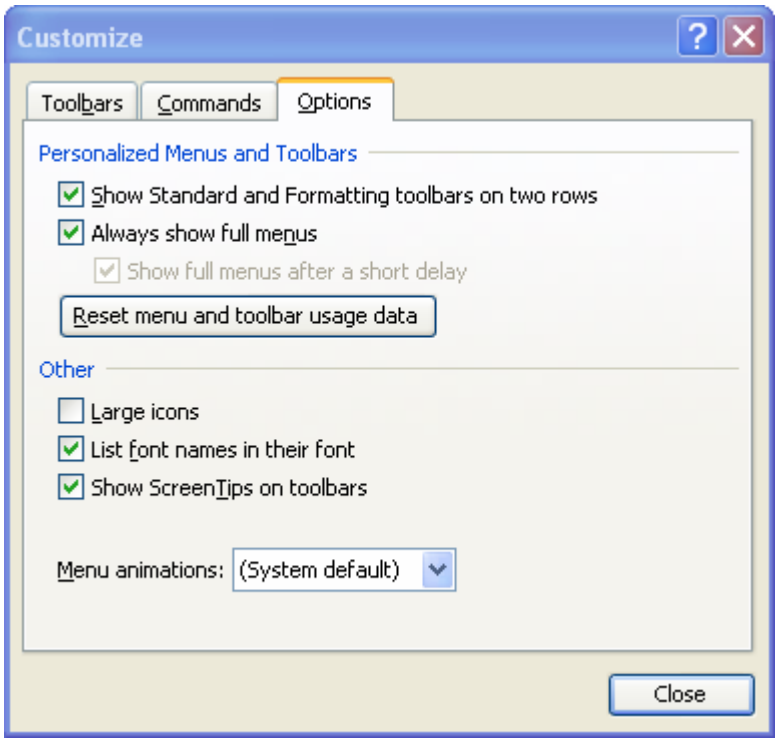
Intermediate Excel 2003

Annoyances

Excel has many great features. It also has some annoyances. Two of the most common annoyances are the default setting of "personalized" menus, and the office assistant.

Incomplete menus



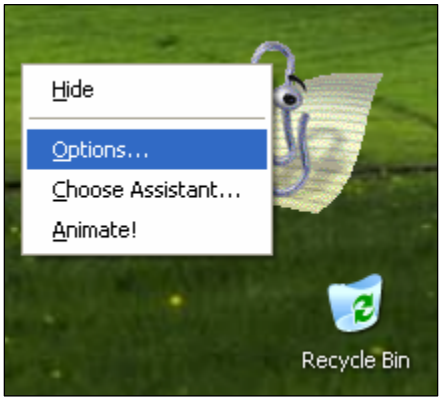
Have you ever wondered, "where did the rest of the menu go?" If you are like most people, you have been trained long and hard to go to the menu to choose your options/actions. We pick up the keyboard shortcuts for our most used actions, and rely on the menus to furnish the ones we haven't yet committed to memory.

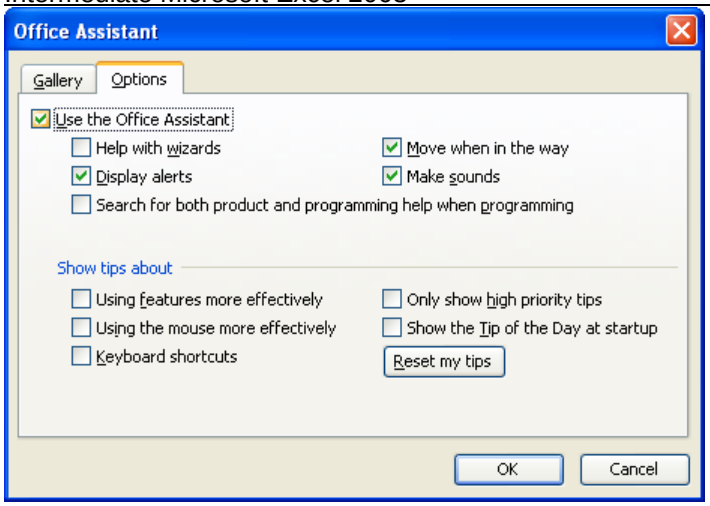
Microsoft decided to play with the menus and have them list the most recently used ones, while hiding the infrequently choosen menu items. All the items are there, you just need to click on the bottom of the menu to expand it to show all the menu items.

When you go to the menu to find an option/action because it is one you don't use often, and the only ones that appear on the menu are the ones you do use often, that's annoying. Fortunately, it's easily remedied.
You will find the fix under Tools/Customize on the Options tab. Place a check in the "Always show full menus" box.

Kill Clippie

The default Office Assistant is Clippie, the animated paper clip. Some people think he's cute, others would like him terminated with extreme prejudice. If you are of the latter category of thought, right click on him the next time he appears and choose Options. The Office Assistant dialog box will appear. Uncheck the box next to Use the Office Assistant.





Bye, bye clippie!

Of course, if you fall into the Pro Clippie camp, click on the gallery tab and choose your favorite character as your assistant.

Click on OK to end.

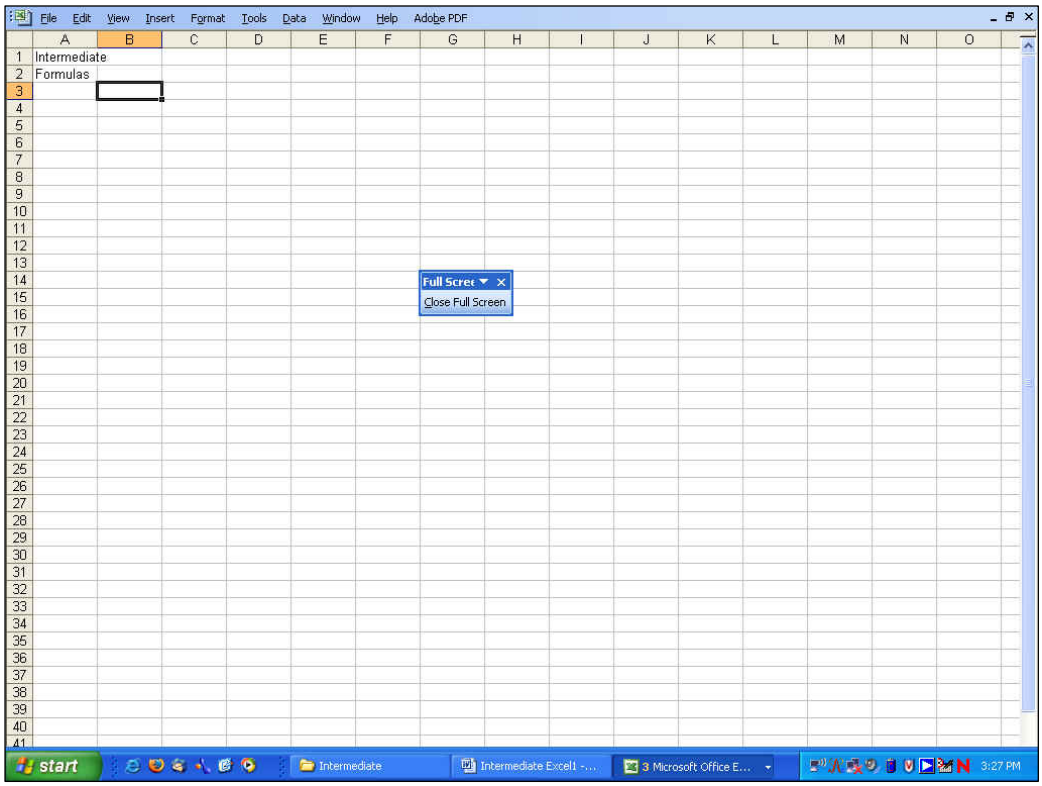
Working With Large Worksheets

What is considered a large worksheet? It all depends on what you are accustomed to. A functional definition of a large worksheet is one where navigation within the sheet becomes cumbersome. Excel can handle worksheets of up to 255 columns by 65,335 rows. Now multiply that by 255, which is the maximum number of worksheets in a workbook, and you can really get lost. The following are ways to help find your way around,

Viewing

When working with a spreadsheet, having more of it viewable is better. Excel has several features and options which make it easy to increase your viewable area.

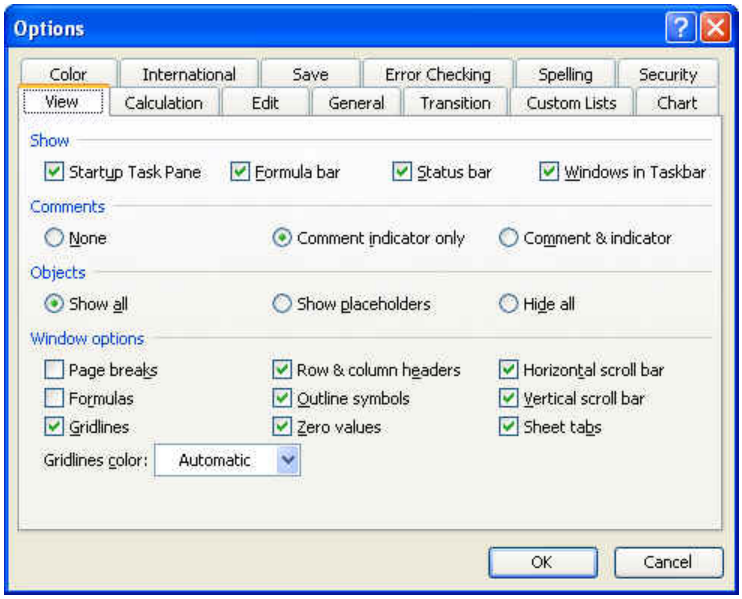
Full Screen



The easiest way is to use the full screen feature found under the View menu. Simply choose View/Full Screen from the menu or use the keyboard shortcut <ALT> V, followed by U.

To exit the Full Screen view, click on the icon or use the <ALT> C keyboard combination to close and return to the normal view.

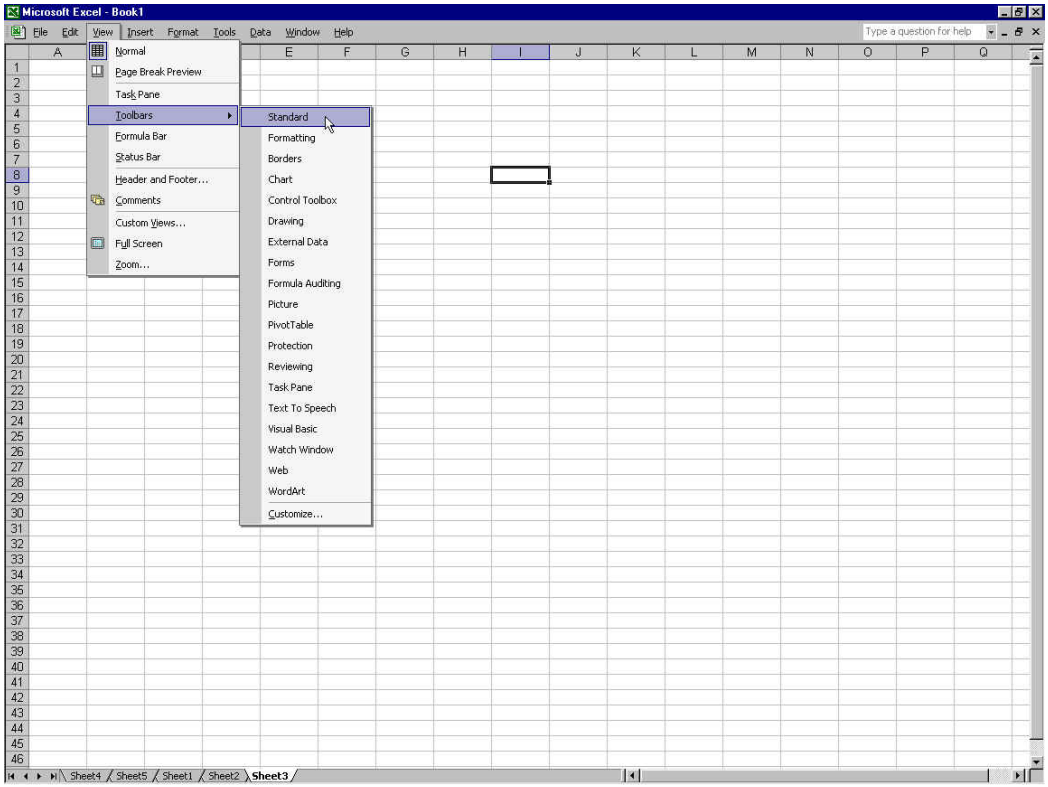
Turn off portions of Excel



Tools/Options/View Under the View tab is the Show section. By deselecting the options you gain more viewable screen area.

By turning off the Formula and the Status bars, you gain a couple of rows of additional viewing area.

Other methods include turning off toolbars from the View/ Toolbars menu.



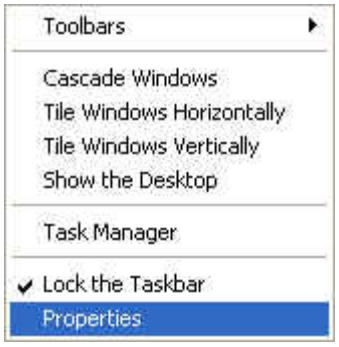
Here is a view of Excel that is about as sparse are you can get and still function.

Note the status bar at the bottom is gone, the formula bar is gone, and all the button style tool bars are gone.

In this configuration we rely on the drop down menu system, quick menus, and "in cell" text and formula entry.

The default toolbars are Standard, and Formatting.

Hiding the Task Bar

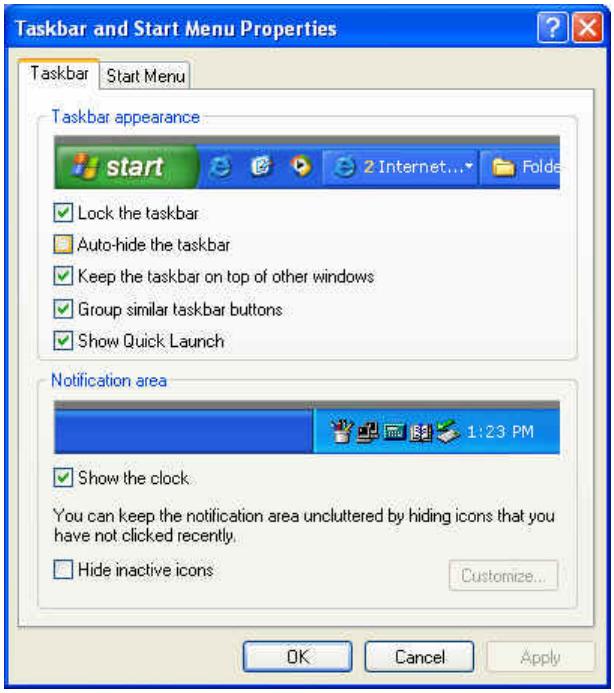


In the Full Screen view, notice that the Task Bar is still being displayed.

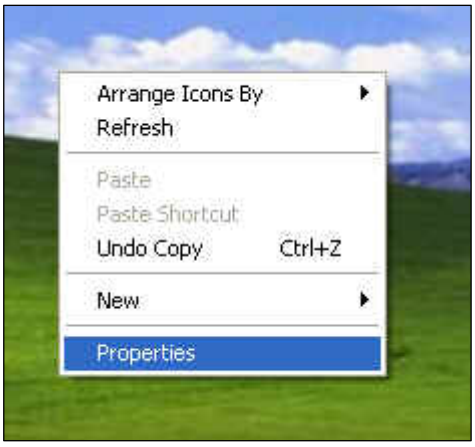
Did you know the task bar along the bottom of your screen can be made to disappear (at least temporarily)? Windows has a way to make it hide when not in use, allowing a bit more of Excel (or any other application) to use that portion of the screen. Find an empty space on the task bar and right click.

At the bottom of the quick menu click on Properties.

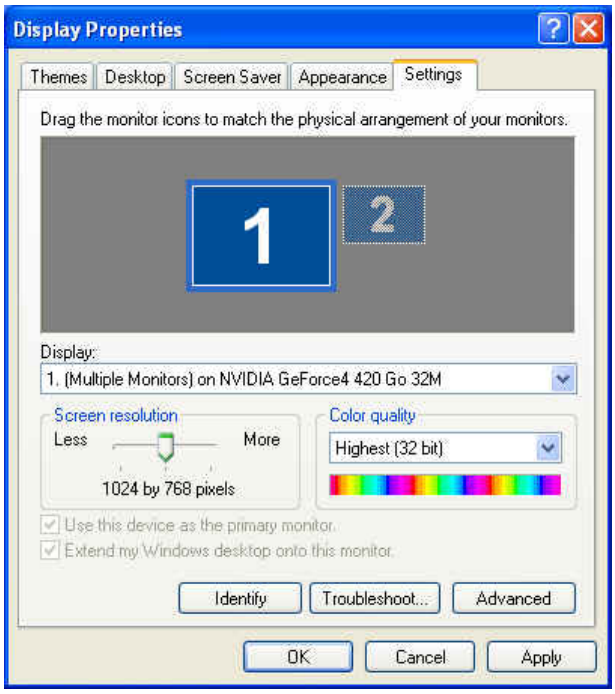
On the Taskbar Options tab click in the checkbox next to Autohide. Click on OK. The taskbar will now be overlaid by any active application. Move the cursor to the bottom of the screen and the taskbar will pop up automatically.



Screen Resolution



You maybe able to gain screen real estate by modifying your computer's display resolution, if you are currently not at the highest resolution. The quick way is to find an empty area on your desktop and right click to bring up a quick menu. At the bottom select Properties.

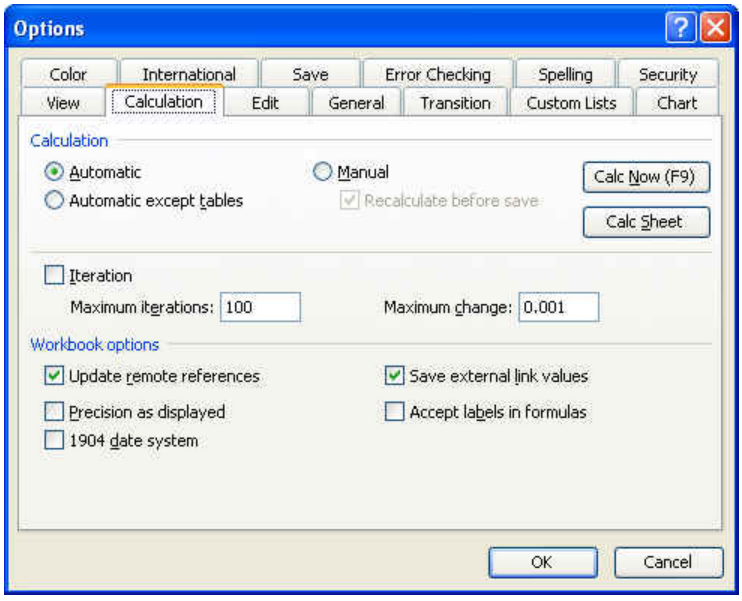


A Display Properties box will appear. Click on the Settings tab. You will see a slider bar with the title "Screen Area" or "Screen Resolution" (depending on which version of Windows is on your machine). By clicking and dragging on the slider you can change the screen resolution. Note how the screen on the properties box changes. Click on the Apply button.

Your monitor may blink or flicker for a moment and the stabilize at the new resolution. If nothing appears, just wait 15 seconds and your previous resolution will be automatically restored. If the system does support the new setting, Windows will then ask if the new resolution is OK.

If you click Yes, the new setting will stay. Should you choose No, the system will revert to the previous resolution.

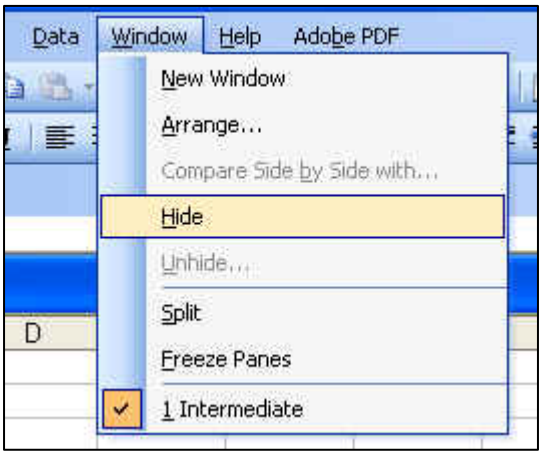
Calculation Options



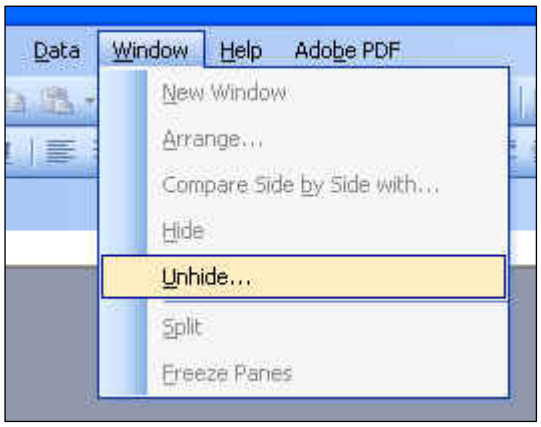
Formulas are calculated automatically by default. In certain instances where large amounts of calculations are being made, you may wish to turn off the automatic recalculation. Waiting 10 to 20 seconds for recalculation after every change to the spreadsheet will test your patience. Fortunately, Excel allows you to turn off automatic calculations. Found under the Tools/Options menu, the Calculation tab has several options allowing you to tailor its behavior. By clicking on the manual button, you are in control of when the sheet recalculates. To manually recalculate, simply press the <F9> function key. You also have the option to force a recalculation when the file is saved.

Hiding Workbooks

Hide and seek, Excel style. If you have simply too many workbooks open and it gets confusing keeping track of them, you can maintain a modicum of sanity by hiding the extraneous ones. Or you can drive yourself crazy by forgetting to unhide a spreadsheet. It's your choice. Here's how:



Have the window you wish to hide active. From the Window menu choose Hide or use the <ALT> W, H keyboard shortcut. The active window is now hidden. If it was the only workbook open, you will be staring at the blue background of raw Excel.



To regain your hidden spreadsheet, choose Window/Unhide or use the keyboard shortcut of <ALT>W, U.

TIP: If you seem to be missing a workbook,, check the Windows menu. If the Unhide button is NOT grayed out, there is a hidden workbook.

Exercise: Hiding workbooks

Exercise A
Open the file **K:\Excel\Intermediate.xls**.

Click on the **Window** menu item. Next, select **Hide**.

You should now see an empty Excel screen.

Click on the **Window** menu item. Next, select **Unhide**. Note that Unhide is the only option not grayed out. Select **Intermediate** from the Unhide Workbook pop-up window. Click on **OK**. Intermediate.xls is back.

Exercise B
Open the files **K:\Excel\Intermediate2.xls** and **K:\Excel\Intermediate3.xls**.

Click on the **Window** menu item. Select **Intermediate** from the bottom area of the drop down menu. This makes Intermediate the active workbook.

Click on the **Window** menu item. Next, select **Hide**.

Click on the **Window** menu item. Select **Intermediate2** from the bottom area of the drop down menu. This makes Intermediate2 the active workbook.

Click on the **Window** menu item. Next, select **Hide**.

For fun, place your cursor over the Excel Icon on the Taskbar. Click once. Notice that only Intermediate3 is shown.

Click on the **Window** menu item. Next, select **Unhide**. Note that with multiple workbooks, Unhide is merely another menu selection.

Select **Intermediate** from the Unhide Workbook pop-up window. Click on **OK**.

Intermediate.xls is back.

Click on the **Window** menu item. Next, select **Unhide**.

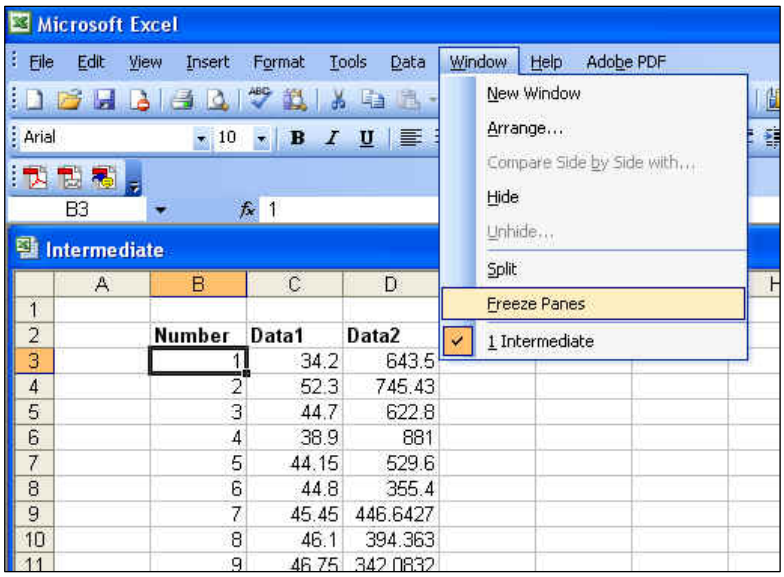
Select **Intermediate** from the Unhide Workbook pop-up window. Click on **OK**.

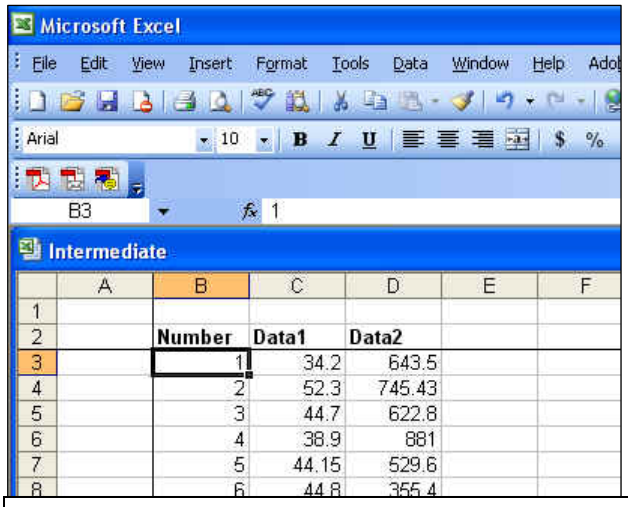
Intermediate.xls is back.

For fun, place your cursor over the Excel Icon on the Taskbar. Click once. Notice that all of our Intermediate excel files are shown.

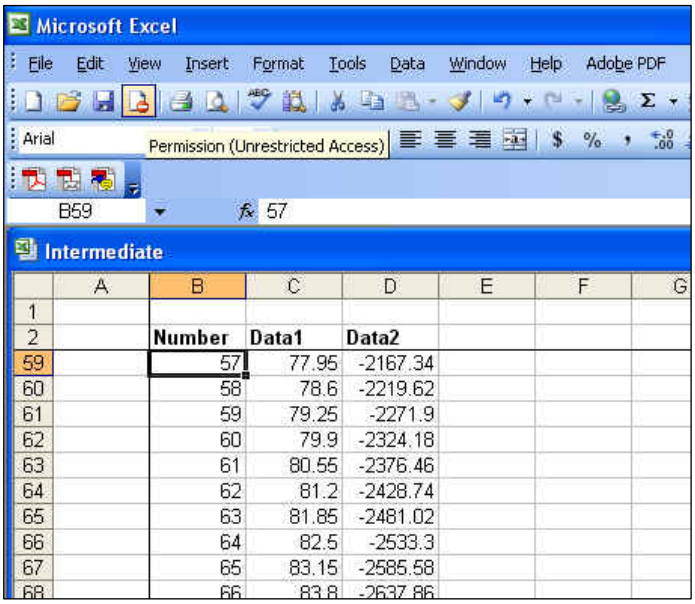
Freezing Panes

Freezing portions of your screen is a very useful feature. Excel calls it Freeze Panes. This allows you to "lock" things like row and column headings, which is handy for remembering what all those numbers really mean. It's an easy feature to use, as long as you remember it creates the frozen panes to the LEFT and ABOVE the active cell. Freeze Panes is found on the Window menu or can be activated by the <ALT>W, F keyboard shortcut. As you can see in the screen shots, cell B3 is active and Freeze Panes is being selected.





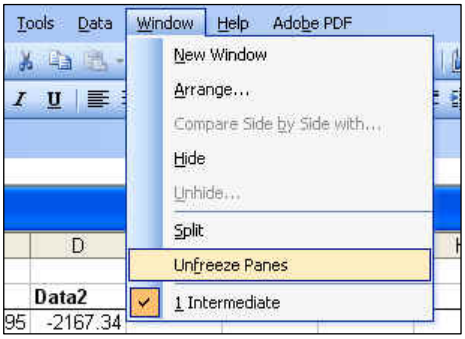
Here you see the thin solid lines which demarcate the Freeze Panes. Note that the lines are above and to the left of the active cell ,B3 .



	A	B	C	D	E	F	G
1							
2		Number	Data1	Data2			
59		57	77.95	-2167.34			
60		58	78.6	-2219.62			
61		59	79.25	-2271.9			
62		60	79.9	-2324.18			
63		61	80.55	-2376.46			
64		62	81.2	-2428.74			
65		63	81.85	-2481.02			
66		64	82.5	-2533.3			
67		65	83.15	-2585.58			
68		66	83.8	-2637.86			

Notice in this screen shot how the data has been scrolled, but the headings remain stationary (and visible!).

To turn off the Freeze Panes choose Window, Unfreeze from the menu or use <ALT>W, F again to toggle the panes off.



Exercises: Freeze! Don't Move!

In the Excel book **Intermediate.xls**, click on the **Freeze** tab to make it the active spreadsheet.

Click once in cell **C3** make it the active cell.

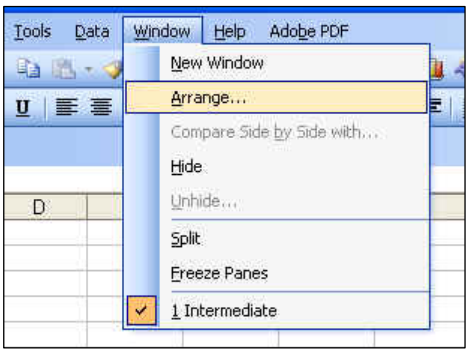
From the **Window** menu, select **Freeze Panes**.

Use the down arrow to scroll through the data.
Next, use the right arrow to scroll to the right.
Note the frozen portions of the screen do not scroll.

Press the **Scroll Lock** key. Excel is one application where it actually does something.
Now, try scrolling again. Notice that scrolling is immediate.

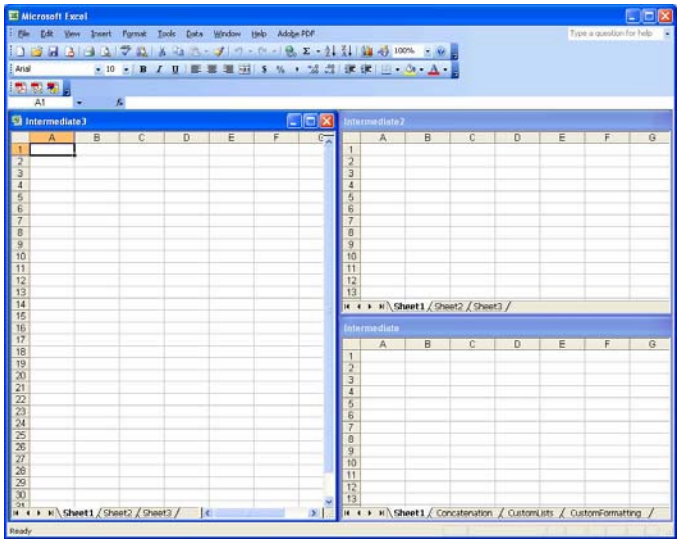
Turn off Freeze Panes by going to the **Window** menu and selecting **Unfreeze Panes**.

Arranging windows

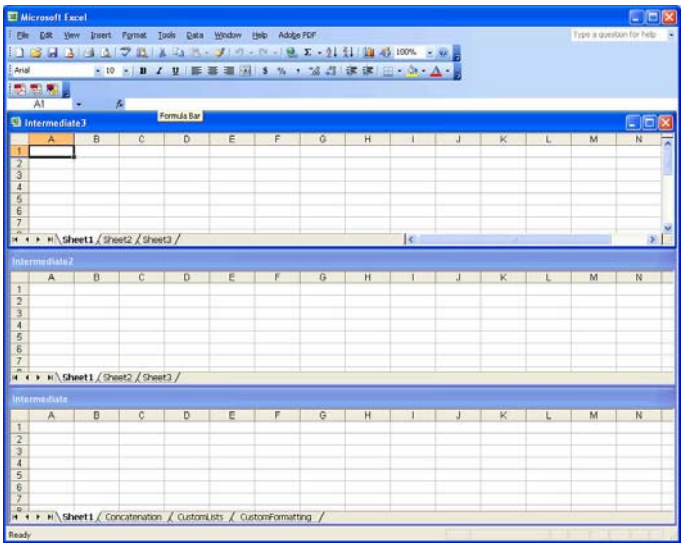


Excel can have multiple workbooks open at once. Each workbook can have it's own window displayed in Excel. The number of workbooks Excel can open is limited by the memory and resources available on your computer. Quite logically, the Arrange options are found on the Window menu.

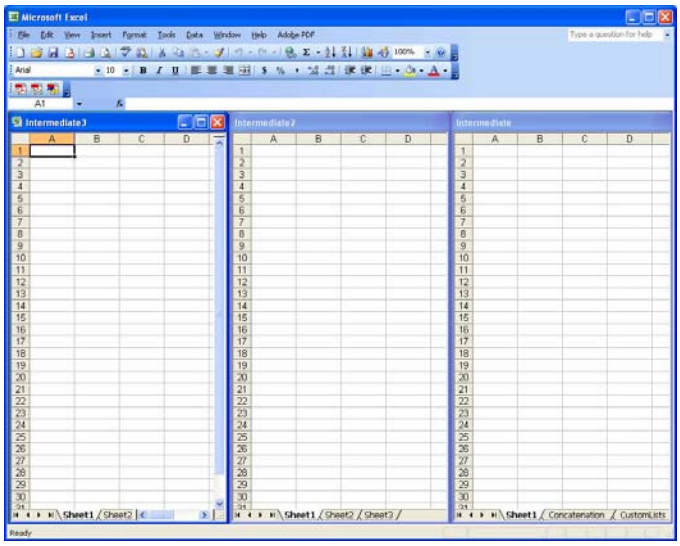
The options are Tiled, Horizontal, Vertical, and Cascade. Select the checkbox next to Windows of active workbook to view sheets only in the active workbook. The following screen shots show each of the options with three workbooks open.



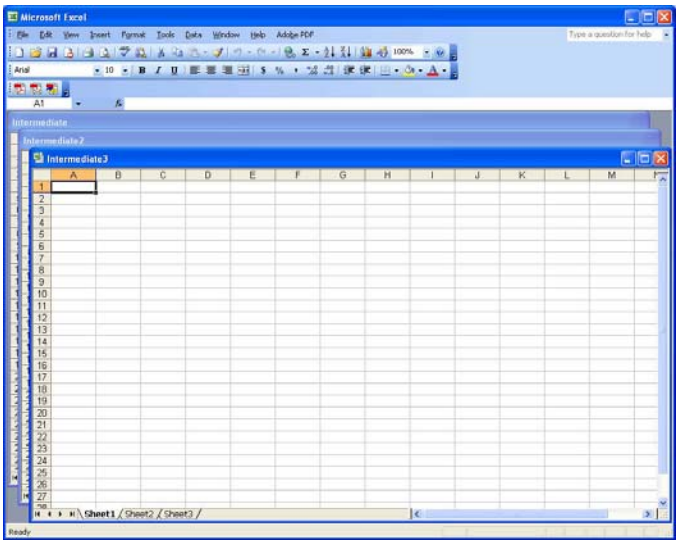
Tiled



Horizontal



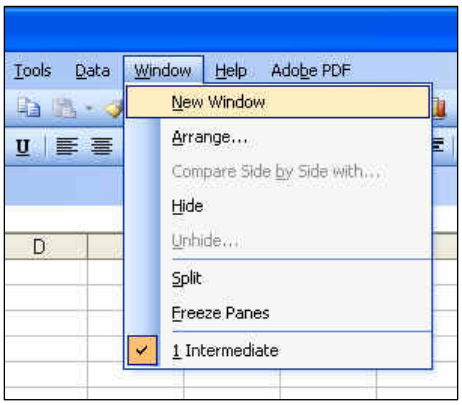
Vertical



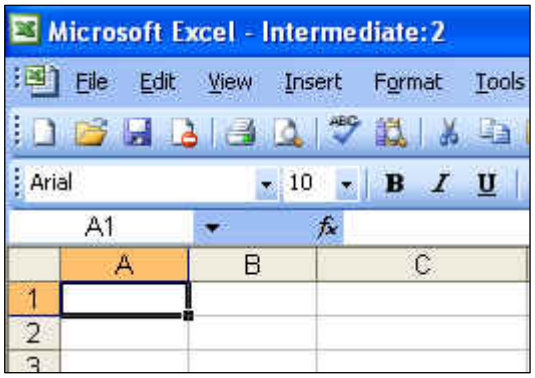
Cascaded

Click on the maximize button to bring a worksheet to full size.

Multiple Views of the same workbook



Have you ever wanted to have a window for each sheet in a workbook? It is easy to do. Simply open an new window for each sheet. Notice the syntax of the name displayed in each window title bar: <Filename:Number>. Each new window gets a number.



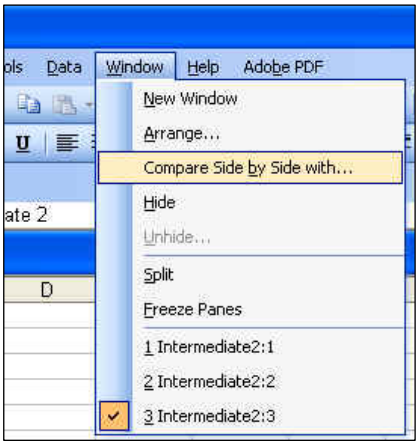
Just click on the tab you want to display in each window.

Exercise: Multiple views

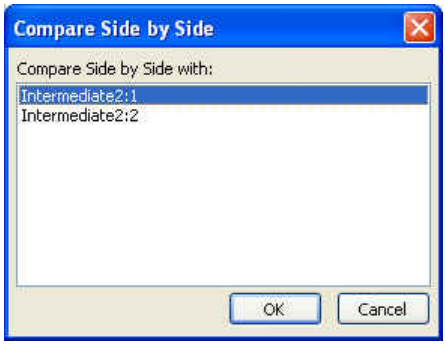
In **Intermediate.xls** click on **Window/New**.

Click on **Window**.
Notice that at the bottom of the menu there are now two window names: **Intermediate:1** and **Intemediate:2**.
These are both the same worksheet, just another view.
In **Intermediate:1**, click on the **Formulas** sheet tab.
In cell **F15** enter "**Bob**"
In **Intermediate:2**, click on the **Formulas** sheet tab.
Bob is there in cell F15.
Delete Bob from cell F15.

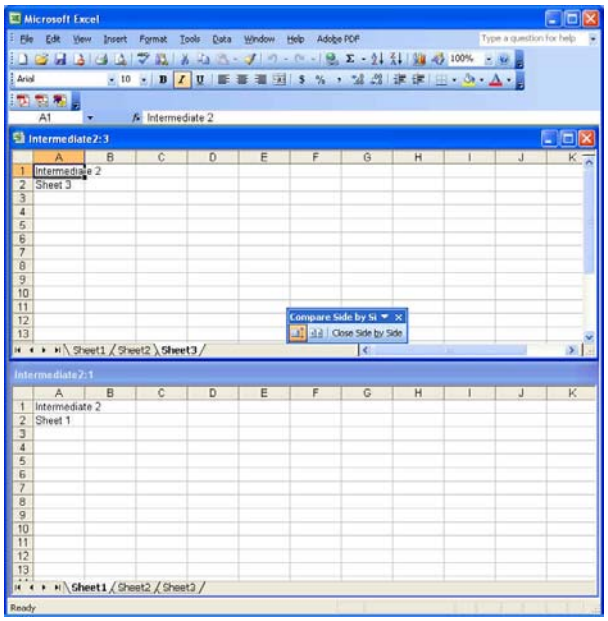
Compare Side by Side



Once there is more than one window open, a new menu item is available. Compare Side by Side with… allows a quick method of comparing two workbooks. When you select Compare Side by Side with… from the Window menu, the active workbook is automatically selected for the first of the workbooks.
If there are only two workbooks open, Compare Side by Side will list the non-active workbook in the menu and will not open a pop up box.



If there are more than two workbooks open a pop up window containing a list of other open workbooks is presented for your choice of a second workbook.



Click on the desired workbook and click OK to do a side by side comparison. The comparison stays active until you click on the Close Side by Side button. Closing Side by Side returns you to the prior state of Excel. It's a quick and easy way to manipulate workbooks.

Exercise: Compare Side by Side

In file **Intermediate.xls** use **File/Open** from the menu to open **Intermediate2.xls**.

From the **Window** menu, choose **Compare Side by Side with Intermediate1xls**.

Go ahead and compare the two, click on tabs, switch back and forth between workbooks.

Click on the **Close Side by Side** button.

From the **File** menu select **Open** and choose **Intermediate3.xls**.

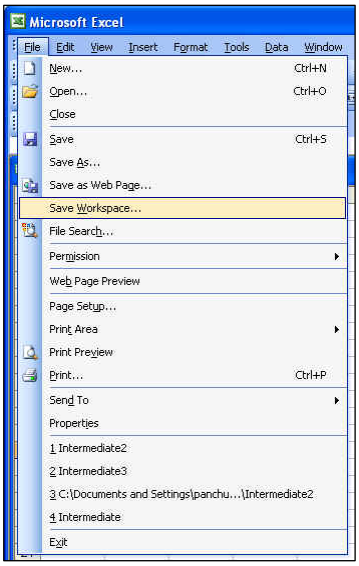
From the **Window** menu, choose **Compare Side by Side with…**

Notice that when there are more than two instances of workbooks open, a dialog box will pop up listing your choices.

Select a workbook and click on **OK** to compare them Side by Side.

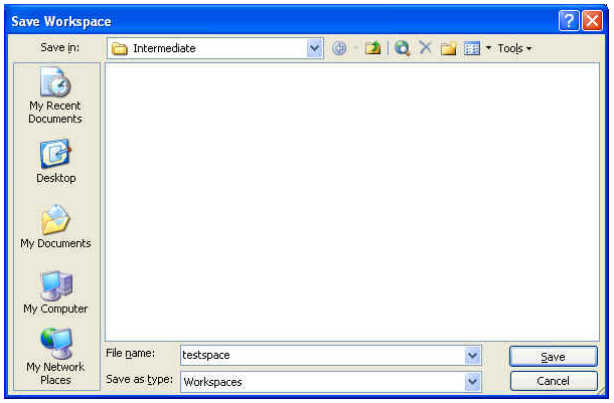
Click on **Close Side by Side** to end the comparison and close the window.

Workspace



A workspace file contains information about how a defined set of workbooks were arranged, including window sizes, screen magnification, display settings, and print areas. It does NOT contain the Workbooks. If you spend any amount of time getting your favorite spreadsheets laid out just the way you want them, save it as a workspace.

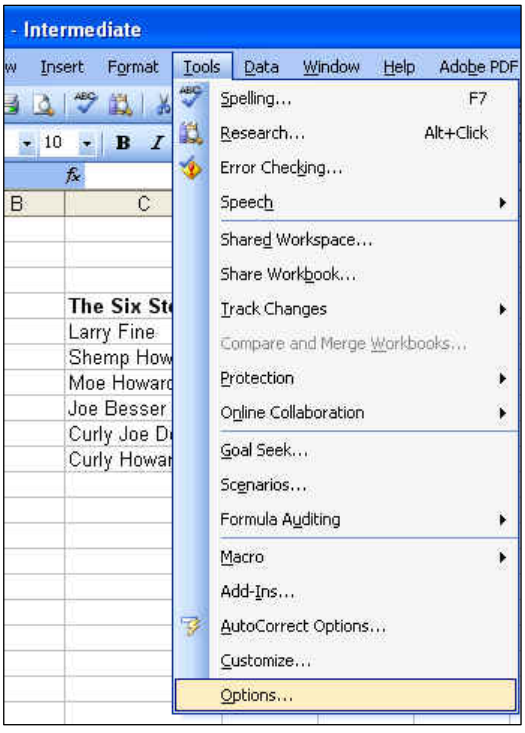
From the File menu, select Save Workspace. Type in a name or select one from the list.



Exercise: Workspace

Arrange the open workbooks the way you want them.
From the **File** menu select **Save Workspace**.
Enter a name for your workspace.
Click on **Save**.

Custom Fill Series

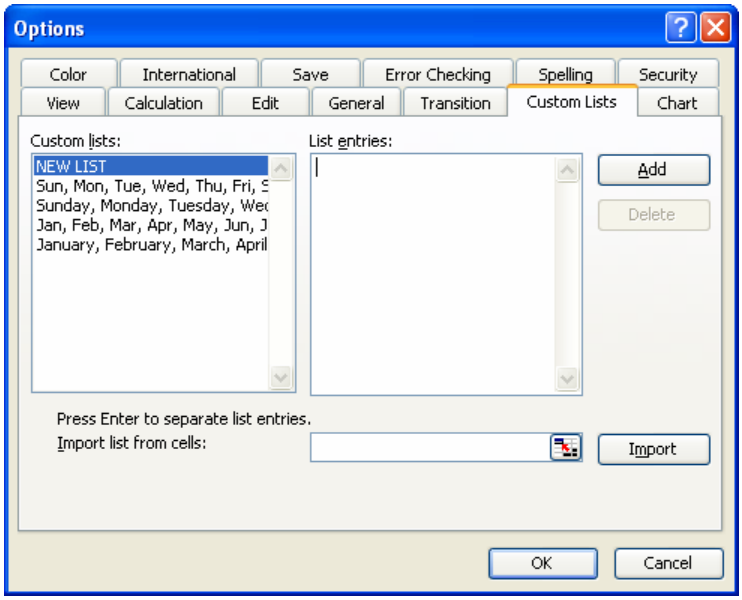


Autofill automatically fills a series cells based on the contents of the initial cell. The subsequent entries are pulled from a list, and wrap back to the beginning of the list if the range of selected cells is longer than the list. The initial cell does not have to contain the initial list entry. For example, if your custom autofill list were comprised of “Bob, Carol, Ted, Alice” And the initial cell contained “Ted” the autofill would fill the next cell with “Alice”, followed by “Bob”, then “Carol”, and back to “Ted” if the selected range were that long.

Not to be confused with data lists, an autofill custom list in Excel is a specified sequence of text separated by commas . Excel has built in, ready to use autofill lists for the days of the week and the months of the year in both full and abbreviated formats. You can also create a custom list.

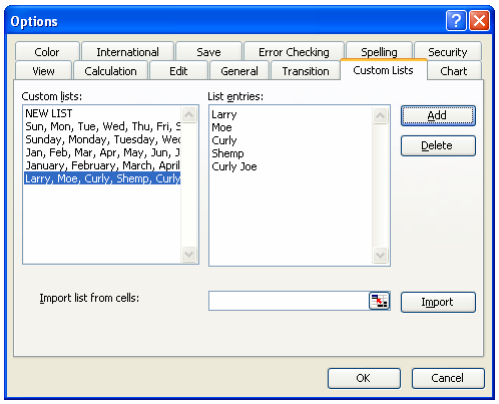
A custom autofill list can contain both text and numbers, however, the list must be created with numbers formatted as text. Also, to use the numbers from the autofill list, the starting cell must be formatted as text. In other words, it can be done, but you have to jump through a couple of hoops to get it done.

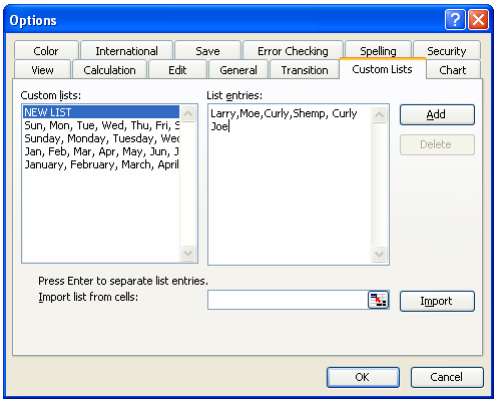
To create a custom autofill list start by choosing Tools/Options from the menu.



Select the Custom Lists tab.

There are two ways to enter a custom list. The first is to click on NEW LIST in the Custom lists: window. In the List entries window, enter the text items you want in the list, separated by commas. Click Add and enter the list.





The second way is to import the list from a range of cells. In this method, a range on cells is entered into the range field and the Import button is clicked.

Exercise: Custom Lists

Exercise A:

Use the **Intermediate.xls** workbook and click on the **CustomLists** tab to make it active.
From the **Tool** menu select **Options**.
Click on the **Custom Lists** tab to make it active.
Make sure the **New List** is highlighted (normally the top entry) in the Custom Lists area.
In the List Entries area, enter **Larry, Moe, Curly, Shemp, Joe, Curly Joe**
Click **Add**
Note the new entries in the custom list area.

Enter **$C$5:$C$10** in the **Import from** cells box.
Click on **Import**.
Click on **OK.**

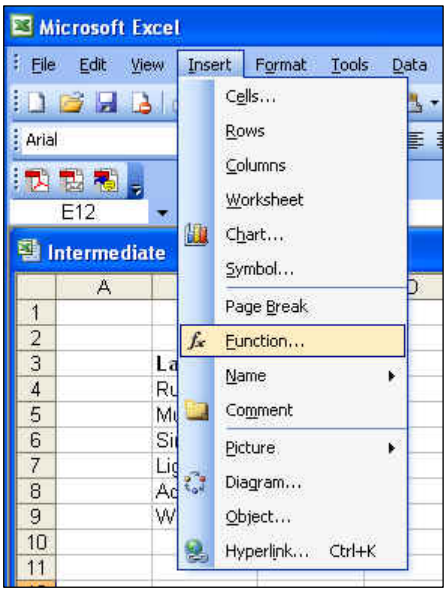
In cell **E4** enter **larry.**
Using the fill tab at the lower left corner of cell **E4**, click and drag to highlight cells **E4** through **G4.**
Release the mouse button.
Larry, Moe, Curly will be cells E4 through G4 respectively.

Next, click in cell **C5**. Again, use the fill tab at the lower left corner of the cell to click and drag highlighting cells **C5** through **H5**. The stooge's names will be displayed.

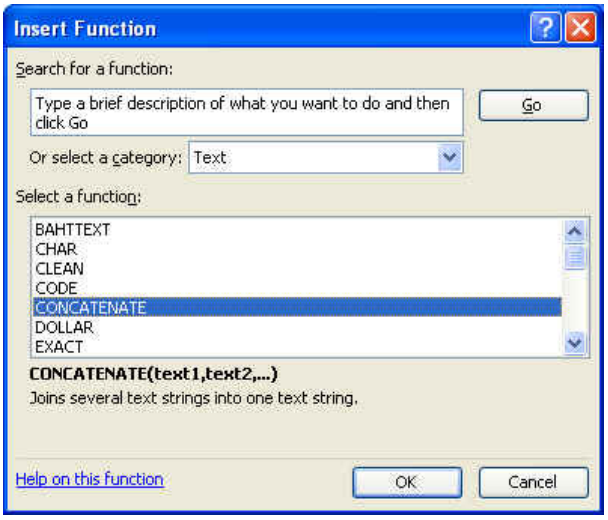
In cell **D14** enter **Shemp**.
Using the fill tab at the lower left corner of cell **D14**, click and drag to highlight cells **D14** through **G14.**
Release the mouse button.
Notice that you can start anywhere in the custom list and it will recognize it.

Concatenation of Cells

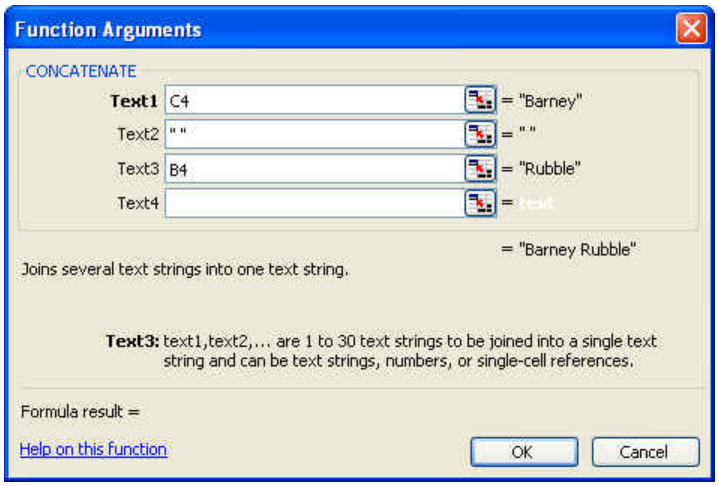
Let's suppose you have a column of last names, and a column of first names. Also, you would like to create a new column with both the first and last name combined in to a single cell. With numbers, you would add the cells together. With text you use the concatenate function. Up to 30 text strings can be made into one.



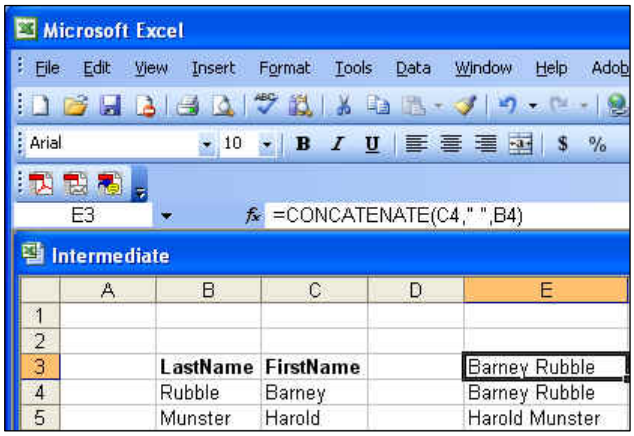
Select Function from the Insert menu. The Insert Function dialog box will appear. You can Search for a function, select a function category, or select a function from a list.



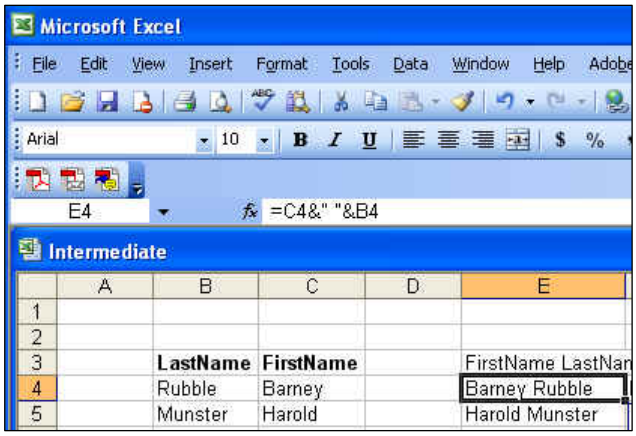
Here the Text category is selected. Select Concatenate and click on OK.



Next, we select the text we want to combine. The first is in cell C4 which contains "Barney". The second is a literal string of a single space enclosed in quotes. This puts a space between the first and last names. Last, cell B4 which contains "Rubble" is entered. Note the proposed result. If this is what you want, click on OK.



Here is the result.



As with most things in Excel, there is more than one way to do something. The ampersand (&) functions as concatenate in a formula. Typing =C4&" "&B4 gives the exact same result as going through the insert function menus.

Exercise: Concatenation

In **Intermediate.xls** click on the **Concatenation** tab to make it the active tab.

In cell **E4** enter the following formula **=C4&" "&B4**
Press **Enter.**
Note the entry in cell **E4** now displays **Barney Rubble.**

Right click in cell **E4** and select **Copy** from the quick menu.
Click and drag from cell **E5** to cell **E9** highlighting those cells.
Right click anywhere in highlighted area and select **Paste** from the quick menu.
The formula is copied from cell **E4** and copied into the range **E5** to **E9.**

Suppose the desired result is not first and last name, but last name, comma, first name.

In cell **F4** enter the following formula **=B4&", "&C4**
Press **Enter.**
Note the entry in cell **F4** now displays **Rubble, Barney.**

Click in cell **F4** and use the grab tab in the lower right corner to highlight the range of cell **F4** to **F9.**
The formula from cell F4 is copied into the range F4 to F9. Neat, eh?

Cell References

Even Excel needs good references. What are references? References are the way in which Excel is able to locate a cell or range of cells in a spreadsheet. There are two way in which cells are referenced in a spreadsheet, relative and absolute.

Relative References

A formula created with relative references uses the active cell as its base point.
All of the formula references are relative to that point. The beauty of relative references is you can copy and paste the formula without having to enter the cell references, the references adjust automatically. A relative reference takes the form of column, row. For example, A1 is the relative reference for the cell at the intersection of column A and row 1.

Absolute References

Absolute references refer to a specific row, column, or cell of a spreadsheet. Absolute references are denoted by using the dollar sign immediately before the column and row to lock in the row, column or both. For example $A$1 is the absolute reference for the cell at the intersections of column A, row 1.

Names

A word or string of characters that represents a cell, range of cells, formula, or constant value. Use easy-to-understand names, such as Products, to refer to hard to understand ranges, such as Sales!C20:C30.

Names in Formulas

You can use the labels of columns and rows on a worksheet to refer to the cells within those columns and rows. Or you can create descriptive names to represent cells, ranges of cells, formulas, or constant values.

Note: Labels can be used in formulas that refer to data on the same worksheet; if you want to represent a range on another worksheet, use a name.

A defined name in a formula can make it easier to understand the purpose of the formula. For example, the formula =SUM(FirstQuarterSales) might be easier to identify than =SUM(C20:C30).

Names are available to any sheet. For example, if the name ProjectedSales refers to the range A20:A30 on the first worksheet in a workbook, you can use the name ProjectedSales on any other sheet in the same workbook to refer to range A20:A30 on the first worksheet.

Names can also be used to represent formulas or values that do not change (constants). For example, you can use the name SalesTax to represent the sales tax amount (such as 6.2 percent) applied to sales transactions.

You can also link to a defined name in another workbook, or define a name that refers to cells in another workbook. For example, the formula =SUM(Sales.xls!ProjectedSales) refers to the named range ProjectedSales in the workbook named Sales.

Note *By default, names use absolute cell references.*

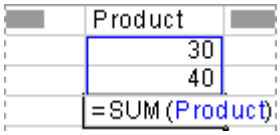
Rules for names

A name can contain up to 255 characters.The first character of a name must be a letter or an underscore character. Remaining characters in the name can be letters, numbers, periods, and underscore characters. Names as NOT case sensitive. Names cannot be the same as a cell reference, such as Z$100 or R1C1, that would confuse Excel (and be redundant). Underscore characters and periods may be used as word separators— for example, Sales_Tax or First.Quarter.

Note *If a name defined for a range contains more than 253 characters, you cannot select it from the* ***Name*** *box.*

Using existing row and column labels as names

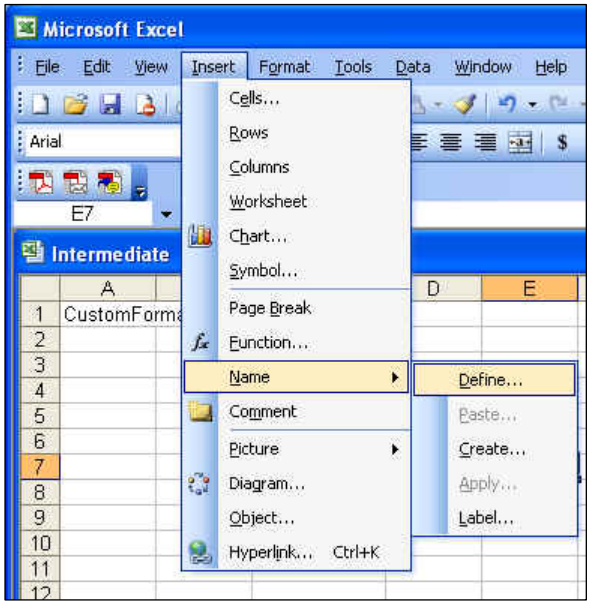
When you create a formula that refers to data in a worksheet, you can use the column and row labels in the worksheet to refer to the data. For example, to calculate the total value for the Product column, use the formula =SUM(Product).



Cell Naming

Name cells in a workbook

You can use the labels of columns and rows on a worksheet to refer to the cells within those columns and rows. Or you can create descriptive names to represent cells, ranges of cells, formulas, or constant values. Labels can be used in formulas that refer to data on the same worksheet; if you want to represent a range on another worksheet, use a name.
Names that are used across two or more worksheets are called 3-D names.



Define – Where you add, delete and modify names
Paste – Paste existing names into new places
Create -- (Create names from copied cells?)
Apply -- Applies names to existing formulas, cells
Label -- Use a label instead of a name

Change cell references in formulas to names

If you define names for cell references after creating one or more formulas that use those cell references, you can update those cell references to names.

Do one of the following:
To update only certain formulas on a worksheet, select the cells that contain those formulas.
To update all the formulas on the worksheet, select a blank cell.
On the **Insert** menu, point to **Name**, and then click **Apply**.
In the **Apply names** box, click one or more names.

Exercise: Name a range of cells

In worksheet **Intermediate.xls** click on the Names worksheet tab to select it.

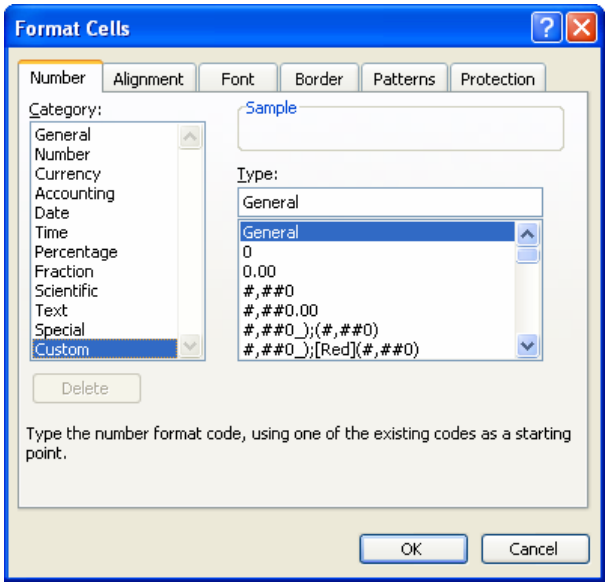
In cell **B4**, click and drag to cell **B7**.

From the **Insert** menu select **Names**, then **Define**.
In the **Names in Workbook** area, enter the name for your data range.
In the **Refers to**: area, enter the cell or range of cells you wish to name.
Click **Add** to enter the name for the range.
Click on **Names in Workbook**, enter **Expenses**.
In the **Refers to:** area click on the range selection tool.
Click and drag from **C4** to **C7**. Press enter.
Click on **Add**.

Click **OK** to accept the names.

In cell **D4** enter **=income-expenses**

Custom Formats



Custom Formats allow you to specify exactly how you want to display a number, date or time, currency, percentage, scientific notation, and text or spacing.

Specify up to four sections of format codes. Separate the sections with a semicolon. The order of the sections is as follows, positive number, negative number, zeros, and text. If you enter only two sections, the first will be applied to positive and zeros, the second to negatives. If only one is specified, it will be applied to all numbers. In the case where you wish to skip a section, simply enter a semicolon as it's placeholder.

To display both text and numbers in a cell, enclose the

text with double quotes. A single character should be preceded by a backslash. Special characters are displayed without the use of quotation marks: $ - + / ( ) : | ^ & `(left single quote) ‘ (right single quote) ~ { } = < > and the space character.

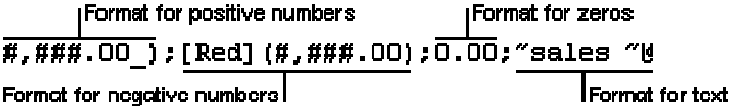
A section for text entry. A text entry section is always the last section in the number format. Include an at (@) sign in the section where you want the text to be displayed. If the @ is missing, so will be the text. If you want to display specific characters along with the entered text, simply enclose the additional text within double quotes, then the @ symbol.

Adding a space for alignment of numbers. To create a space the width of a character, include an underscore followed by the character.

Create a custom number format

1. Select the cells you want to format.
2. On the **Format** menu, click **Cells**, and then click the **Number** tab.
3. In the **Category** list, click a category that is similar to the one you want, and then set its built-in formats to be similar to the ones you want. (You will not alter the built-in format; you'll be creating a copy to customize.)
4. In the **Category** list, click **Custom**.
5. In the **Type** box, edit the number format codes to create the format you want.

You can specify up to four sections of format codes. The format codes, separated by semicolons, define the formats for positive numbers, negative numbers, zero values, and text, in that order. If you specify only two sections, the first is used for positive numbers and zeros, and the second is used for negative numbers. If you specify only one section, it is used for all numbers. If you skip a section, include the ending semicolon for that section.



Use format codes that describe how you want to display a number; date or time; currency, percentage, or scientific notation; and text or spacing.

Displaying both text and numbers To display both text and numbers in a cell, enclose the text characters in double quotation marks (" ") or precede a single character with a backslash (\). Include the characters in the appropriate section of the format codes. For example, type the format **$0.00" Surplus";$-0.00" Shortage"** to display a positive amount as "$125.74 Surplus" and a negative amount as "$-125.74 Shortage." The following characters are displayed without the use of quotation marks: $ - + / ( ) : ! ^ & ' (left single quotation mark) ' (right single quotation mark) ~ { } = < > and the space character.

Including a section for text entry If included, a text section is always the last section in the number format. Include an at sign (@) in the section where you want to display any text entered in the cell. If the @ character is omitted from the text section, text you enter will not be displayed. If you want to always display specific text characters with the entered text, enclose the additional text in double quotation marks (" ")— for example, **"gross receipts for "@**

If the format does not include a text section, text you enter is not affected by the format.

Adding space To create a space the width of a character in a number format, include an underscore (_) followed by the character. For example, when you follow an underscore with a closing parenthesis (_)), positive numbers line up correctly with negative numbers that are enclosed in parentheses.

Repeating characters To repeat the next character in the format to fill the column width, include an asterisk (*) in the number format. For example, type **0*-** to include enough dashes after a number to fill the cell.

Decimal places, spaces, colors, and conditions

Decimal places and significant digits To format fractions or numbers with decimal points, include the following digit placeholders in a section. If a number has more digits to the right of the decimal point than there are placeholders in the format, the number rounds to as many decimal places as there are placeholders. If there are more digits to the left of the decimal point than there are placeholders, the extra digits are displayed. If the format contains only number signs (#) to the left of the decimal point, numbers less than one begin with a decimal point.

- # displays only significant digits and does not display insignificant zeros.
- 0 (zero) displays insignificant zeros if a number has fewer digits than there are zeros in the format.
- ? adds spaces for insignificant zeros on either side of the decimal point so that decimal points align when formatted with a fixed-width font, such as Courier New. You can also use ? for fractions that have varying numbers of digits.

To display	Use this code
1234.59 as 1234.6	####.#
8.9 as 8.900	#.000
.631 as 0.6	0.#
12 as 12.0 and 1234.568 as 1234.57	#.0#
44.398, 102.65, and 2.8 with aligned decimals	???.???
5.25 as 5 1/4 and 5.3 as 5 3/10, with aligned division symbols	# ???/???

Thousands separator To display a comma as a thousands separator or to scale a number by a multiple of one thousand, include a comma in the number format.

To display	Use this code
12000 as 12,000	#,###
12000 as 12	#,
12200000 as 12.2	0.0,,

Color To set the color for a section of the format, type the name of one of the following eight colors in square brackets in the section. The color code must be the first item in the section.

[Black]	[Blue]
[Cyan]	[Green]
[Magenta]	[Red]
[White]	[Yellow]

Conditions To set number formats that will be applied only if a number meets a condition you specify, enclose the condition in square brackets. The condition consists of a comparison operator (comparison operator: A sign that is used in comparison criteria to compare two values. Operators include: = Equal to, > Greater than, < Less than, >= Greater than or equal to, <= Less than or equal to, and <> Not equal to.) and a value. For example, the following format displays numbers less than or equal to 100 in a red font and numbers greater than 100 in a blue font.
[Red][<=100];[Blue][>100]
To apply conditional formats (conditional format: A format, such as cell shading or font color, that Excel automatically applies to cells if a specified condition is true.) to cells— for example, color shading that depends on the value of a cell— use the Conditional Formatting command on the Format menu.

Currency, percentages, and scientific notation

Currency symbols To enter one of the following currency symbols in a number format, turn on NUM LOCK and use the numeric keypad to enter the ANSI code for the symbol.

To enter	Hold down ALT and type this code
¢	**0162**
£	**0163**
¥	**0165**
€	**0128**

Note Custom formats are saved with the workbook. To have Microsoft Excel always use a specific currency symbol, change the currency symbol selected in **Regional Settings** in Control Panel before you start Excel.

Percentage To display numbers as a percentage of 100, include the percent sign (%) in the number format. For example, a number such as .08 appears as 8%; 2.8 appears as 280%.

Scientific notation To display numbers in scientific format, use "E-," "E+," "e-," or "e+" exponent codes in a section. If a format contains a zero (0) or number sign(#) to the right of an exponent code, Excel displays the number in scientific format and inserts an "E" or "e". The number of zeros or number signs to the right of a code determines the number of digits in the exponent. "E-" or "e-" places a minus sign by negative exponents. "E+" or "e+" places a minus sign by negative exponents and a plus sign by positive exponents.

Dates and times

Days, months, and years If you use "m" immediately after the "h" or "hh" code or immediately before the "ss" code, Microsoft Excel displays minutes instead of the month.

To display	Use this code
Months as 1–12	m
Months as 01–12	mm

Months as Jan–Dec	mmm
Months as January–December	mmmm
Months as the first letter of the month	mmmmm
Days as 1–31	d
Days as 01–31	dd
Days as Sun–Sat	ddd
Days as Sunday–Saturday	dddd
Years as 00–99	yy
Years as 1900–9999	yyyy

Hours, minutes, and seconds

To display	Use this code
Hours as 0–23	H
Hours as 00–23	hh
Minutes as 0–59	m
Minutes as 00–59	mm
Seconds as 0–59	s
Seconds as 00–59	ss
Hours as 4 AM	h AM/PM
Time as 4:36 PM	h:mm AM/PM
Time as 4:36:03 P	h:mm:ss A/P
Elapsed time in hours; for example, 25.02	[h]:mm
Elapsed time in minutes; for example, 63:46	[mm]:ss
Elapsed time in seconds	[ss]
Fractions of a second	h:mm:ss.00

AM and PM If the format contains an AM or PM, the hour is based on the 12-hour clock, where "AM" or "A" indicates times from midnight until noon and "PM" or "P" indicates times from noon until midnight. Otherwise, the hour is based on the 24-hour clock. The "m" or "mm" code must appear

immediately after the "h" or "hh" code or immediately before the "ss" code; otherwise, Microsoft Excel displays the month instead of minutes.

Note You can also use the & (ampersand) text operator to join, or concatenate, two values.

Repeating characters. To fill the column width with a character, include an asterisk followed by the character.

Exercise: Create a Custom Format

Exercise A: Green is good
Let's make a sale of over 2,750 or over appear as green text.

In **Intermediate2.xls**
Click on the **Custom Formats** tab to make it the active sheet.
In cell **D5** click and drag to cell **D7** to highlight the range.
Right click anywhere in the highlighted range to bring up the quick menu.
From the quick menu select **Format Cells**.
In the **Number** tab, in the **Category** area select **Custom** (it should be at the bottom of the list).
Under the **Type** area, scroll down until you see the formatting codes that match **$#,##0_);($#,##0)**
Click once on it to highlight it.
In the **Type** are we can now edit the format to suit our needs.
Edit the formatting codes to match **[Green][>=2750] $#,##0_);$#,##0**
This tells Excel to make the text green if the value is equal to or greater than 2750, otherwise format it as normal currency.

Click on **OK**.

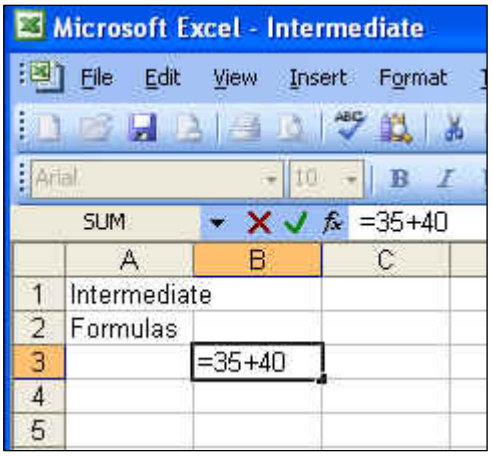
Notice that Larry with sales of $3,000 stands out with green text.
Click in cell **D7** and enter **2788**.
Now Curly is in green.

Exercise B: Leading zeros
Decimal and Binary numbers.
In instances where leading zeros are important as placeholders or for other reasons, we can make Excel display the leading zeros by using a custom format.

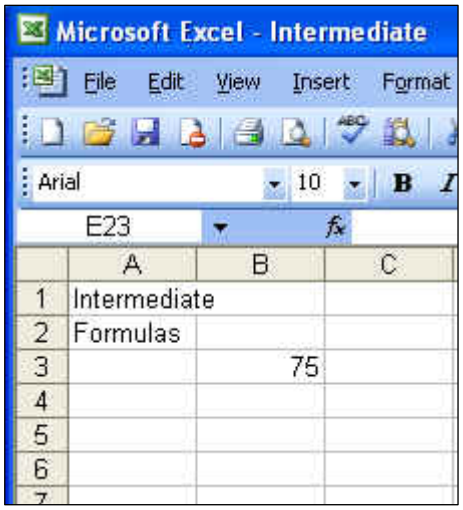
In ***Intermediate2.xls***, on the **Custom Format** sheet, Click on cell **D11** and drag to cell **D26** to select the range.
Right click anywhere on the range to bring up the quick menu.
From the quick menu select **Format Cells**.
In the **Number** tab, in the **Category** area select **Custom** (it should be at the bottom of the list).
In the **Type** area, enter four zeros.
Click on **OK.**
Notice the leading zeros appear.

Formula Creation

The heart of Excel (or any spreadsheet) is formulas. A formula is an equation that performs calculations on data in your spreadsheet. A formula starts with an equals sign. "=". Calculations are made on numbers, values contained in cell references, named values, or values derived from other formulas or functions.



Here is an example of a simple formula: =35+40. If you enter this formula into a cell in your spreadsheet, you will see the result of the formula (75) displayed in the cell. Notice the formula in the Formula bar.



Operators

Operators are the familiar addition, subtraction, multiplication, division, percent and exponentiation (+,-,*,/, %, and ^).Operators specify the type of calculation that you want to perform on the elements of a formula. Microsoft Excel includes four different types of calculation operators: arithmetic, comparison, text, and reference.

Arithmetic operators To perform basic mathematical operations such as addition, subtraction, or multiplication; combine numbers; and produce numeric results, use the following arithmetic operators.

Comparison operators You can compare two values with the following operators. When two values are compared by using these operators, the result is a logical value either TRUE or FALSE.

Comparison operator	Meaning (Example)
= (equal sign)	Equal to (A1=B1)
> (greater than sign)	Greater than (A1>B1)
< (less than sign)	Less than (A1<B1)
>= (greater than or equal to sign)	Greater than or equal to (A1>=B1)
<= (less than or equal to sign)	Less than or equal to (A1<=B1)
<> (not equal to sign)	Not equal to (A1<>B1)

Text concatenation operator Use the ampersand (&) to join, or concatenate, one or more text strings to produce a single piece of text.

Text operator	Meaning (Example)
& (ampersand)	Connects, or concatenates, two values to produce one continuous text value ("North"&"wind")

Reference operators Combine ranges of cells for calculations with the following operators.

Reference operator	Meaning (Example)
: (colon)	Range operator, which produces one reference to all the cells between two references, including the two references (B5:B15)
, (comma)	Union operator, which combines multiple references into one reference (SUM(B5:B15,D5:D15))
(space)	Intersection operator, which produces on reference to cells common to the two references (B7:D7 C6:C8)

Order of precedence

If you combine several operators in a single formula, Excel performs the operations in the order shown in the following table. If a formula contains operators with the same precedence— for example, if a formula contains both a multiplication and division operator— Excel evaluates the operators from left to right.

Operator	Description
: (colon) (single space) , (comma)	Reference operators
–	Negation (as in –1)
%	Percent
^	Exponentiation
* and /	Multiplication and division
+ and –	Addition and subtraction
&	Connects two strings of text (concatenation)
= < > <= >= <>	Comparison

To change the order of evaluation, enclose in parentheses the part of the formula to be calculated first. For example, the following formula produces 11 because Excel calculates multiplication before addition. The formula multiplies 2 by 3 and then adds 5 to the result.

=5+2*3

In contrast, if you use parentheses to change the syntax, Excel adds 5 and 2 together and then multiplies the result by 3 to produce 21.

=(5+2)*3

In the example below, the parentheses around the first part of the formula force Excel to calculate B4+25 first and then divide the result by the sum of the values in cells D5, E5, and F5.

=(B4+25)/SUM(D5:F5)

Entering Formulas

Formulas are equations that perform calculations on values in your worksheet. A formula starts with an equal sign (=). For example, the following formula multiplies 2 by 3 and then adds 5 to the result:

=5+2*3.

Example formula	What it does
=128+345	Adds 128 and 345
=5^2	Squares 5

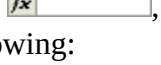
To create a simple formula:

1. Click the cell in which you want to enter the formula.
2. Type = (an equal sign).
3. Enter the formula.

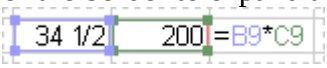
Press ENTER.

The following formulas contain of other cells. The cell that contains the formula is known as a dependent cell when its value depends on the values in other cells. For example, cell B2 is a dependent cell if it contains the formula =C2.

Example formula	What it does
=C2	Uses the value in the cell C2
=Sheet2!B2	Uses the value in cell B2 on Sheet2
=Asset-Liability	Subtracts a cell named Liability from a cell named Asset

Click the cell in which you want to enter the formula.
In the formula bar  , type = (equal sign).
Do one of the following:

To create a reference, select a cell, a range of cells, a location in another worksheet, or a location in another workbook. You can drag the border of the cell selection to move the selection, or drag the corner of the border to expand the selection.



To enter a reference to a named range, press F3, select the name in the **Paste name** box, and click **OK**. Press ENTER.

Conditional Operators

Conditional operators in a formula allow you to use logical constructs in the formula. Logical constructs are a way of introducing decision making into your formulas.

You can use the AND, OR, NOT, and IF function to create conditional formulas. The IF function uses the following arguments:

=IF(logical_test, value_if_true, value_if_false)

Formula with the IF function

logical_test: the condition you want to check
value_if_true: the value to return if the condition is true
value_if_false: the value to return if the condition is false

Create a conditional formula that results in a logical value (TRUE or FALSE)
Use the AND, OR, and NOT functions, and operators (operator: A sign or symbol that specifies the type of calculation to perform within an expression. There are mathematical, comparison, logical, and reference operators.) to do this task, as presented in the following example worksheet.

	A
1	**Data**
2	15
3	9
4	8

Formula	Description (Result)
=AND(A2>A3, A2<A4)	Is 15 greater than 9 and less than 8? (FALSE)
=OR(A2>A3, A2<A4)	Is 15 greater than 9 or less than 8? (TRUE)
=NOT(A2+A3=24)	Is 15 plus 9 not equal to 24? (FALSE)

Create a conditional formula that results in another calculation, or values other than TRUE or FALSE

Use the IF, AND, and OR functions to do this task, as presented in the following example worksheet.

	A
1	**Data**

2	15
3	9
4	8

Formula	Description (Result)
=IF(A2=15, "OK", "Not OK")	If the value in cell A2 equals 15, then return "OK". (OK)
=IF(AND(A2>A3, A2<A4), "OK", "Not OK")	If 15 is greater than 9 and less than 8, then return "OK". (Not OK)
=IF(OR(A2>A3, A2<A4), "OK", "Not OK")	If 15 is greater than 9 or less than 8, then return "OK". (OK)

Tip: A quick way to see the formulas in the worksheet rather than the results, is to use the <CTRL> ~ (control and tilde) to see the formulas and bring up the formula auditing toolbar.

Exercises: Formulas

Exercise A:
Formula creation: Interview ratios
In **Intermediate.xls,** click on the **Formulas** tab to select sheet.
In cell **E5**, enter the formula **=C5/B5**
In cell **F5**, enter the formula **=D5/B5**

In cell **G5**, enter the formula **=D5/C5**

Copy the formulas to fill out the table.

Formula creation: Sales

In cell **E14**, enter **=($B$14*C14)*D14**

Copy the formula in **E14** to the range **E15:E19**
Notice the absolute reference to cell B14 does not change.

Exercise B:
Text formulas
In **Intermediate.xls**, on the **Formulas** sheet,
Click on cell **C21** to select it.
Enter the following formula **=find(“ “,B21)**
Note that the number 7 is displayed in cell C21. The find function found the space at the 7th position in the cell referenced.

Next. Let’s edit the formula we just entered in cell C21.
With **C21** active, press <**F2**> to enter edit mode.

Move the insertion point to the right of the = and enter **left(B21,**
Move to the end of the formula and enter a right closing parenthesis “)**”**.
Press Enter to finish the formula. Cell C21 now contains “George”.
The left function returned the left 7 characters of the text string in cell B21.

Exercise C:
Conditional formulas

Conditional formulas test if a specified condition is true.
If true, return the first, if false return the second.

In cell **C27**, enter the formula **=if(b27>a27,”Yes”,”No”)**

Copy the formula from **C27** to the range **C29:C31**.

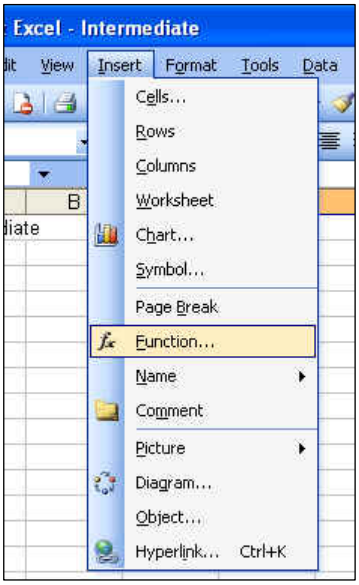
Note the answers in column C.

In cell **B27**, enter the number **25**.
Note the changes in column C.

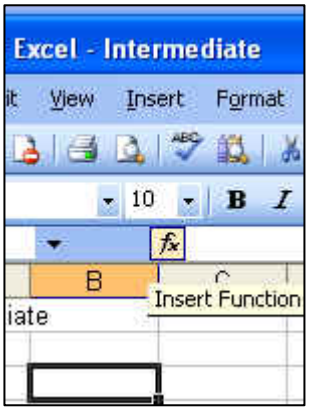
In cell **B7**, enter the number **72**.
Note the changes in column C.

Functions

Functions are built-in formulas that takes a value or values, performs operations or calculations, and returns the resulting value or values. Think of them as shortcuts to common formulas. Functions are useful in shortening lengthy formula and improve readability and ease of use. Really. Excel has over 300 built-in functions (329 to be exact). If that’s not enough, you can also define your own functions.

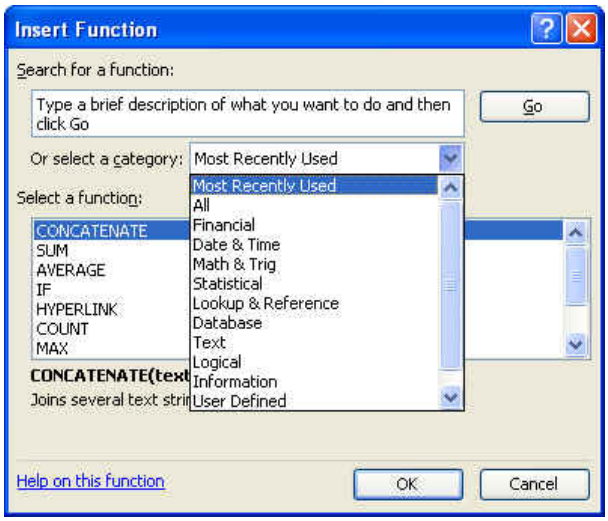


Function appears on the Insert menu. Another way is to click on the Fx immediately to the left of the the formula bar. Alternatively, once you’re familiar with your favorite functions, you can enter them directly into a cell from the formula bar.



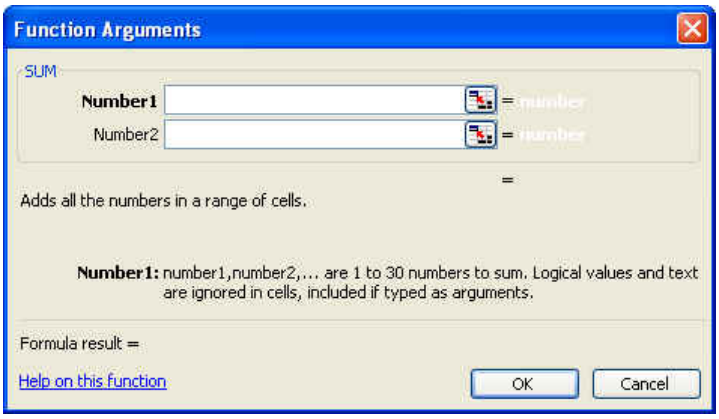
Example formula	**What it does**
=SUM(A:A)	Adds all numbers in column A
=AVERAGE(A1:B4)	Averages all numbers in the range

Click the cell in which you want to enter the formula.



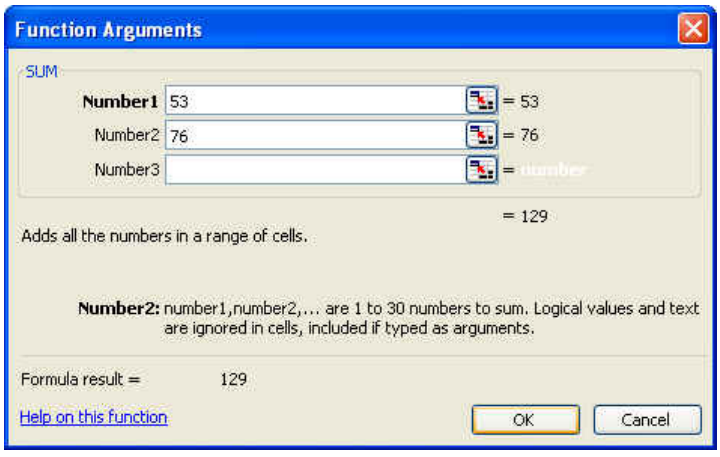
To start the formula with the function, click Insert Function on the formula bar (formula bar: A bar at the top of the Excel window that you use to enter or edit values or formulas in cells or charts. Displays the constant value or formula stored in the active cell.) .

Select the function you want to use. You can enter a question that describes what you want to do in the Search for a function box (for example, "add numbers" returns the SUM function), or browse from the categories in the Or Select a category box.



Enter the arguments. To enter cell references as an argument, click Collapse Dialog to temporarily hide the dialog box. Select the cells on the worksheet, then press Expand Dialog .

When you complete the formula, press ENTER.



Tip: You can quickly enter the same formula into a range of cells. Select the range you want to calculate, type the formula, and then press CTRL+ENTER. For example, if you type =SUM(A1:B1) in range C1:C5, and then press CTRL+ENTER, Excel enters the formula in each cell of the range, using A1 as a relative reference.

If you are familiar with the arguments of a function, you can use the function tooltip that appears after you type the function name and an opening parenthesis. Click the function name to view the Help topic on the function, or click an argument name to select the corresponding argument in your formula. To hide the function tooltips, on the **Tools** menu, click **Options**, and then clear the **Function tooltips** check box on the **General** tab.

Exercise: Using Functions

In Intermediate2.xls, click on the Functions tab to make the sheet active.
In cell **B10**, enter **=sum(b7:b9)**
The sum of the values in the range B7 to B9 is displayed in cell B10

In cell **C10**, enter **=avg(c7:c9)**
The average of the values in the range C7 to C9 is displayed in cell C10

In cell **D7**, enter =**sin(B7)**
The sine of the value of B7 is displayed in D7.

In cell **E7**, enter **=count(B7:B9)**
The count function counts the number of number values in the specified range.
Change the entry in **E7** to **=count(B6:B9)**
The expanded range includes the text "Sum". Note that the count in **E7** did not change.

In cell **F7**, enter **=today()**
Today's date will appear.

In cell **G7**, enter **=sum(B6:B9)/count(B6:B9)**

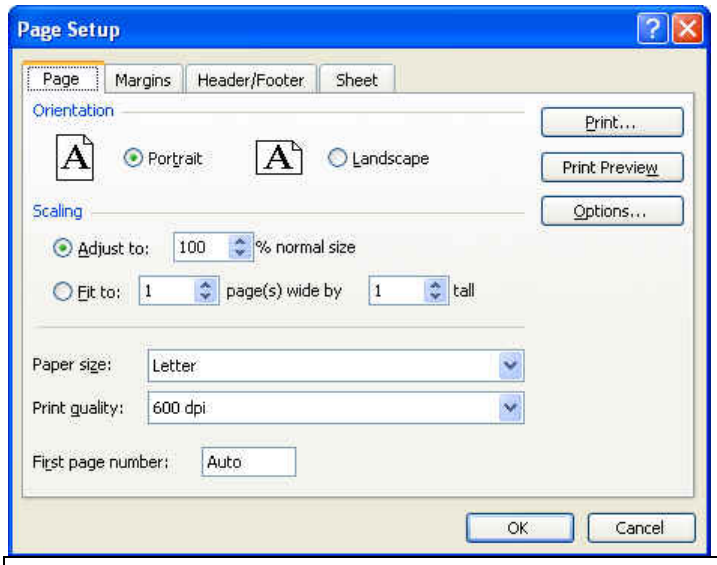
In cell **H7**, enter **=roman(G7)**
Now we know what the mean is in roman numerals. (The roman function works for number 1 through 3999 only. A zero shows up as an empty cell. If a number is larger than 3999, or negative, it returns a #VALUE error).

Printing

Printing in Excel can be a frustrating experience. Here are some tips to help you get the information you need out of Excel and onto paper.

Page Setup

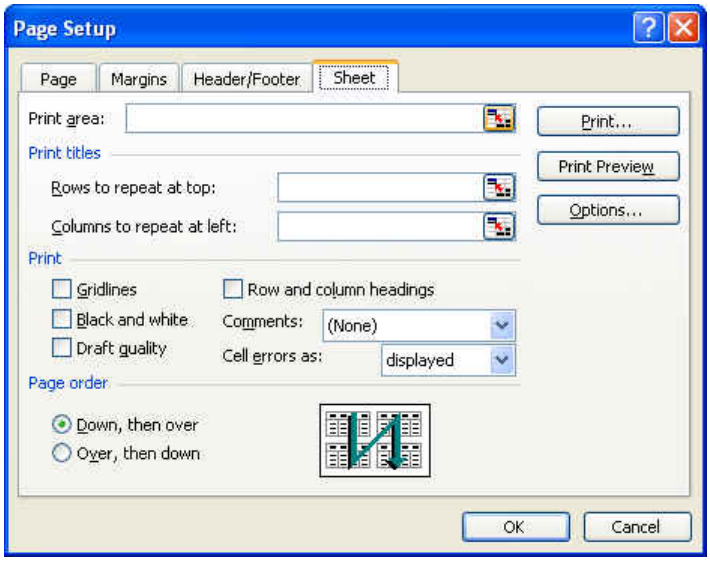
Page setup is where Excel look to find information about how the page is laid out.



To print a spreadsheet on one or more pages

Under Scaling, click Fit to.
Do one of the following:
Print a worksheet to fit a paper width
In the first box beside **Fit to**, enter **1** (for 1 page wide).
In the second box beside **Fit to**, delete the value so that the number of pages tall is unspecified.
Print a worksheet on a specified number of pages
In the boxes beside **Fit to**, enter the number of pages on which you want to print the work.

Note: Microsoft Excel ignores manual page breaks when you use the **Fit to** option.



Print row and column headings or labels on every page

Row headings are the row numbers to the left of the worksheet; column headings are the letters or numbers that appear at the top of the columns on a worksheet. Sometimes it's helpful to have them printed on each page. Here's how:

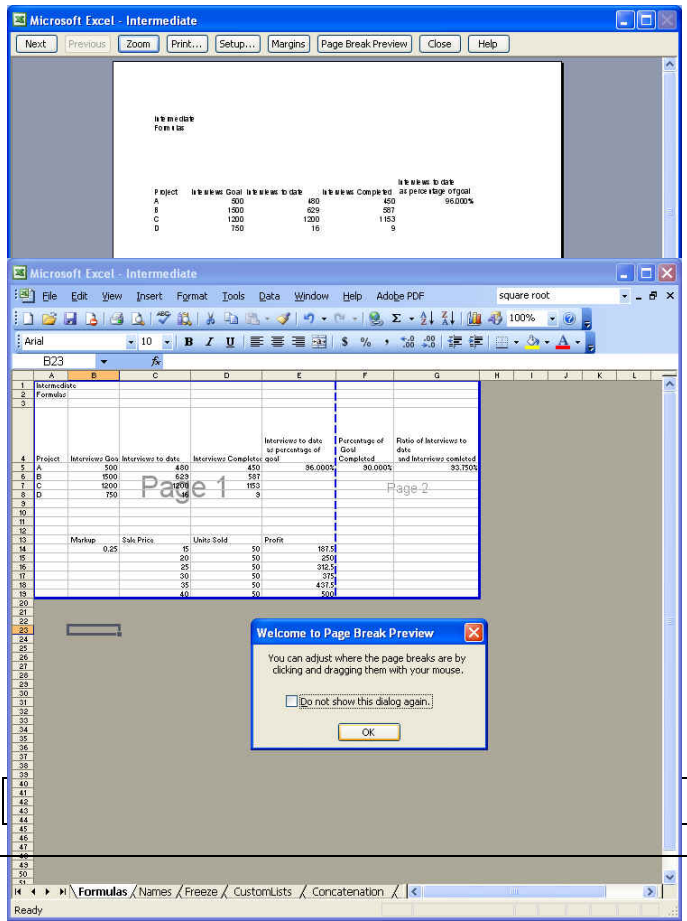
Click the worksheet.
On the **File** menu, click **Page Setup**, and then click the **Sheet** tab.
Do one of the following:
Print row and column headings
Select the **Row and column headings** check box, and click **Print**.

Print row and column labels on every page
To print column labels on every page, under **Print titles** in the **Rows to repeat at top** box, enter the rows that contain the column labels, and then click **Print**.
To print row labels on every page, under Print titles in the **Columns to repeat at left** box, enter the columns that contain the row labels, and then click **Print**.

Defining the print area

(print area: One or more ranges of cells that you designate to print when you don't want to print the entire worksheet. If a worksheet includes a print area, only the print area is printed.)

Print Preview



Print preview commands

Next Displays the next page to be printed. If you have multiple worksheets selected and click **Next** when the last page of a selected worksheet appears, Excel displays the first page of the next selected worksheet.

Previous Displays the previous page to be printed. If you have multiple worksheets selected and click Previous when the first page of a selected worksheet appears, Excel displays the last page of the previous selected worksheet.

Zoom Switches between a full-page view of a sheet and a magnified view. The Zoom feature does

not affect printing size. You can also switch between a full-page view and a magnified view of a worksheet by clicking any area of the worksheet. Depending on the resolution of your monitor, you may not see certain graphics, such as thin borders, in full-page view.
Print Lets you set printing options and then prints the selected worksheet.
Setup Lets you set options that control the appearance of printed sheets.
Margins Displays or hides margin handles that you can drag to adjust page margins , header and footer margins, and column widths.
Page Break Preview Switches to page break preview, in which you can adjust the page breaks on the active worksheet. You can also resize the print area and edit the worksheet. The name of the button changes from Page Break Preview to Normal View if you were in page break preview when you clicked Print Preview .
Normal View Displays the active worksheet in normal view.
Close Closes the print preview window and returns to the previous view of the active worksheet.

Printing selected portions

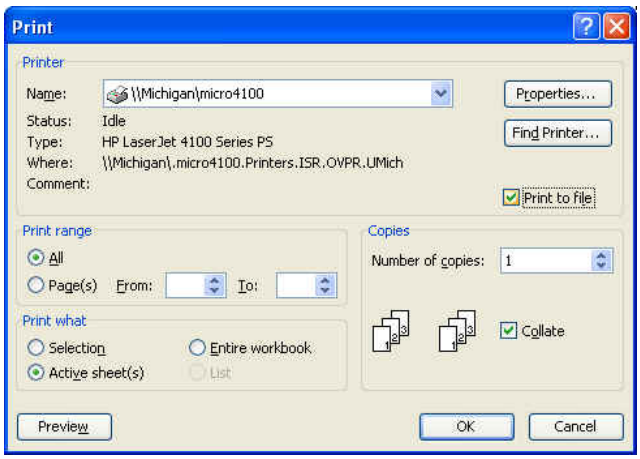
Define what part of the worksheet to print
On the **View** menu, click **Page Break Preview**.
Select the area you want to print.
On the **File** When you save the document, your print area selection is also saved.
menu, point to **Print Area**, and then click **Set Print Area**.

Add cells to an existing print area
On the **View** menu, click **Page Break Preview**.
Select the cells you want to add to the print area.
Right-click within the selection, and then click **Add to Print Area**.

On the **File** menu, point to **Print Area**, and click **Clear Print Area**.

To return to normal view, go to the View menu and select Normal.

Printing to a File



Printing to a file is easy in Excel.
From the File/Print menu selection, the Print dialog box appears. Check the box next to Print to File.

Another popup box will appear with the title Print To File. Enter a name for your printout in the Output File Name

This concludes Intermediate Excel 2003

If you have any questions, contact either myself or the computing helpdesk at 763-7699.

Worksheet and workbook specifications

Feature	Maximum limit
Open workbooks	Limited by available memory and system resources
Worksheet size	65,536 rows by 256 columns
Column width	255 characters
Row height	409 points
Page breaks	1000 horizontal and vertical
Length of cell contents (text)	32,767 characters. Only 1,024 display in a cell; all 32,767 display in the formula bar.
Sheets in a workbook	Limited by available memory (default is 3 sheets)
Colors in a workbook	56
Cell styles in a workbook	4,000
Named views (view: A set of display and print settings that you can name and apply to a workbook. You can create more than one view of the same workbook without saving separate copies of the workbook.) in a workbook	Limited by available memory
Custom number formats	Limited by available memory
Names in a workbook	Limited by available memory
Windows in a workbook	Limited by system resources
Panes in a window	4
Linked sheets	Limited by available memory
Scenarios (scenario: A named set of input values that you can substitute in a worksheet model.)	Limited by available memory; a summary report shows only the first 251 scenarios
Changing cells in a scenario	32
Adjustable cells in Solver	200
Custom functions	Limited by available memory
Zoom range	10 percent to 400 percent
Reports	Limited by available memory
Sort references	3 in a single sort; unlimited when using sequential sorts
Undo levels	16
Fields in a data form	32
Custom toolbars in a workbook	Limited by available memory
Custom toolbar buttons	Limited by available memory

Workgroup specifications

Feature	Maximum limit
Users who can open and share a shared workbook (shared workbook: A workbook set up to allow multiple users on a network to view and make changes at the same time. Each user who saves the workbook sees the changes made by other users.) at the same time	256
Personal views (view: A set of display and print settings that you can name and apply to a workbook. You can create more than one view of the same workbook without saving separate copies of the workbook.) in a shared workbook	Limited by available memory
Days that change history (change history: In a shared workbook, information that is maintained about changes made in past editing sessions. The information includes the name of the person who made each change, when the change was made, and what data was changed.) is maintained	32,767 (default is 30 days)
Workbooks that can be merged at one time	Limited by available memory
Cells that can be highlighted in a shared workbook	32,767
Colors used to identify changes made by different users when change highlighting is turned on	32 (each user is identified by a separate color; changes made by the current user are highlighted with navy blue)

Calculation specifications

Feature	Maximum limit
Number precision	15 digits
Largest number allowed to be typed into a cell	9.99999999999999E+307
Largest allowed positive number	1.79769313486231E+308
Smallest allowed negative number	-2.2250738585072E-308
Smallest allowed positive number	2.229E-308
Largest allowed negative number	-1E-307
Length of formula contents	1,024 characters
Iterations	32,767
Worksheet arrays	Limited by available memory. Also, arrays cannot refer to entire columns. For example, an array cannot refer to the entire column C:C or to the range C1:C65536. However, an array can refer to the range C1:D65535 because the range is one row short of the maximum worksheet size and does not include the entire C or D column.

Selected ranges	2,048
Arguments in a function	30
Nested levels of functions	7
Number of available worksheet functions	329
Earliest date allowed for calculation	January 1, 1900 (January 1, 1904, if 1904 date system is used)
Latest date allowed for calculation	December 31, 9999
Largest amount of time that can be entered	9999:59:59