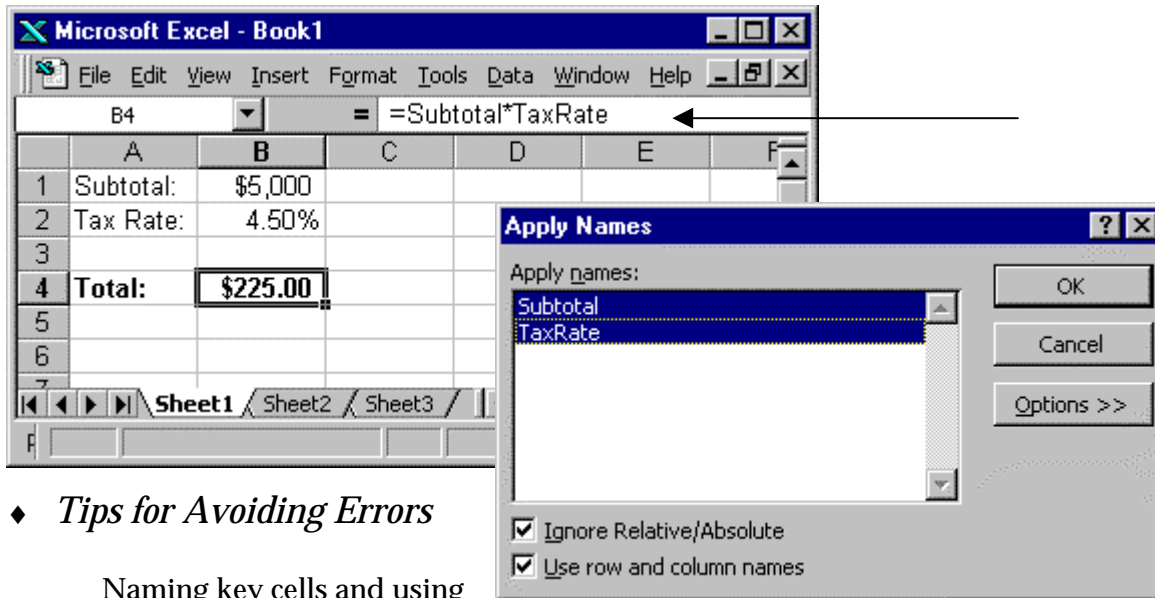
◆ *Naming Cells & Ranges*

You can assign any worksheet cell or range a name and then use that name in a formula. This can make your worksheet more readable.

An easy way to assign a name is to select a cell or range and enter the name you want to assign it in Excel's "name box" on the formula bar.



If you name cells or ranges *after* you've already used their values in formulas, you need to explicitly tell Excel to use the names in the formulas. You can do this with the command *Insert, Name, Apply*. Select the names you want to use from the *Apply Names* dialog box that displays.



◆ *Tips for Avoiding Errors*

Naming key cells and using those names in formulas instead of cell references can help you avoid errors. For example, the formula `=Q55*M92` is probably less immediately comprehensible than the formula `=Subtotal*Taxrate`.

When constructing a formula you can use the mouse to click a cell you want to include in the formula instead of typing in the cell's name or reference. Excel includes the cell reference (or name, if available) in the formula automatically. Clicking the cell you want to include can help you avoid typing in the wrong reference by mistake.

Keep formulas short and straightforward. If you need to express a complex relationship with a formula it's better to build several short formulas and use them as building blocks for intermediate values rather than to build one long, baroque, error-prone, and hard-to-debug formula.

Excel displays an error value in a cell when the formula for that cell can't be calculated. If a formula includes a reference to a cell that contains an error value, that formula also produces an error value.

Examples of Excel error values:

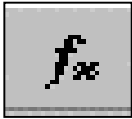
#DIV/0!	The formula is trying to divide by zero.
#N/A	No value is available.
#NAME?	Excel doesn't recognize a name used in the formula.
#NUM!	There's a problem with a number in the formula.
#REF!	The formula refers to an invalid cell.
#VALUE!	An argument or operand is incorrect.

◆ *Using Built-in Functions*

Excel has a large library of built-in functions you can use to perform standard worksheet calculations. In many cases you can use these functions instead of writing your own formulas. Use the built-in functions by themselves or embed them within your own formulas.

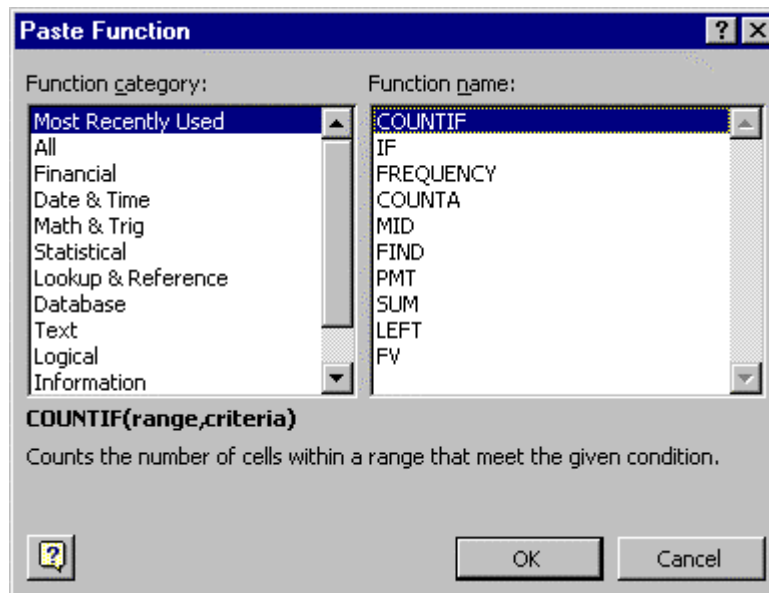
Functions can be nested within other functions.

All Excel functions have the same basic syntax: =function name(parameters).



If you don't already know the syntax of the function you need, use the function button on the *Standard* toolbar to call up the *Function Wizard* dialog box.

The Function Wizard dialog box walks you through selecting and completing a function.



◆ *Copying Formulas (Relative Referencing)*

There will be many occasions when you build a worksheet model with several like formulas. For example, perhaps your budget model totals sales in six departments for each of the months of January to December. The formula to sum departmental sales for January is the same as the formula to sum departmental sales for December, except they refer to different columns of data. If your January to December columns are structured alike, there's no reason to separately enter twelve summing formulas. Instead, enter the formula for January and then copy it across the worksheet to the other eleven columns.

Excel adjusts cell references in each copied formula across the row so that each formula refers to its *own* column's data. That is, if the January sales data is in Column A, the formula for January refers only to cells in Column A. February's data is in Column B. Even though the sum formula for February was copied from January's formula in Column A, the February formula correctly refers only to cells in Column B.

This formula copying and adjusting arrangement is the default in Excel. It's termed relative referencing. Keep in mind that it's an issue only when you're copying a formula.

◆ *Absolute Addressing*

There may be times when you copy a formula that you *don't* want Excel to adjust a cell reference in the copy from the master formula. That is, when you copy the formula, you don't want the default of relative addressing for some or all of the copied formula's cell references.

For any reference in the source formula that you want to "fix" (e.g., disallow any changes during the copy) use a dollar sign before the row and column indicator. The dollar sign is an arbitrary symbol that just instructs Excel not to change the reference. For example, a source formula that allows the **D5** reference to change but fixes the reference to **A1** would look like this:

=D5*\$A\$1

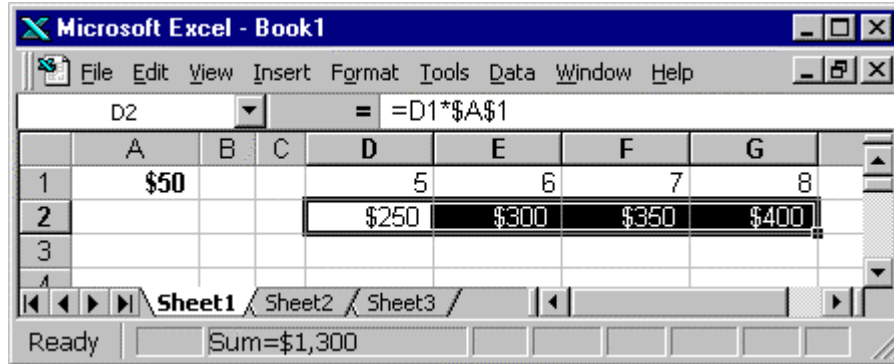
If we copy the source formula above across the worksheet to columns E, F, and G, the copied formulas in those columns would look like this:

=E5*\$A\$1

=F5*\$A\$1

=G5*\$A\$1

In this example, the formulas in E2, F2, and G2 were copied from the original formula in D2. In the master formula in Cell D2, the reference to cell A1 was absolute (fixed) but the reference to the value in Row 1 (D1) was relative.



As a result, when this formula was copied to E2, F2, and G2, each copied formula referred to Cell A1 (the absolute reference value) and also to the value in Row 1 of its own column (the relative reference value).

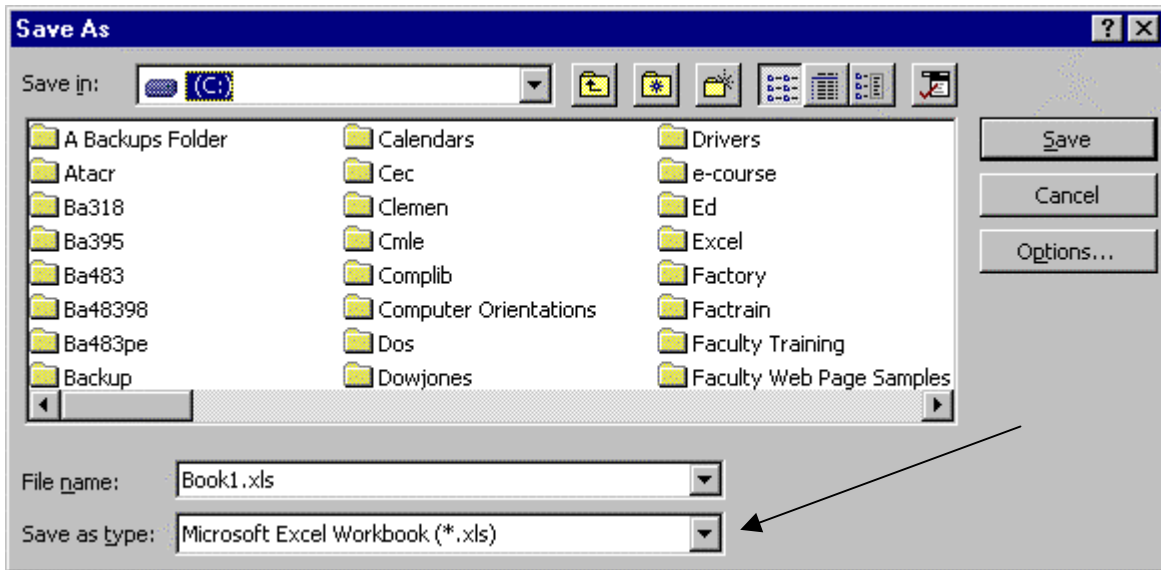
◆ *For More Information*

- Click *Help* on the top-level menu. Select *Contents and Index*. Click the *Find* tab and in the text box that's displayed enter *absolute addressing*.

VII. File Management Essentials

◆ *Saving a File*

To save a workbook use the commands *File, Save* to get the dialog box that lets you name your file and specify what drive and in what folder it should be saved.



The *Save as type:* entry at the bottom of the dialog box lets you translate your file into other formats (123, text, DBase, etc.)

◆ *Retrieving a File*

To retrieve a workbook you've saved on disk use the commands *File, Open*. Excel displays a dialog box similar to the one above where you can name the file to open and specify where it's located.

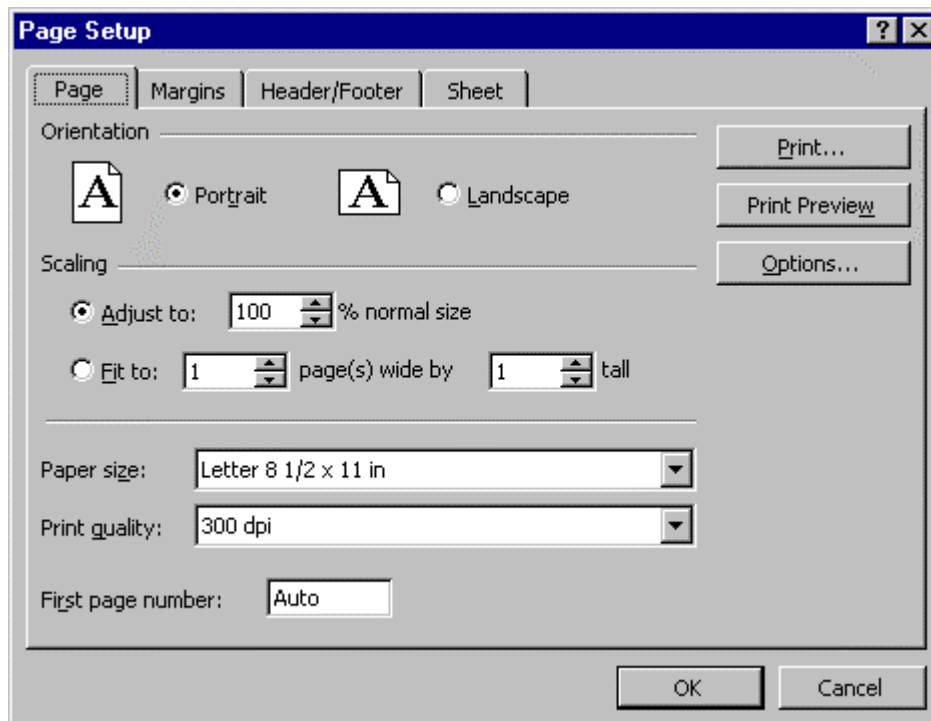
◆ *For More Information*

Click *Help* on the top-level menu. Select *Contents and Index*. On the *Contents* tab, select *Creating, Opening, and Saving Files*.

VIII. Printing

To print the current worksheet using Excel's defaults for printing click the *Print* button on Excel's *Standard* toolbar.

To control Excel's print options select *File, Page Setup* to open the *Page Setup* dialog box. Note that this dialog has four tabs: *Page, Margins, Header/Footer,* and *Sheet*.



Some particularly useful options:

To specify an area to print

Go to the *Sheet* tab, click in the *Print Area* box and then drag through the worksheet areas that you want to print. (Nonadjacent ranges print on separate sheets.)

To print row & column headings & gridlines

Go to the *Sheet* tab and click in the “row and column headings” and “gridlines” boxes to put check marks in these boxes.

To print headers and footers

Click the *Header/Footer* tab and follow the prompts. Note that a number of standard header entries (page, name, date, etc.) are provided.

To center the printout on the page

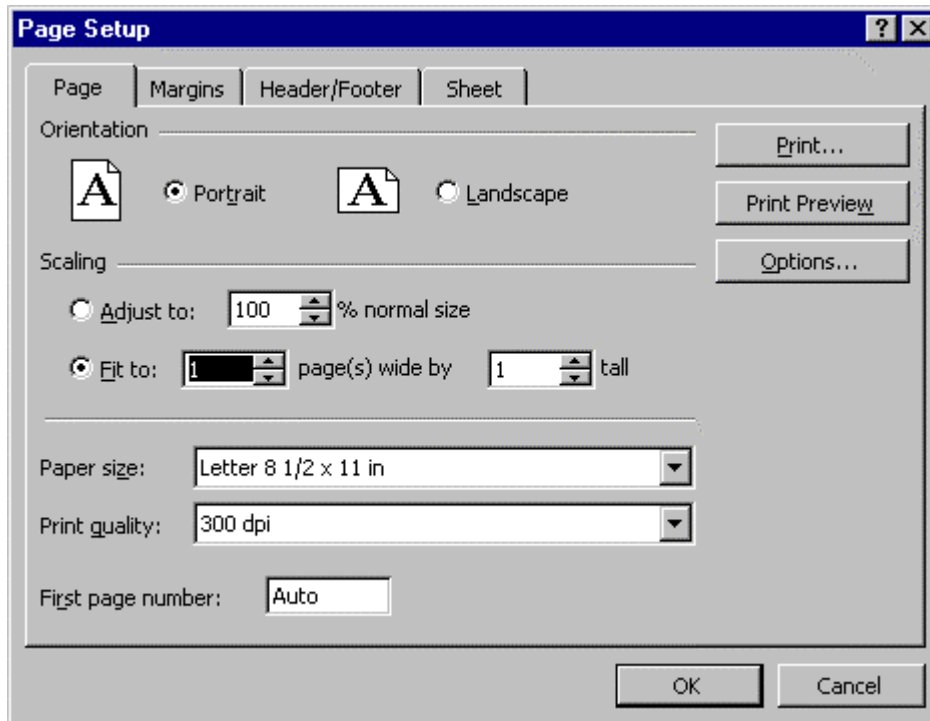
Click the *Margins* tab and check *Center on page horizontally* or *Center on page vertically*.

To select portrait or landscape orientation

Click the *Page* tab and select whether you want Excel to print down an 8 ½ x 11 page or across.

Fit to one (or x) page(s)

Click the *Page* tab and click the *Fit to* option in the “Scaling” section. If you have a spreadsheet that’s just a row or column or two too large to fit nicely on a single page, this is a lifesaver of an option. It reduces your entire spreadsheet in size just enough to fit in the space you specify with the *Fit to* option.



◆ *For More Information*

Click *Help* on the top-level menu. Select *Contents and Index*. On the *Contents* tab click *Printing*.

End.

