# 1. Introduction to Microsoft Excel

A spreadsheet is an online version of an accountant's worksheet, which can automatically do most of the calculating for you. You can do budgets, analyze data, or generate sorted lists.

When you first start Excel, two toolbars are visible on the screen: the **Standard** and the **Formatting** toolbars. These toolbars contain a lot of helpful buttons, but they are only the tip of the iceberg. Excel has many more toolbars, and you can place a staggering number of additional buttons on them.
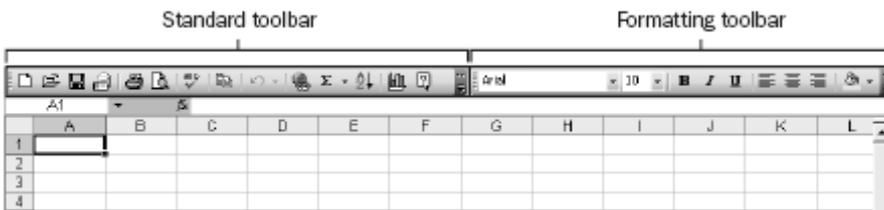
A new workbook, shown floating originally consists of three individual worksheets.
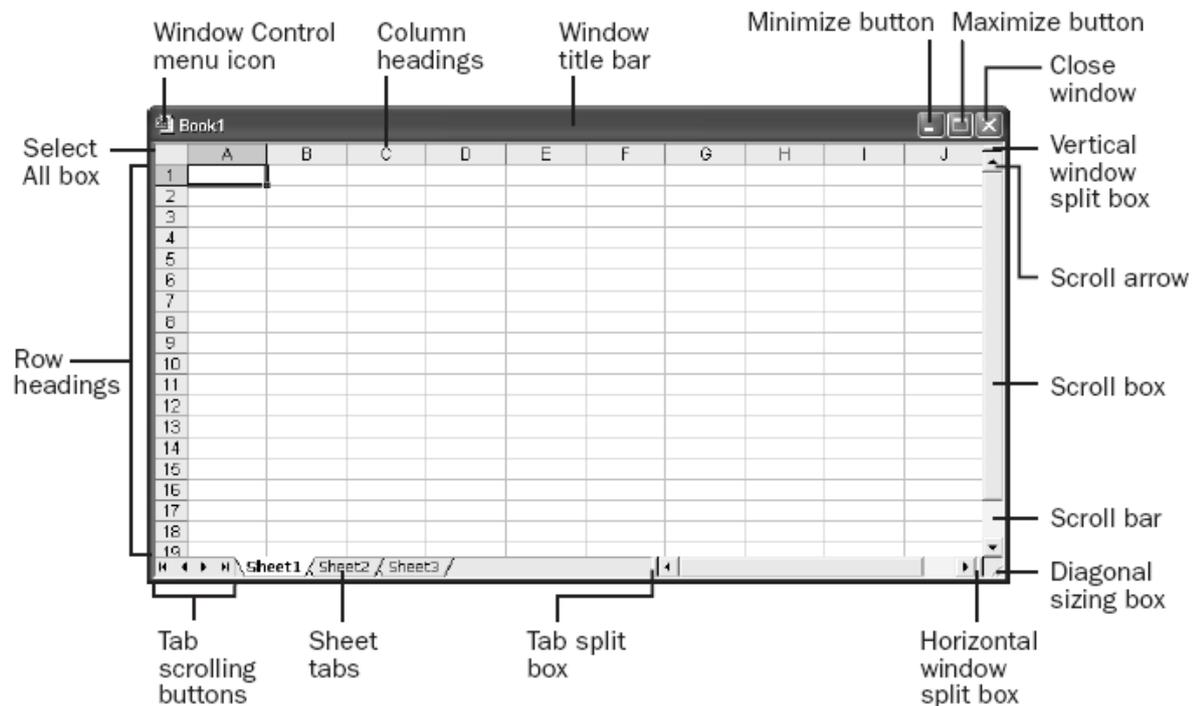
The status bar displays information about what's happening in your workspace. For example, most of the time, Excel displays the word Ready at the left end of the status bar. When you type, the status bar displays the word Enter; when you double-click a cell that contains data, the status bar displays the word Edit.
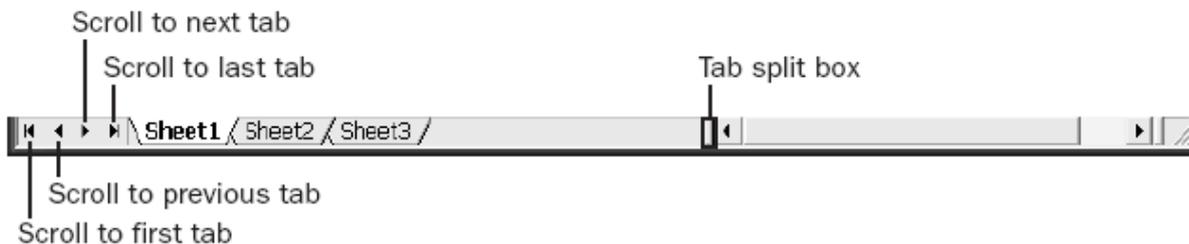
The boxes at the right end of the status bar display various keyboard modes that you can turn on or off. For example, **CAPS** appears in this area of the status bar when you press the **[Caps Lock]** key. When you press the **[Num Lock]** key to activate the numeric keypad, **NUM** appears in this area of the status bar.
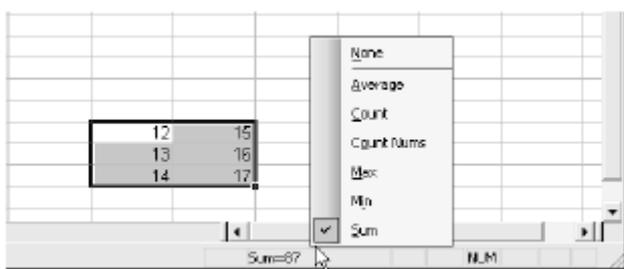
2. Worksheet Editing Techniques

2.1 Copying, Cutting, and Pasting

2.1.1 Collecting Multiple Items on the Clipboard

Using the collect and copy feature, you can Copy (or Cut) up to 24 separate items and then paste them where you want them (one at a time or all at once). You do this by displaying the **Clipboard Task Pane** by choosing **Edit ➜ Office Clipboard**.

You can change the normal collect and copy behavior so that Excel collects items every time you copy or cut, regardless of whether the **Clipboard Task Pane** is present. To do so, click the **Options** button at the bottom of the **Clipboard Task Pane** and choose **Collect Without Showing Office Clipboard**.

Although collect and copy is useful for editing tasks, it can also be a great tool for gathering information. Copy items such as names or addresses from various locations in the order you want them to appear. Then click the **Paste All** button on the **Clipboard Task Pane** to paste all the items you have collected, in the order collected, into a single column.
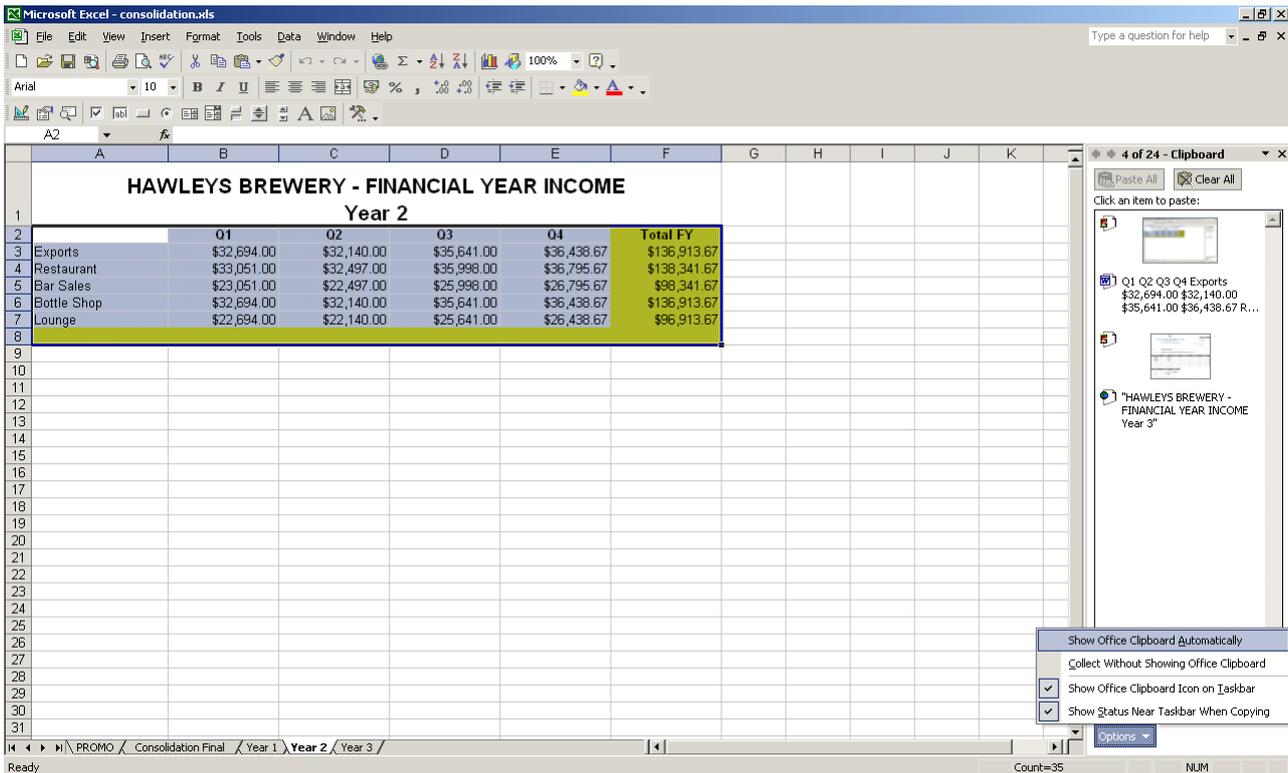
2.1.2   Using the Paste Options Smart Tag

This smart tag appears whenever and wherever you paste, offering action options applicable after pasting – a sort of "Smart Paste Special". The best part is that you can try each action in turn. Keep selecting Paste options until you like what you see, and then press **[Enter]**.
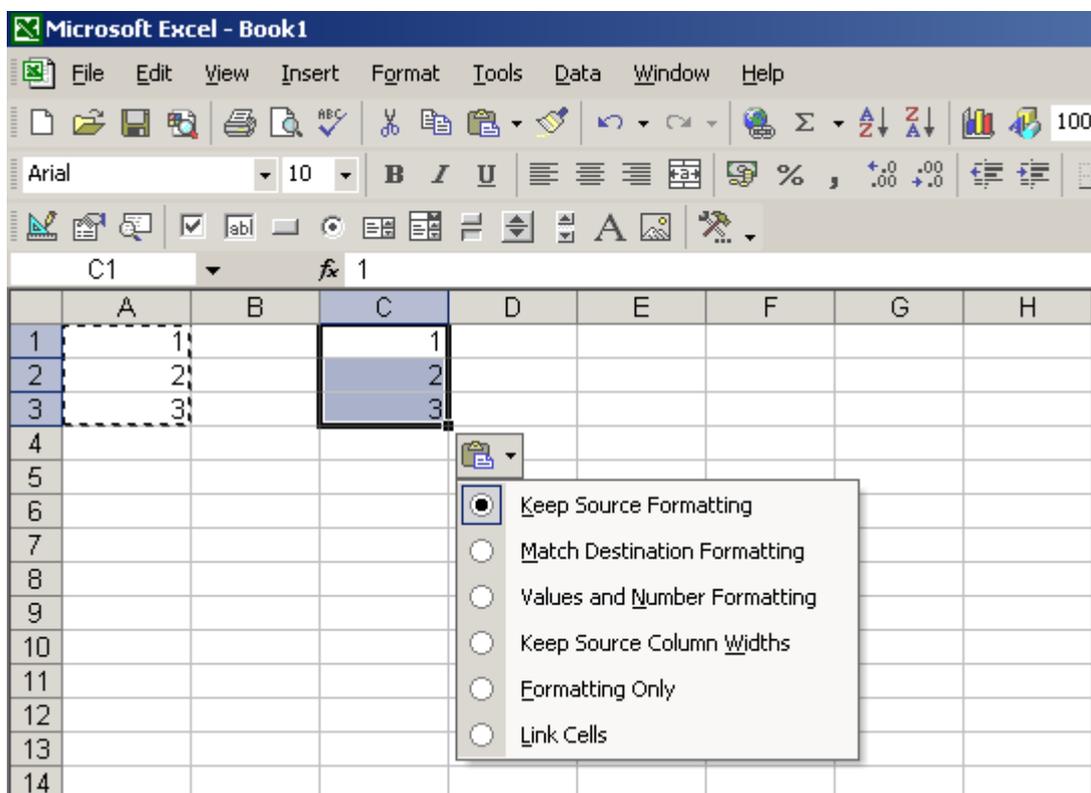
| **Keep Source Formatting:**	Retains formatting. This is the default action. If the other options don't work for you, you can always come back to this one before you press Enter
Match Destination Formatting:	Copies formatted data into a differently formatted table without having to redo the formatting
Values and Number Formatting:	Pastes values without losing number formats
Keep Source Column Widths:	Retains column widths. This option is like choosing Keep Source Formatting with the added action of "pasting" the column width
Formatting Only:	Leaves the contents of the cells alone and transfers the formatting. This works in the same way as the Format Painter button on the Standard toolbar.
Link Cells:	Instead of pasting the contents of the cut or copied cells, pastes a reference to the source cells, ignoring the source formatting

2.1.3 Paste Special
2.1.3.1 Pasting Selectively Using Paste Special

Paste Special is quite possibly the most useful power-editing feature of all. There are many ways to use this feature, but probably the most popular is copying the value in a cell without copying the formatting or the underlying formula. After you copy a cell or cells, choose **Edit ➜ Paste Special**.
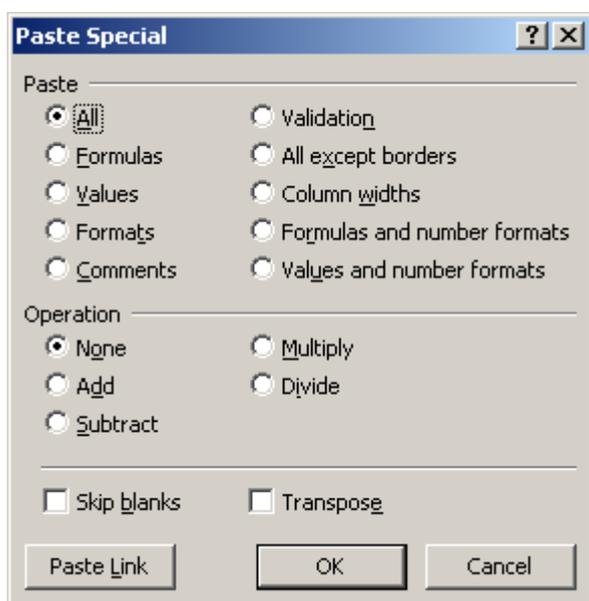

All:	Predictably, pastes all aspects of the selected cell, which is the same as simply using the Paste command
Formulas:	Transfers only the formulas from the cells in the copy range to the cells in the paste range, adjusting relative references
Values:	Pastes static text, numeric values, or only the displayed values resulting from formulas.
Formats:	Transfers only the formats in the copy range to the paste range
Comments:	Transfers only comments attached to selected cells.
Validation:	Pastes only the Data Validation settings that you have applied to the selected cells.
All except borders:	Transfers data without disturbing the border formats you spent so much time applying
Column widths:	Transfers only column widths, which is handy when trying to make a sheet look consistent for presentation
Formulas and number formats:	Transfers only formulas and number formats, which is handy when copying formulas to previously formatted areas. Usually, you'll want the same number formats applied to formulas you copy, wherever they happen to go
Values and number formats:	Transfers resulting values and number formats

2.1.3.2 Pasting Using Math Operators

You use the options in the **Operation** section of the **Paste Special** dialog box to mathematically combine the contents of the copy area with the contents of the paste area. When you select any option other than **None**, Excel uses the specified operator to combine the copy and paste ranges.

*For example, we want to get a total of the Northern and Eastern regions. First we copied the Northern Region figures to column G, and then we copied the Eastern Region numbers in column D and chose **Edit ➔ Paste Special**. We clicked the **Values** and **Add** options in the **Paste Special** dialog box, and after clicking [OK].*
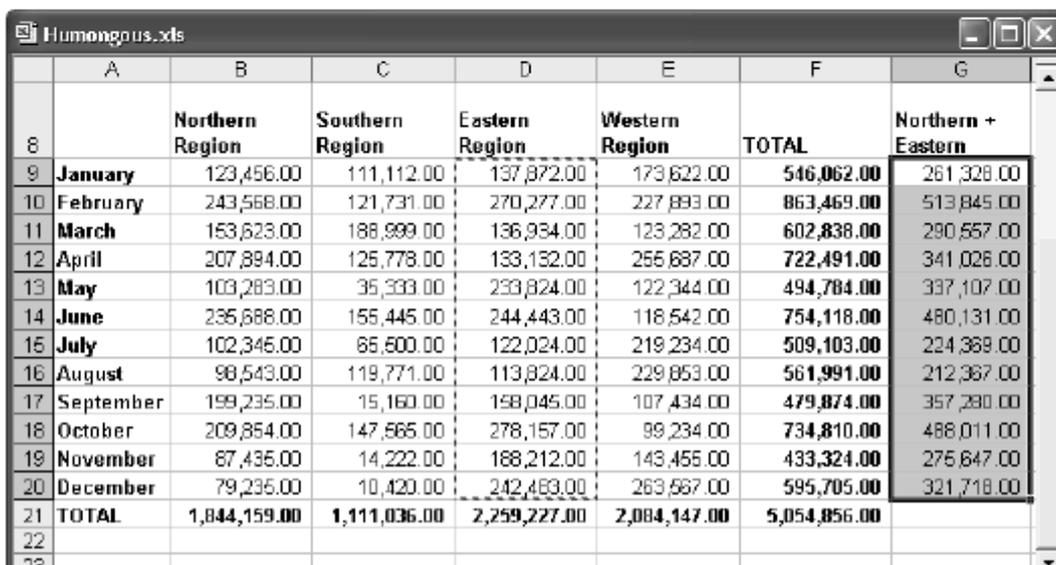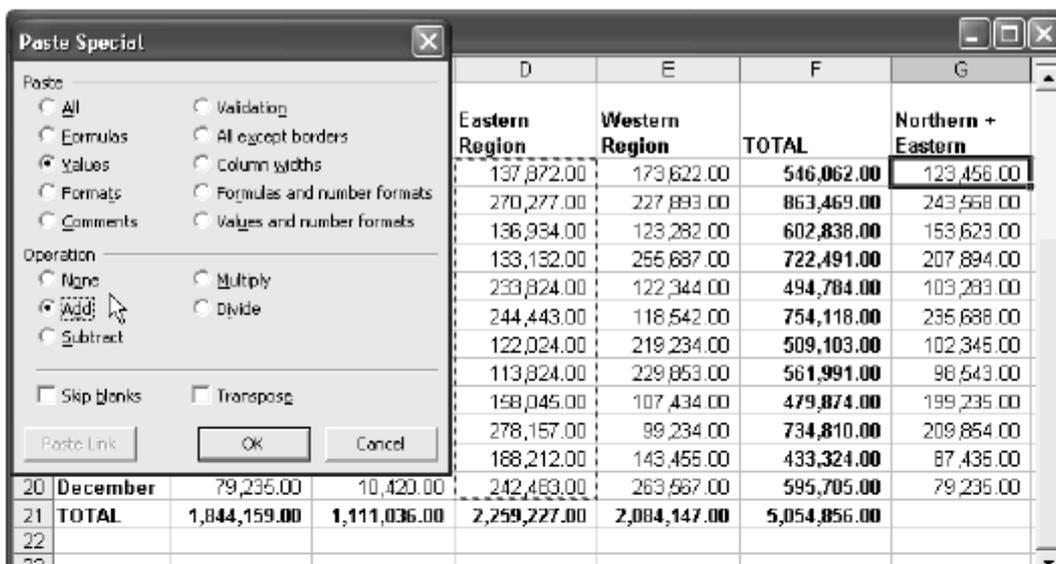
The other options in the **Operation** section of the **Paste Special** dialog box combine the contents of the copy and paste ranges using the appropriate operators. Just remember that the **Subtract** option subtracts the copy range from the paste range, and the **Divide** option divides the contents of the paste range by the contents of the copy range. Also note that nothing happens if the copy range contains text entries and you use **Paste Special** with an **Operation** option.

2.1.3.3 Pasting Links

The **[Paste Link]** button in the **Paste Special** dialog box is a handy way to create references to cells or ranges. When you click the **[Paste Link]** button, Excel enters an absolute reference to the copied cell in the new location. *For example, if you copy cell A3, and then select cell B5, choose **Edit➔** **Paste Special**, and click the [Paste Link] button, the formula =A3 is entered into cell B5.*

If you copy a range of cells, the Paste Link button enters a similar formula for each cell in the copied range to the same sized range in the new location.

2.1.3.4 Skipping Blank Cells

The **Paste Special** dialog box contains a **Skip Blanks** option that you use when you want Excel to ignore any blank cells in the copy range. Generally, if your copy range contains blank cells, Excel pastes those blank cells over the corresponding cells in the paste area. As a result, empty cells in the copy range overwrite the contents, formats, and comments in corresponding cells of the paste area. When you select **Skip Blanks**, the corresponding cells in the paste area are unaffected.

2.1.3.5 Transposing Entries

Transpose helps you to reorient the contents of the copied range when you paste (entries in rows appear in columns, and entries in columns appear in rows). *For example, we needed to use the column headings in Row 3 of the top sheet to create identical row headings in column A of the bottom sheet. Accomplishing this was as simple as copying cells B3:G3 in the top sheet, clicking cell A4 in the bottom sheet, and using **Paste Special** with **Transpose** selected.*
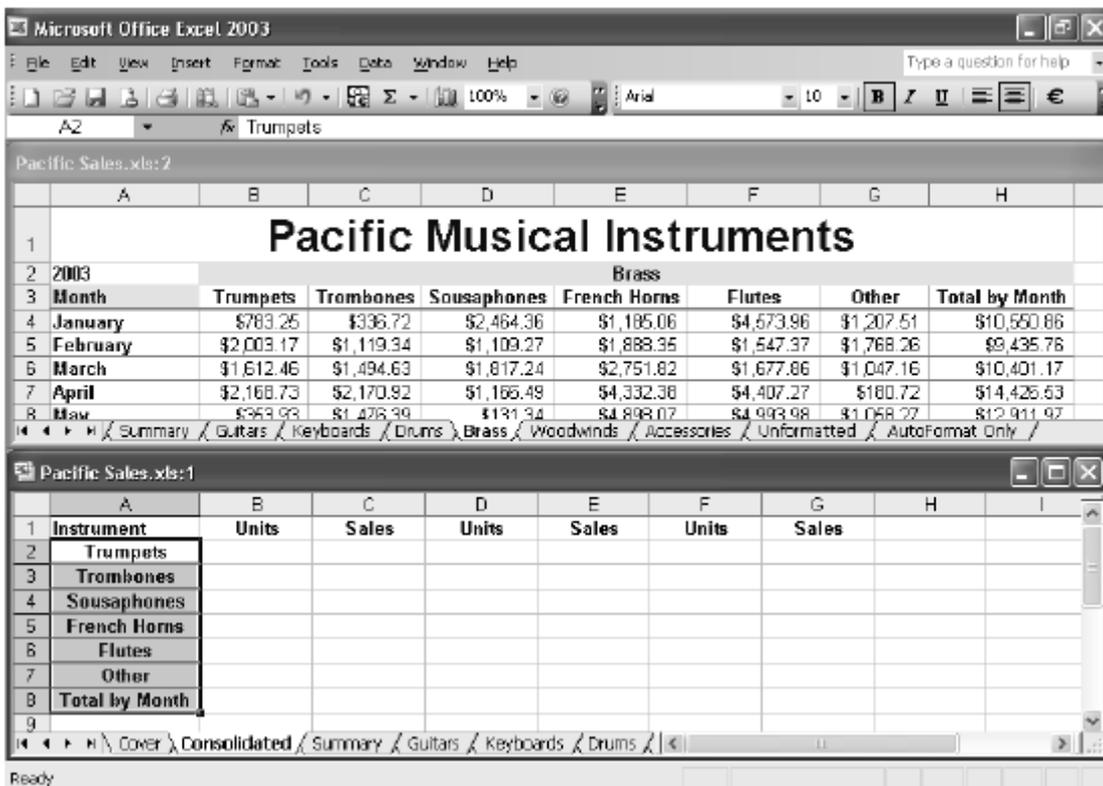
2.1.4 Pasting Hyperlinks

The **Edit ➔ Paste as Hyperlink** paste a hyperlink to the copied data in the location you specify. When you create a hyperlink, it's as if Excel draws an invisible box that acts like a button when you click it, and places it over the selected cell.
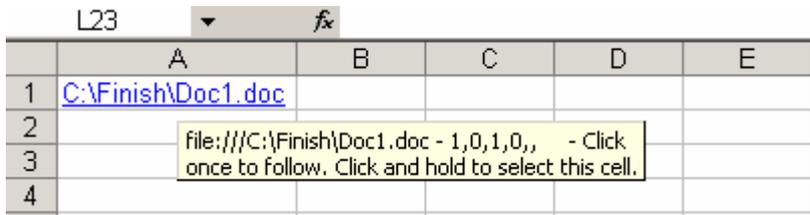
2.2 Filling and Creating Data Series

Uses of the fill handle include quickly and easily filling cells and creating data series using the incredibly useful AutoFill feature.

- If you choose **Fill Series** on the smart tag action menu, Excel creates the simple series 1, 2, 3 instead of copying the contents of cell.

- If you choose **Copy Cells** on the **AutoFill Options** menu, instead of extending the series, Excel copies the cells, repeating the pattern of selected cells as necessary to fill the range.

- Moreover, **AutoFill** normally increments recognizable date and time values when you drag the fill handle, even if you initially select only one cell.
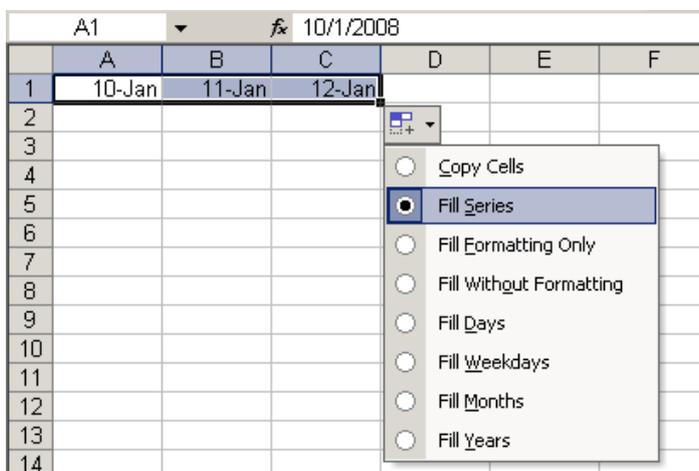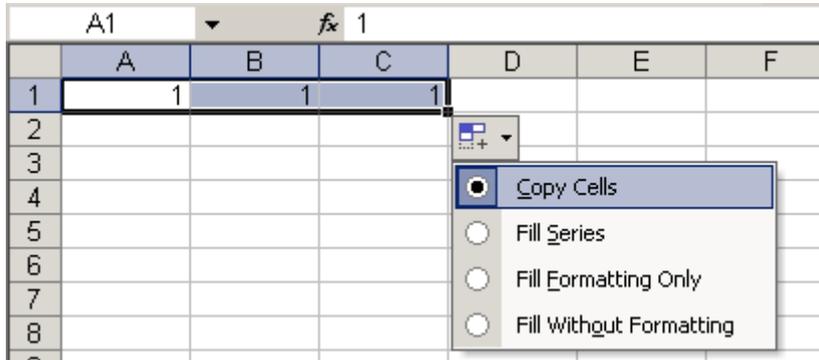
2.3 Finding and Replacing
2.3.1 Finding Formatting

Excel provides a way to find cells based on formatting in conjunction with other criteria, and even to find and replace specifically formatted cells, regardless of their content. You can select any number of options in this dialog box, and when you are finished, click **[OK]** to add them to your criteria. If you click the **[▼]** button next to the **Format** button to display the Format menu, you can select **Choose Format From Cell**.
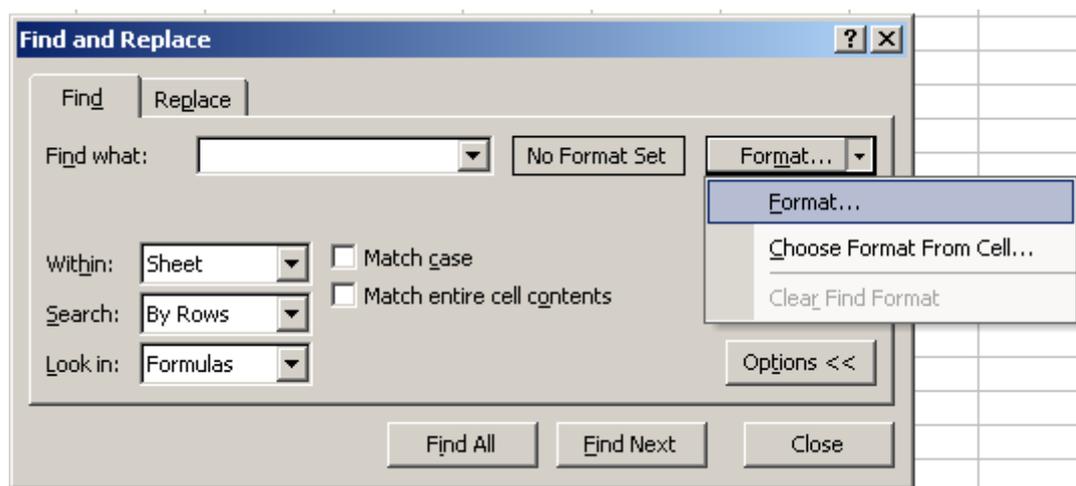
2.3.2 Replacing What You Find

Replace works much like Find by choosing **Edit➔ Replace**. You can also find and replace formats using the dual **[Format]** buttons. To replace every occurrence of a string or formatting, click **Replace** All. Instead of pausing at each occurrence to allow you to change or skip the current cell, Excel locates all the cells that contain the **Find What** string and replaces them.
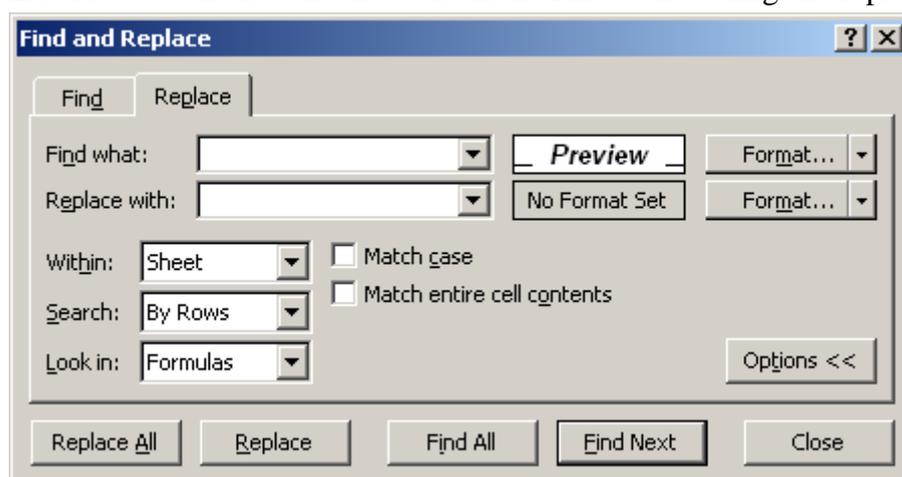
3. Worksheet Formatting Techniques

3.1 Formatting in Cells

3.1.1 Formatting Individual Characters

If you select a cell and apply formats, the entire contents of the cell receive the formats. However, you can also apply formatting to individual text characters within cells (but not numeric values or formulas). Select individual characters or words, and apply the attributes you want or choosing **Format ➔ Cells**. When you are finished, press **[Enter]** to see the results.
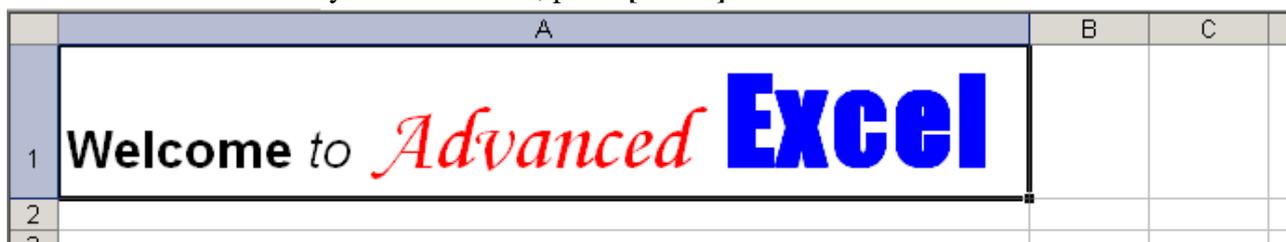
3.1.2 Formatting Numbers

The **Number** category in the **Format Cells** dialog box contains options for displaying numbers in integer, fixed-decimal, and punctuated formats. It is essentially the **General** format with additional control over displayed decimal places, thousand separators, and negative numbers. You can use this category to format any numbers that do not fall into any of the other categories.
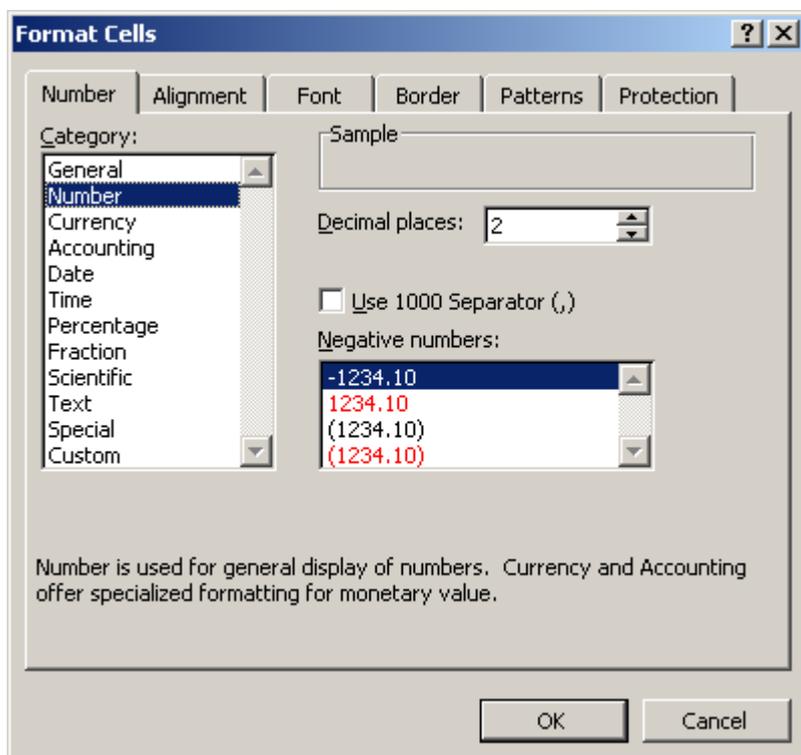
3.1.3 Formatting Currency

The **Currency** formats are similar to the **Number** formats except that instead of selecting the thousands separator (which accompanies all currency formats by default), you can select which currency symbol, if any, precedes (or trails) the number. Select the currency symbol in the **Symbol** drop-down list, which includes more than 250 different currency symbols from around the world.
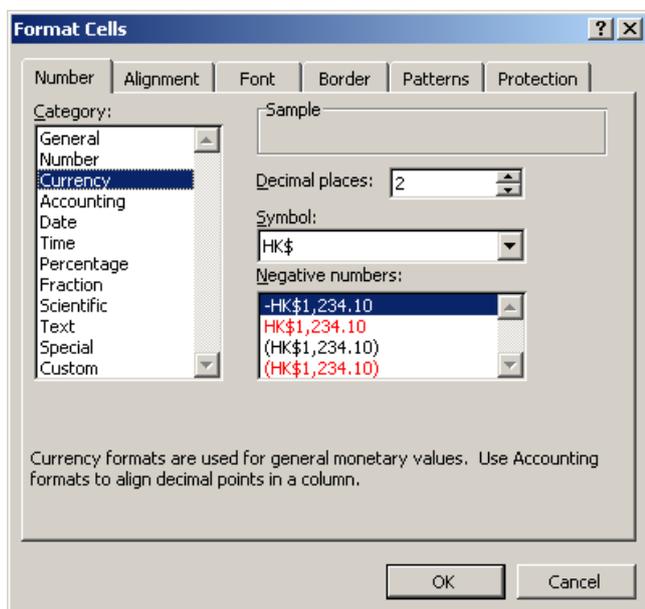

3.2 Creating Custom Formats
3.2.1 Creating New Formats

Use the **Custom** tab in the **Format Cells** dialog box to create custom number formats using special formatting codes. Excel adds new formats to the bottom of the list of formatting codes in the **Type** list, which also includes built-in formats. To delete a custom format, select the format in the **Format Cells** dialog box and click **Delete**. However, you cannot delete built-in formats.
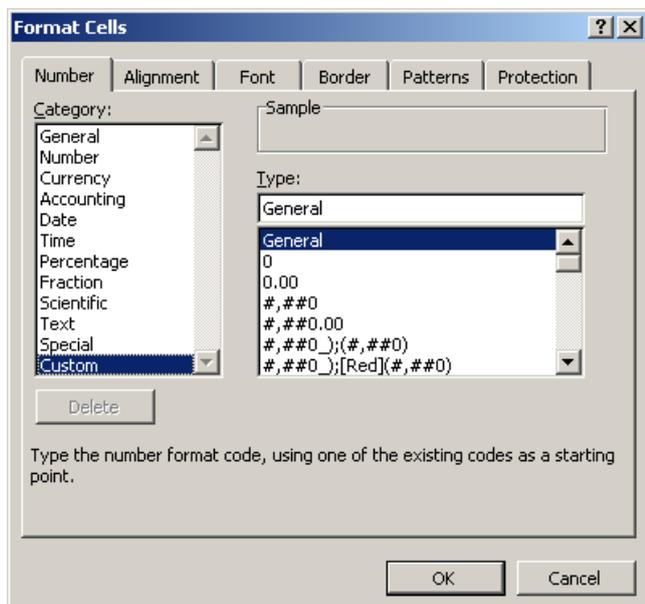
3.2.2 Custom Format Symbols

| Symbol	Meaning
0	**Digit Placeholder.** This symbol ensures that a specified number of digits appear on each side of the decimal point. If a number has more digits to the right of the decimal point than the number 0s specified in the format, the number in the cell is rounded. *(E.g. the value .98 is displayed as 0.980 if the format is 0.000; .98 is rounded to 1.0 if the format is 0.0)*
?	**Digit Placeholder.** This symbol follows the same rules as the 0 placeholder, except that space is left for insignificant zeros on either side of the decimal point. This placeholder aligns numbers on the decimal points. *(E.g., 1.4 and 1.45 would line up on the decimal point if both were formatted as 0.??)*
#	**Digit Placeholder.** This symbol works like 0, except that extra zeros do not appear if the number has fewer digits on either side of the decimal point than #s specified in the format. This symbol shows Excel where to display commas or other separating symbols. *(E.g. the format #,### display a comma after every 3rd digit to the left of the decimal point)*
%	**Percentage Indicator.** This symbol multiplies the entry by 100 and insert the % character.
.	**Decimal Point.** This symbol determines how many digits (0 or #) appear to the right and left of the decimal point. *(E.g. if you want Excel to include commas and display at least one digit to the left of the decimal point in all cases, specify the format #,##0).*
/	**Fraction Format Character.** This symbol displays the fractional part of a number in a non-decimal format. The number of digit placeholders that surround this character determines the accuracy of the display. *(E.g. the decimal fraction 0.269 when formatted with # ?/? is displayed as 1/4, but when formatted with # ???/??? is displayed as 46/171)*
,	Thousands separator. If the format contains a comma surrounded by #s, 0s, or ?s, Excel uses commas to separate hundreds from thousands, thousands from millions, and so on. *(E.g. the format code #,###,###, would round 4567890 to 4,568, whereas the format code #,###,###,, would round it to 5)*
E– E+	**Scientific Format Characters.** If a format contains one 0 or # to the right of an E– or E+, Excel displays the number in scientific notation and inserts E in the displayed value. The number of 0s or #s to the right of the E determines the minimum number of digits in the exponent. Use E– to place a negative sign by negative exponents; use E+ to place a negative sign by negative exponents and a positive sign by positive exponents.
****	**Literal demarcation character.** Precede each character you want to display in the cell (except for : $ – + / ( ) and space) with a backslash. *(E.g. the format code #,##0 \\D;-#,##0 \\C displays positive numbers followed by a D, and negative numbers followed by a C. To insert several characters, use the quotation-mark technique described in the "Text" table entry)*
$ – + / ( ) space	**Standard formatting characters.** These symbols type these characters directly.
_	**Underscore.** This code leaves space equal to the width of the next character. Use this formatting character for alignment purposes. *(E.g. _) leaves a space equal to the width of the close parenthesis)*

Symbol	Meaning
"*Text*"	**Literal Character String.** This formatting code works like the backslash technique except that all text can be included within one set of double quotation marks without using a separate demarcation character for each literal character.
*	**Repetition Initiator.** Repeats the next character in the format enough times to fill the column width. Use only one asterisk in the format.
@	**Text Placeholder.** If the cell contains text, this placeholder inserts that text in the format where the @ appears. *(E.g. the format code "Hello" @ displays "Hello World" in a cell containing the text "World")*

3.2.3 Codes for Creating Custom Date and Time Formats

| Code	Meaning
General	Number in General (serial value) format
d	Day number without leading zero (1 – 31)
dd	Day number with leading zero (01 – 31)
ddd	Day-of-week abbreviation (Sun – Sat)
dddd	Complete day-of-week name (Sunday – Saturday)
m	Month number without leading zero (1 – 12)
mm	Month number with leading zero (01 – 12)
mmm	Month name abbreviation (Jan – Dec)
mmmm	Complete month name (January – December)
yy	Last two digits of year number (00 – 99)
yyyy	Complete four-digit year number (1900 – 2078)
h	Hour without leading zero (0 – 23)
hh	Hour with leading zero (00 – 23)
m	Minute without leading zero (0 – 59)
mm	Minute with leading zero (00 – 59)
s	Second without leading zero (0 – 59)
ss	Second with leading zero (00 – 59)
s.0	Second and tenths of a second without leading zero
s.00	Second without leading zero and hundredths of a second without leading zero
ss.0	Second without leading zero and tenths of a second with leading zero
ss.00	Second and hundredths of a second with leading zero
AM/PM	Time in AM/PM notation
am/pm	Time in am/pm notation
A/P	Time in A/P notation
a/p	Time in a/p notation
[ ]	Brackets display the absolute elapsed time when used to enclose a time code

3.2.4 Adding Color to Formats

You can also use the **Number** formats to change the color of selected cell entries. You can even create formats that assign different colors to specific numeric ranges so that all values greater than or less than a specified value appear in a different color. To change the color of an entry, type the name of the new color in brackets (e.g. [BLUE]) in front of each segment of code.
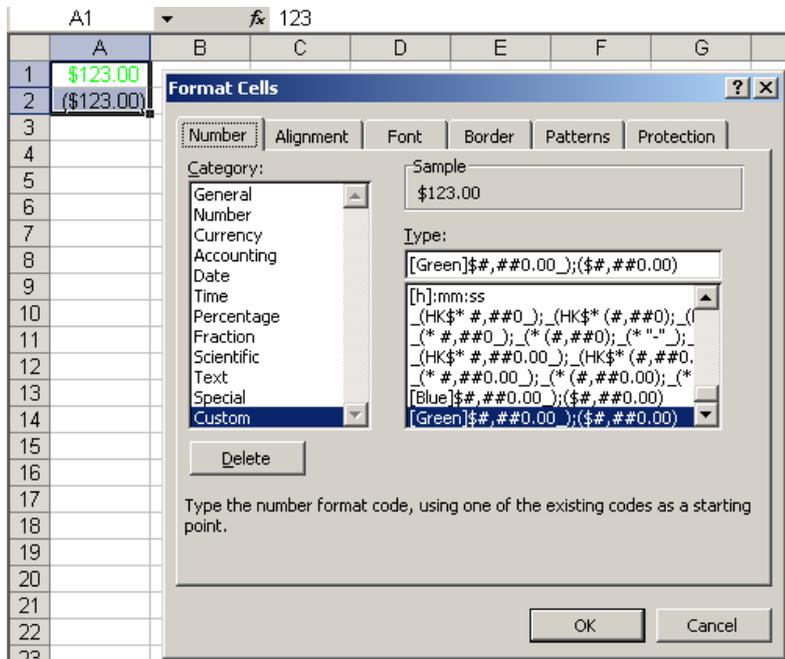

3.2.5 Using Custom Format Condition Operators

You can create custom formats that are variable by adding a condition operator (<, >, =, <=, >=, or <>) to the Excel for conditional format.
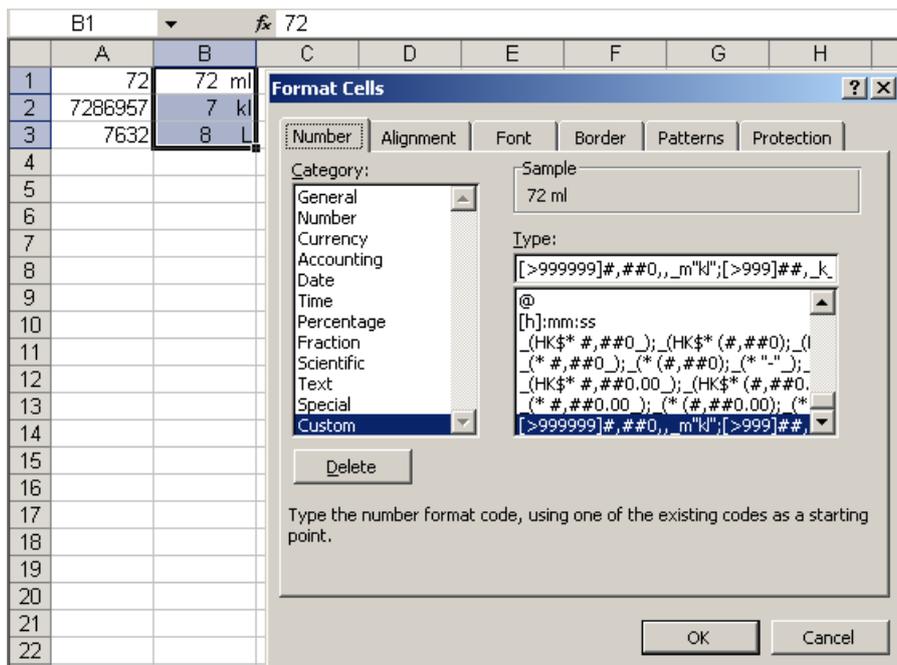
3.3 Aligning Data

The **Alignment** tab in the **Format Cells** dialog box, positions text and numbers in cells. It also contains options you can use to create multi line text labels, repeat a series of characters within one or more cells, and orient text vertically or at any angle in cells.
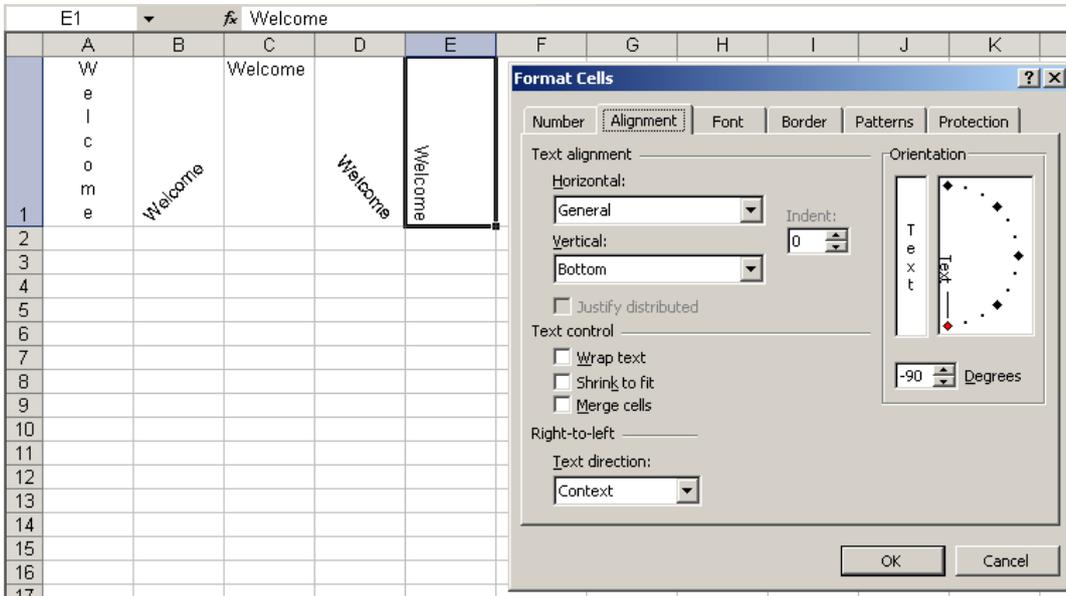
3.4 AutoFormat

You can apply collections of complementary formats to cell regions on your worksheets quickly and easily using **Format** ➜ **AutoFormat**. The **AutoFormat** dialog box, applies predefined combinations of formatting criteria to your worksheets. You can change the number style, font, alignment, border, pattern, column width, and row height, all with just one click.
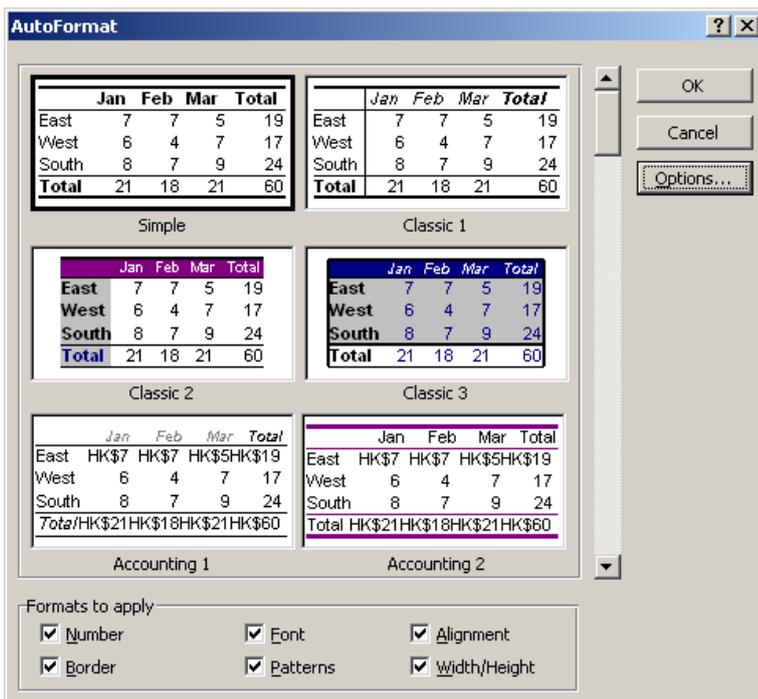
3.5 Applying Conditional Formats

Conditional formatting offers an easy way to apply formats based on the conditional for the cell. To apply conditional formatting to cells, follow these steps:

1. Select the cells you want to format.

2. Choose **Format ➜ Conditional Formatting** to display the **Conditional Formatting** dialog box, and select from the following options:

    •   Use the first drop-down list to either apply a condition based on the value in the selected cell, or to create a formula that uses other values to determine a condition. Normally you want to use the **Cell Value Is** option, which looks at the displayed value in the cell. Use the **Formula Is** option if you want to enter your own formula to determine the condition.

    •   Choose an operator in the second condition drop-down list. Your choices are **Between**, **Not Between**, **Equal To**, **Not Equal To**, **Greater Than**, **Less Than**, **Greater Than Or Equal To**, or **Less Than Or Equal To**.

    •   Enter the comparison values in the entry boxes. If you choose **Between** or **Not Between** in the second condition list, two entry boxes appear in which you provide an upper and a lower limit. Otherwise, only one box appears.

    •   Click **[Add>>]** to create another condition. You can set up to three conditions.

3. After you establish the condition you want to apply, click **Format**. An abbreviated version of the **Format Cells** dialog box appears, containing only **Font**, **Border**, and **Patterns** tabs. Specify any combination of formats to be applied when your condition or conditions are met.

To remove conditional formatting, select the cell or range, choose **Format ➜ Conditional Formatting**, and then click the **[Delete]** button to trigger the **Delete Conditional Format** dialog box. Then select the condition you wish to delete, and pres **[OK]** button to confirm.
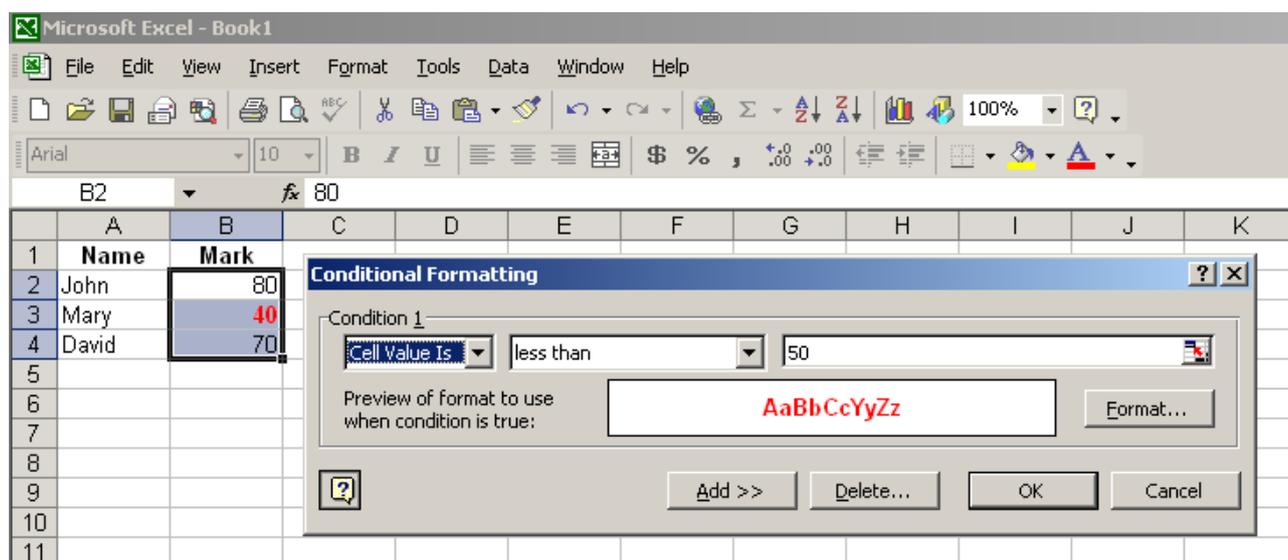
3.6 Formatting with Styles

Styles help you achieve consistency in formatting, both within a worksheet and across worksheets and workbooks. Using styles, you can easily modify the formatting characteristics of many cells at once.

Every new workbook contains six predefined styles. These predefined styles have the same characteristics on each worksheet in a workbook and in each new workbook you create, but you can change them for any workbook and you can add styles of your own. When you save a workbook, all its style definitions are saved with the rest of your data.

Predefined Style	Detail
Comma	Number formatting only, with thousand separators and two decimal places
Comma [0]	Number formatting only, with thousand separators, rounded to the nearest integer.
Currency	Number formatting only, with currency signs, thousand separators, and two decimal places.
Currency [0]	Number formatting only, with currency signs and thousand separators, rounded to the nearest integer
Normal	Includes defaults for all formatting attributes
Percent	Number formatting only, percentage format with no decimal places

3.6.1 Defining Styles

You define styles by choosing **Format** ➔ **Style**. The **Style** dialog box shows the attributes of the Normal style. Styles can have 1 – 6 attributes. All the predefined styles except **Normal** have only one attribute (a number format). The predefined **Normal** style is applied to every cell in every new workbook.
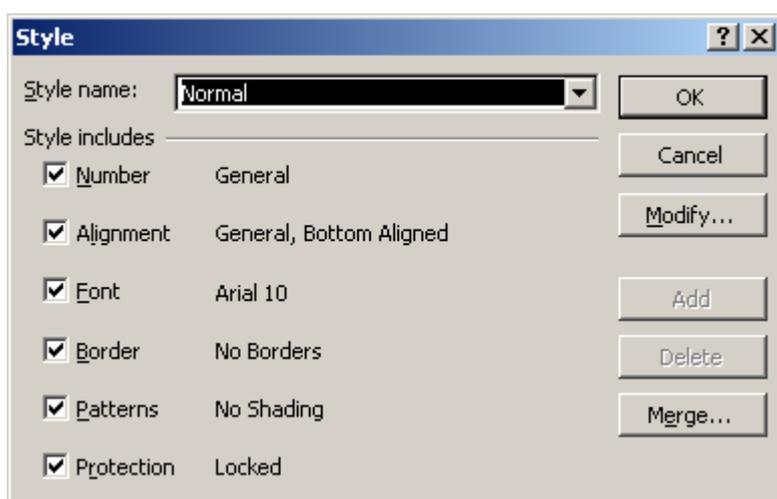
3.6.2 Defining Styles from Scratch

To create a new style without first formatting a cell, use the following procedure:

1. Choose **Format ➔ Style**, and in the **Style Name** edit box, type a name for the new style.

2. Click the **[Modify]** button. The **Format Cells** dialog box appears. All the changes you make in the **Format Cells** dialog box apply to your new style definition.

3. Select format options on the **Number**, **Alignment**, **Font**, **Border**, **Patterns**, and **Protection** tabs, and then click **[OK]** to return to the **Style** dialog box.

4. The **Style Includes** section of the dialog box reflects the formats you added. Clear the **Style Includes** options you don't want to include in your new style.

5. Click **[Add]** to add the new style to your workbook..

Your new style appears among all the others defined for the current workbook. You can apply it at any time from the Style Name list (or the Style box if you add it to a toolbar).
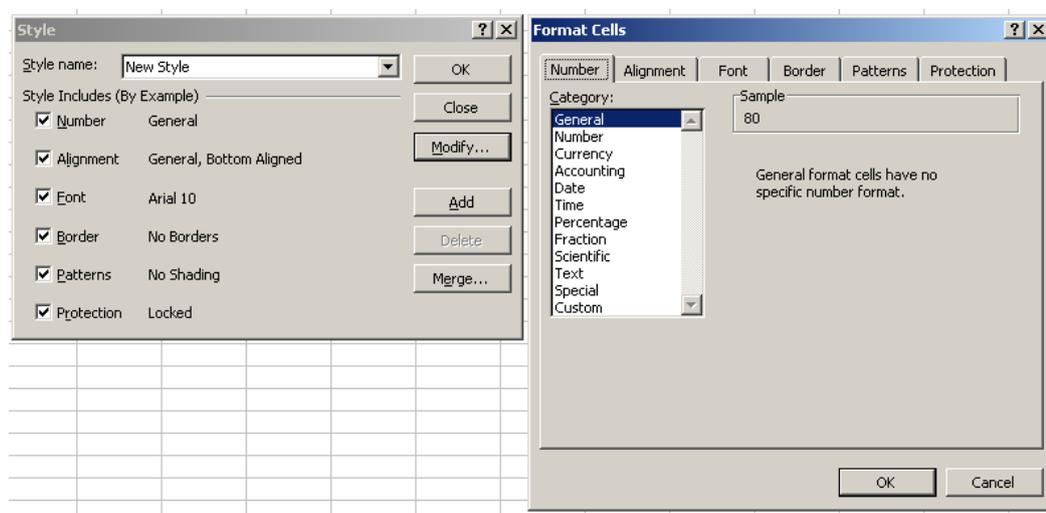
3.6.3 Applying a Style

To apply a style to a cell or range, select the cell or range and choose **Format ➔ Style**. Then select any style from the **Style Name** list. You can change the appearance of any cell or range in your worksheet, whether or not you have applied a style to that cell or range, by choosing **Format ➔ Cells**.

3.6.4 Modifying a Style

The principal advantage of using styles is that if you change your mind about the appearance of a particular element in your workbook, you can revise every instance of that element at once by changing the style. To modify a style definition, follow these steps:

1. Choose **Format ➔ Style.**

2. Select the style from the **Style Name** list, and then click **Modify** to display the **Format Cells** dialog box.

3. Select the appropriate format options.

4. Click **[OK]** to return to the **Style** dialog box, then click **[OK]** to confirm your changes.

3.6.5   Merging Styles from Different Workbooks

To maintain formatting consistency across a group of worksheets, you can keep the worksheets in the same workbook. If this is impractical but you still want to maintain stylistic consistency, you can copy style definitions between workbooks. To copy a style from one workbook to another, take the following steps:

1.   Open both the source workbook and the destination workbook.

2.   Click the destination workbook to make it the active window.

3.   Choose **Format ➔ Style** and click **[Merge]**. Select the name of the workbook you want to copy styles from, and click **[OK]**.
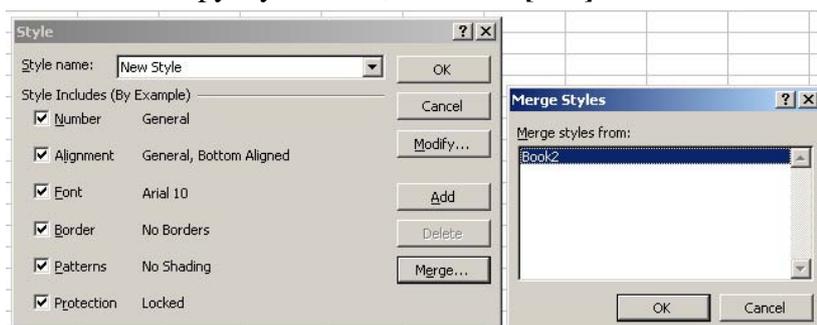
3.6.6   Deleting a Style

To delete a style's definition, choose **Format ➔ Style**, select the style in the **Style Name** list, and then click **[Delete]**. Any cells that were formatted with the deleted style revert to the **Normal** style. (You cannot delete the Normal style). Any cell that was formatted with a deleted style and was then also formatted directly, however, retains all direct formatting you applied using **Format ➔ Cells**.

3.6.7   Using Template Files to Store Formatting

A template file is a model that can serve as the basis for new worksheets. A template can include both data and formatting information. The advantages to using templates are standardization and protection. To create a template file, follow these steps:

1.   Open the workbook you want to use as a template.

2.   Choose **File ➔ Save As**, and supply a file name.

3.   Choose Template from the **Save as type** list, and click **[Save]** button.