

# Microsoft Excel XP

Manual - Intermediate Level



SAMPLE

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SAMPLE

## Viewing Worksheets

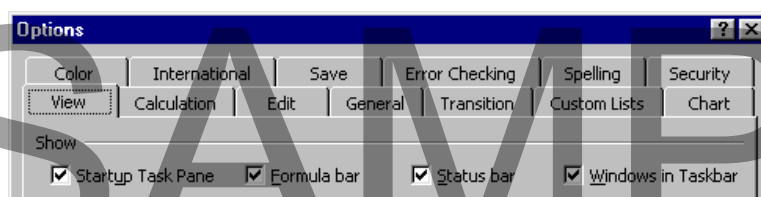
When you have completed this learning module you will have seen how to:

- Customize the Excel window display
- Customize the Comments View options
- Customize the Objects View options
- Customize the Worksheet View options
- Choose a Toolbar
- Display Toolbars
- Customize Toolbar Options
- Add Commands to a Toolbar
- Hide a Workbook
- Hide Worksheets
- Display hidden Workbooks
- Display hidden Worksheets
- Freeze a horizontal pane
- Freeze a vertical pane
- Freeze horizontal and vertical panes
- Unfreeze panes
- Group Worksheets
- Ungroup Worksheets

## Customizing View Options

### Customizing the Excel window display

- From the main menu, choose **Tools > Options** to display the **Options** dialog box, click on the **View** tab, and select the following options from the **Show** area:



**Startup Task Pane** - Select to show the Startup Task Pane.

**Formula bar** - Select to show the Formula bar.

**Status bar** - Select to show the Status bar.

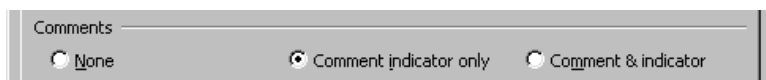
**Windows in Taskbar** - Select to list each open Workbook on the Taskbar.

- Click **OK** to change and save the settings.

---

### Customizing the Comments View options

- From the main menu, choose **Tools > Options** to display the **Options** dialog box, click on the **View** tab, and select the following options from the **Comments** area:



**None** - Select to hide all comments.

**Comment indicator only** - Select to indicate comments with red triangles.

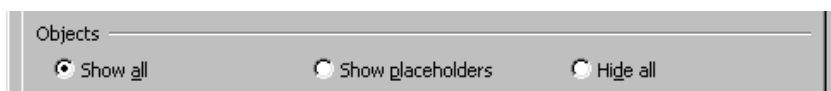
**Comment & indicator** - Select to show the comments and its indicator.

- Click **OK** to change and save the settings.

---

### Customizing the Objects View options

- From the main menu, choose **Tools > Options** to display the **Options** dialog box, click on the **View** tab, and select from the following options from the **Objects** area:



**Show all** - Select to show all objects.

**Show placeholder** - Select to show a grey box in place of an object.

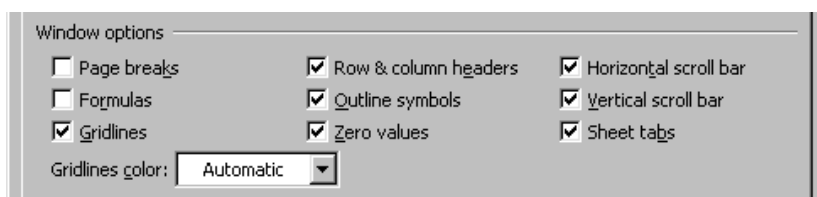
**Hide all** - Select to hide all objects.

- Click **OK** to change and save the settings.

---

### Customizing the Worksheet View options

- From the main menu, choose **Tools > Options** to display the **Options** dialog box, click on the **View** tab, and select from the following options from the **Window options** area:



**Page breaks** - Select to display page breaks.

**Formulas** - Select to display formulas instead of results in Worksheet cells.

**Gridlines** - Select to display gridlines.

**Gridline color** - Change the gridline color by clicking on the down arrow and selecting a new color.

**Row & column headers** - Select to show the row and column headers.

**Outline symbols** - Select to show any outline symbols.

**Zero values** - Select to show cells containing 0.

**Horizontal scroll bar** - Select to show the horizontal scroll bars.

**Vertical scroll bar** - Select to show the vertical scroll bars.

**Sheet tabs** - Select to show the sheet tabs.

- Click **OK** to change and save the settings.

## Displaying and Customizing Toolbars

### Choosing a Toolbar

- Excel has 19 **Toolbars** for you to choose from. Each Toolbar contains a group of icons that are relevant to specific functions in Excel. You can use the following list to help you choose the toolbar to display:

**Standard** - Icons for basic Excel 2002 functions.

**Formatting** - Icons for cell formatting.

**Border** - Icons for drawing and customizing border lines.

**Chart** - Icons to create and format Charts.

**Control Toolbox** - Icons to customize and control form elements.

**Drawing** - Icons to draw shapes.

**External Data** - Icons for querying external data.

**Forms** - Icons to create form elements.

**Formula Auditing** - Icons to troubleshoot formulas.

**Picture** - Icons to create and manipulate pictures.

**PivotTable** - Icons for working with Pivot Tables.

**Protection** - Icons to lock and protect Worksheets.

**Reviewing** - Icons to create and manipulate comments.

**Task Pane** - Links to the some of the most common tasks in Excel.

**Text to Speech** - Icons to control how Excel read cell contents.

**Visual Basic** - Icons for working with Visual Basic.

**Watch Window** - Window to track the formula results of different cells.

**Web** - Icons to create, manipulate, and interact with the Web.

**WordArt** - Icons for creating and manipulating WordArt objects.

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## Displaying Toolbars

- From the main menu, choose **View > Toolbars** and select the Toolbar you want to display (you will see a check mark beside visible Toolbars).

**OR** right-click on any visible toolbar and choose the toolbar you want to display from the popup menu (you will see a check mark beside visible Toolbars).

---

## Customizing Toolbar Options

- Right-click on any visible toolbar and choose **Customize** from the popup menu, click on the **Options** tab, and select from the following options:

### Show Standard and Formatting toolbars on two rows

By default, Excel displays the Standard and Formatting toolbars on one row to increase the Worksheet window display. Select this option to display the toolbars on the two different rows.

### Always show full menus

By default, Excel shows a condensed version of the main menus, containing the most recently used commands menu items. Select this option to show full menus.

### Show full menus after a short delay

By default, Excel displays the full menus after it has been open for a few seconds. Deselect this option to prevent the full menus from appearing.

### Reset my usage data

Click on this button to restore the dropdown menus to their default settings.

### Large icons

Select this option to display large icons on all toolbars.

### List font names in their font

Select this option to display the actual font in the Formatting toolbar Font dropdown menu.

### Show ScreenTips on toolbars

Select this option to display the descriptive name of the icon when the mouse pointer is placed over it.

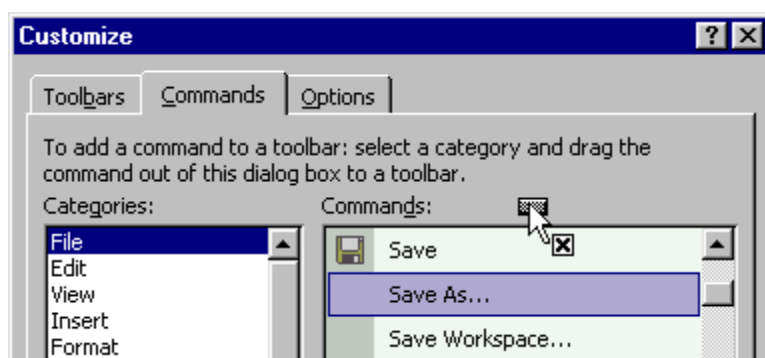
### Menu animations

Select how menus appear on screen; choose from None, Random, Unfold, or Slide.

- Click **Close** to save the settings.

## Adding Commands to a Toolbar

- Begin by displaying the toolbar you want to customize.
- From the main menu, choose **Tools > Customize**, click on the **Commands** tab, and select a Category from the **Categories** scrolling box.
- From the **Commands** scrolling box, find the command you want to add, and drag the command onto the toolbar you want to affect:



## Hiding Workbooks and Worksheets

### Hiding a Workbook

- Begin by displaying the Workbook you want to hide.
- From the main menu, choose **Window > Hide**.

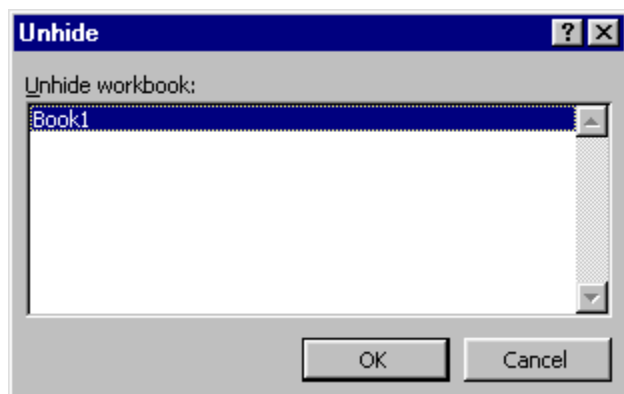
**Note:** If there are unsaved changes in your hidden Workbook, Excel will prompt you to save the Workbook when you exit.

### Hiding Worksheets

- Begin by selecting the Worksheet(s) you want to hide.
- From the main menu, choose **Format > Sheet > Hide**.

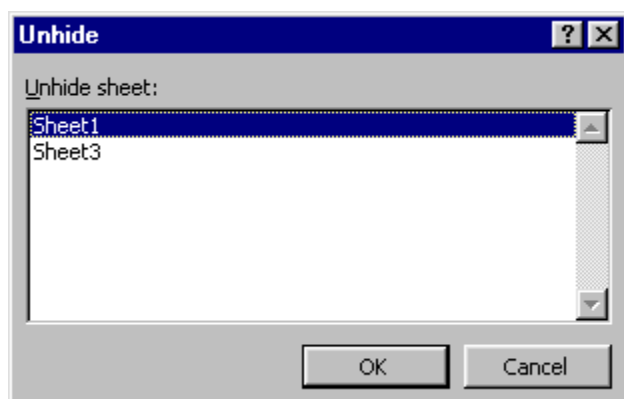
### Displaying hidden Workbooks

- From the main menu, choose **Window > Unhide** to display the **Unhide** dialog box, select the hidden Workbook you want to display, and click **OK**:




### Displaying hidden Worksheets

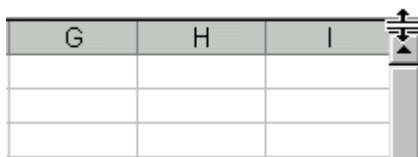
- From the main menu, choose **Format > Sheet > Unhide** to display the **Unhide** dialog box, select the hidden Worksheet you want to display, and click **OK**:



### Freezing Panes


#### Freezing a horizontal pane

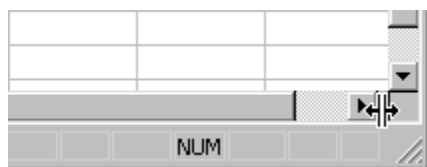
- Begin by placing the mouse pointer over the rectangle above the right scrollbar (your mouse cursor should change to the drag cursor .
- Drag the rectangle **down** to below the row you want to freeze. From the main menu, choose **Window > Freeze Panes**:



**Note:** The frozen pane is marked by a horizontal black line.

### Freezing a vertical pane

- Begin by placing the mouse pointer over the rectangle to the right of the bottom scrollbar (your mouse cursor should change to the drag cursor .
- Drag the rectangle **left** to the right of the column you want to freeze. From the main menu, choose **Window > Freeze Panes**:



**Note:** The frozen pane is marked by a vertical black line.

### Freezing horizontal and vertical panes

- Begin by selecting the top-left cell that will not be part of the frozen panes.
- From the main menu, choose **Window > Freeze Panes**.

For example, to freeze the top two rows and the left column, select cell **B3**:

	A	B	C	D	E
1					
2					
3					
4					
5					
6					

### Unfreezing panes

- From the main menu, choose **Window > Unfreeze Panes**.

**Note:** This menu selection is available only if there are panes to unfreeze.

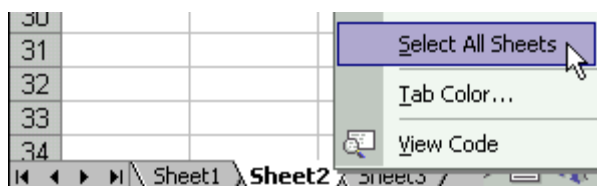
## Grouping and Ungrouping Worksheets

### Grouping Worksheets

- You can group Worksheets together to edit and format the sheets at the same time. Every change made to the active Worksheet will be reflected in all Worksheets in the Group. Worksheets can be grouped simply by selecting the Worksheets you want.

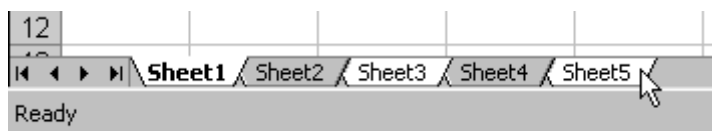
### To select all Worksheets

- Right-click on a sheet tab, and choose **Select All Sheets** from the popup menu:



### To select several Worksheets

- Click on the first sheet tab of the Worksheet you want to select, hold down the **Ctrl** key, and click on the other sheet tabs of the Worksheets you want to select:



### Ungrouping Worksheets

- Right-click on one of the grouped Worksheet tabs, and choose **Ungroup Sheets** from the popup menu

**OR** hold down the **Shift** key and click on the active sheet tab.

## Review Questions

How would you:

- Customize the Excel window display?
- Customize the Comments View options?
- Customize the Objects View options?
- Customize the Worksheet View options?
- Choose a Toolbar?
- Display Toolbars?
- Customize Toolbar Options?
- Add Commands to a Toolbar?
- Hide a Workbook?
- Hide Worksheets?
- Display hidden Workbooks?
- Display hidden Worksheets?
- Freeze a horizontal pane?
- Freeze a vertical pane?

- Freeze horizontal and vertical panes?
- Unfreeze panes?
- Group Worksheets?
- Ungroup Worksheets?

SAMPLE

## More Formatting Techniques

When you have completed this learning module you will have seen how to:

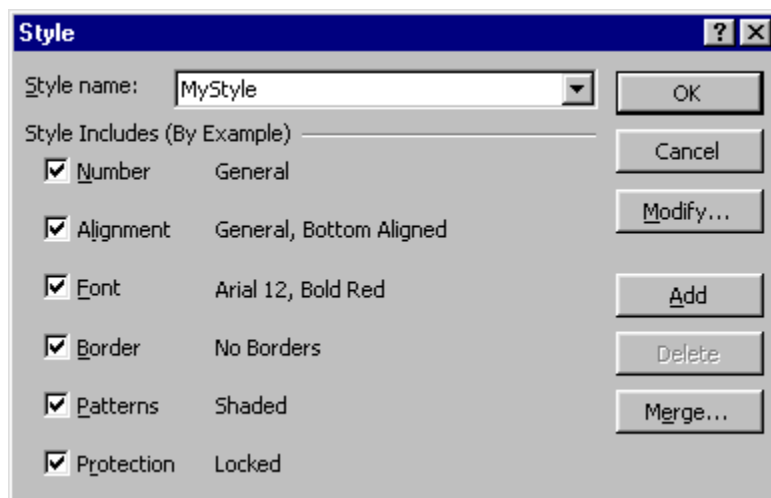
- Create a new style
- Apply a style
- Change the formatting of a style
- Remove a style from cells
- Delete a style
- Use conditional formatting
- Change conditional formatting
- Delete conditional formatting
- Find cells with conditional formatting
- Copy and apply cell formatting with the Format Painter
- Copy and apply column width or row height with the Format Painter
- Copy and apply cell formatting with the Format Painter
- Copy and apply the Format Painter in multiple locations
- Change the color of the Gridlines
- Turn off the onscreen Gridlines
- Print Gridlines
- Hide Columns
- Hide Rows
- Use the mouse to hide Columns
- Use the mouse to hide Rows
- Display hidden Columns
- Display hidden Rows
- Use the mouse to display hidden Columns
- Use the mouse to display hidden Rows

## Using Styles

### Creating a new style

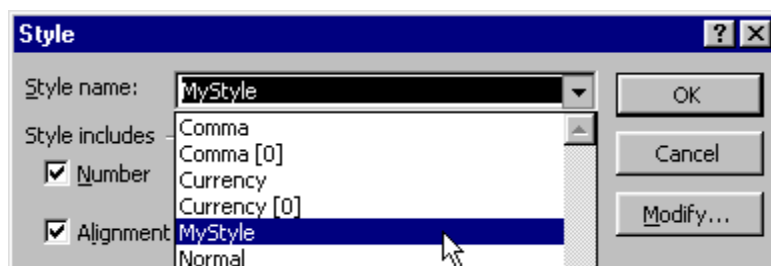
- You can create a new style based on the formatting of an existing cell. Once a style is created, you can use it repeatedly.
- Begin by selecting the cell containing the formatting you want.
- From the main menu, choose **Format > Style** to display the **Style** dialog box.
- Type a name into the **Style name** dropdown list box, and click on the **Add** button.

- Click **OK**:



### Applying a style

- Begin by selecting the cell(s) you want to affect.
- From the main menu, choose **Format > Style** to display the **Style** dialog box.
- Click on the **Style name** down arrow, and select the style you want.
- Click **OK**:



### Changing the formatting of a style

- From the main menu, choose **Format > Style** to display the **Style** dialog box.
- Click on the **Style name** down arrow, select the style you want to change, and click on the **Modify** button to display the **Format Cells** dialog box.
- Specify the formatting you want, and click **OK** to return to the **Style** dialog box.
- Click **OK**.

**Note:** You can also create a new style by typing a name for your style and clicking on the **Modify** button to specify the formatting of the new style.

### Removing a style from cells

- Begin by selecting the cell(s) you want to affect.

- From the main menu, choose **Format > Style** to display the **Style** dialog box.
- Click on the **Style name** down arrow, and select the **Normal** style.
- Click **OK**.

### Deleting a style

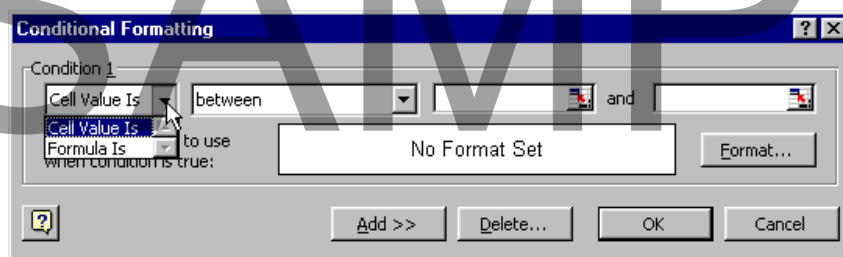
- From the main menu, choose **Format > Style** to display the **Style** dialog box.
- Click on the **Style name** down arrow, select the style you want to delete, and click on the **Delete** button.
- Click **OK**.

**Note:** Excel has pre-defined styles associated to the **Currency Style**, **Percent Style**, and **Comma Style** icons on the Formatting toolbar. Deleting these styles will disable the icons.

## Conditional Formatting

### Using conditional formatting

- Conditional formatting allows you to change the formatting of a cell depending on the value in the cell. You can set up conditional formatting to highlight data based on conditions you define.
- Begin by selecting the cell or range you want to affect.
- From the main menu, choose **Format > Conditional Formatting** to display the **Conditional Formatting** dialog box.
- Enter the condition in the **Condition** area (conditions can be defined based on the cell value or formula).
- Click on the **Format** button to display the **Format Cells** dialog box. Specify the formatting you want, and click **OK** to return to the **Conditional Formatting** dialog box. (A sample of the formatting appears in the preview box.)
- Click **OK** to apply conditional formatting:



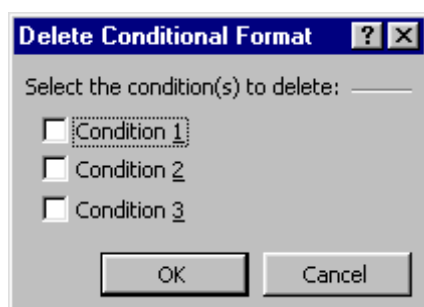
**Note:** To define another condition, click **Add** instead of **OK**. You can have up to three conditions; when finished, click **OK**. Excel will evaluate the conditions in the order they are entered, and will stop evaluating once a condition is met and the associated format is applied.

### Changing conditional formatting

- Begin by selecting the cell or range containing the conditional formatting you want to change.
- From the main menu, choose **Format > Conditional Formatting** to display the **Conditional Formatting** dialog box.
- Edit the condition(s) and formatting as needed.
- Click **OK**.

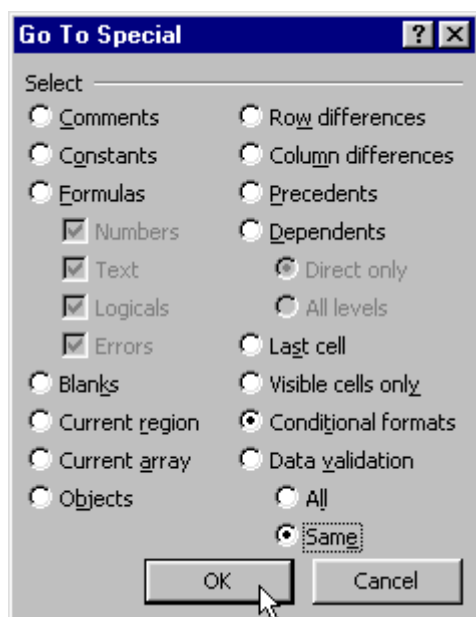
### Deleting conditional formatting

- Begin by selecting the cell or range containing the conditional formatting you want to delete.
- From the main menu, choose **Format > Conditional Formatting** to display the **Conditional Formatting** dialog box.
- Click the **Delete** button to display the **Delete Conditional Format** dialog box, select the condition(s) you want to delete, and click **OK** to return to the **Conditional Formatting** dialog box.
- Click **OK**:



### Finding cells with conditional formatting


- To find cells with specific conditional formatting, begin by selecting the cell with the conditional formatting you want to find.
- From the main menu, choose **Edit > Go To** to display the **Go To** dialog box.
- Click on the **Special** button to display the **Go To Special** dialog box.
- Select the **Conditional formats** radio button, and select the **Same** radio button below **Data validation**.
- Click **OK** to highlight the cells with the specified conditional formatting:



**Note:** To find cells with any conditional formatting, you can begin by selecting any cell, and follow the same instructions as above, but select the **All** instead of the **Same** radio button.

## Using the Format Painter


### Copying and applying cell formatting with the Format Painter

- You can use the **Format Painter** to copy the formatting (including conditional formatting) of an existing cell to other cells within Excel.
- Begin by selecting the cell or range containing the formatting you want to copy.
- Click on the **Format Painter** icon on the **Formatting** toolbar (your mouse cursor change to the painter cursor .
- Click on the cell you want the formatting to be applied

**OR** select the range you want the formatting to be applied.

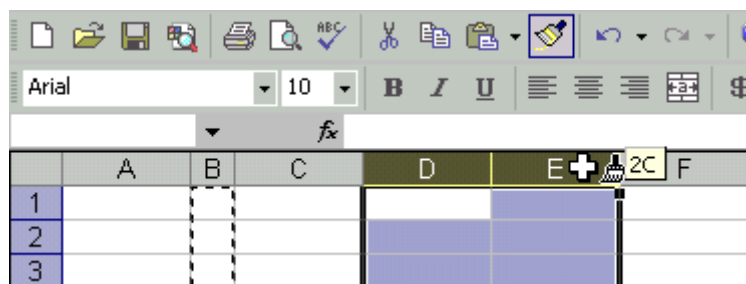
**Note:** If you are copying the formatting of a range, after copying with the Format Painter, click on the top-left cell to apply the formatting to a range of the same size.

### Copying and applying column width or row height with the Format Painter


- Begin by selecting the column (row) containing the width (height) you want to copy.
- Click on the **Format Painter** icon on the **Formatting** toolbar (your mouse cursor change to the painter cursor .

- Click on the column (row) header you want the formatting to be applied


**OR** select the range of columns (rows) you want the formatting to be applied:



### Copying and applying cell formatting with the Format Painter

- Begin by selecting the object containing the formatting you want to copy.
- Click on the **Format Painter** icon on the **Formatting** toolbar (your mouse cursor change to the painter cursor .
- Click on the object you want the formatting to be applied.

### Copying and applying the Format Painter in multiple locations

- Begin by selecting the cell or range containing the formatting you want to copy.
- Double-click on the **Format Painter** icon on the **Formatting** toolbar (your mouse cursor changes to the painter cursor .
- Click on the cell or select the range you want the formatting to be applied (your mouse cursor stays as the painter cursor). Continue applying the copied formatting.
- When finished, click on the **Format Painter** icon to end the painter formatting.

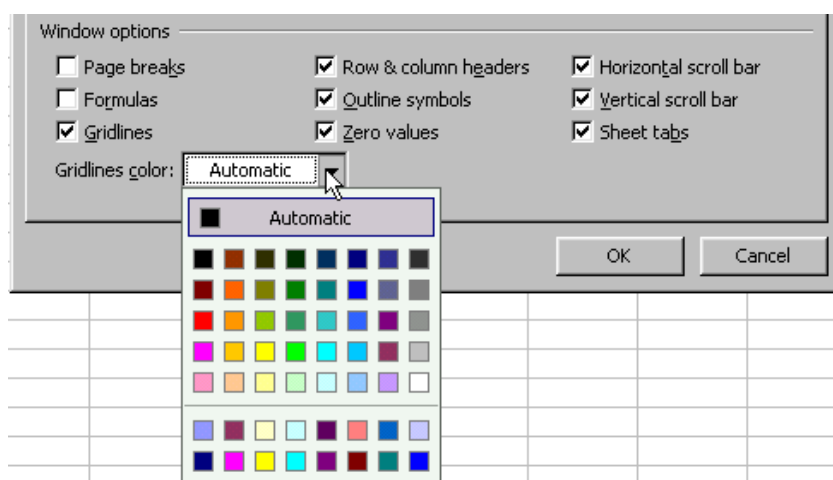
**Note:** You can also use this method on column widths, row heights, objects, and conditional formatting.

## Using Guidelines

### Changing the color of the Gridlines

- Begin by selecting the Worksheets you want to affect.
- From the main menu, choose **Tools > Options** to display the **Options** dialog box, and click on the **View** tab.
- Click on the **Gridlines color** down arrow in the **Window options** area.

- Click **OK**:



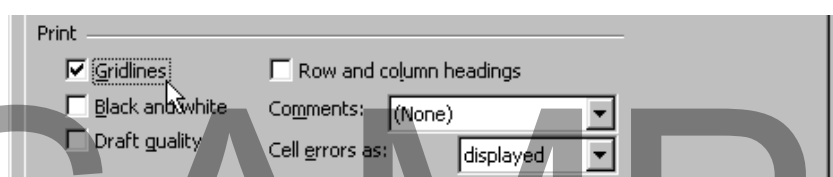
### Turning off the onscreen Gridlines

- From the main menu, choose **Tools > Options** to display the **Options** dialog box, and click on the **View** tab.
- Deselect the **Gridlines** checkbox in the **Window options** area.
- Click **OK**.

### Printing Gridlines

- From the main menu, choose **File > Page Setup** to display the **Page Setup** dialog box, and click on the **Sheet** tab.
- Select the **Gridlines** checkbox in the **Print** area.
- Click **OK** to exit **Page Setup**

**OR** click **Print** to print:



### Hiding and Displaying Cells

#### Hiding Columns

- Begin by selecting the column(s) you want to hide.
- From the main menu, choose **Format > Column > Hide**.

**Note:** You can identify hidden column(s) by the missing header letters.

## Hiding Rows

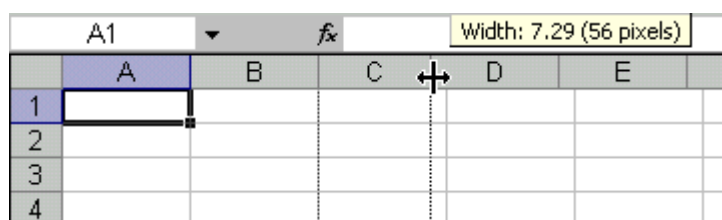
- Begin by selecting the row(s) you want to hide.
- From the main menu, choose **Format > Row > Hide**.

**Note:** You can identify hidden row(s) by the missing header number.

## Using the mouse to hide Columns

- Begin by placing the mouse pointer on the right most header border of the column(s) you want to hide.
- Drag the border past the left most header border of the column(s) you want to hide.

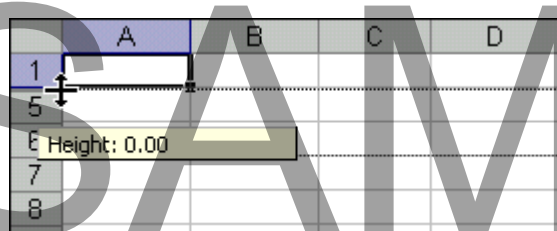
For example, if you want to hide column **B** and **C**, place your mouse pointer over the right header border of column **C**, and drag the border past the left header border of column **B**:



## Using the mouse to hide Rows

- Begin by placing the mouse pointer on the bottom most header border of the row(s) you want to hide.
- Drag the border past the top most header border of the row(s) you want to hide.

For example, if you want to hide row **2** to **4**, place your mouse pointer over the bottom header border of row **4**, and drag the border past the top header border of row **2**:



## Displaying hidden Columns

- Begin by selecting the columns on either side of the hidden column(s).
- From the main menu, choose **Format > Column > Unhide**.

**Note:** If column **A** is hidden, you will need to navigate to cell **A1** instead of selecting the columns on either side of column **A**.

**To navigate to cell A1:**

- From the main menu, choose **Edit > Go To**, type **A1** in the **Reference** text box, and click **OK**:

	A1				
	B	C	D	E	
1					
2					
3					
4					

**Displaying hidden Rows**


- Begin by selecting the rows on either side of the hidden row(s).
- From the main menu, choose **Format > Row > Unhide**.

**Note:** If row 1 is hidden, you will need to navigate to cell **A1** instead of selecting the rows on either side of row 1.

**To navigate to cell A1:**

- From the main menu, choose **Edit > Go To**, type **A1** in the **Reference** text box, and click **OK**.


**Using the mouse to display hidden Columns**

- Begin by placing the mouse pointer between the two column headers where column(s) are hidden.
- Move the mouse pointer slightly to the right until it changes from a single-lined drag cursor to a double-lined drag cursor .
- Drag the column border to the right to display the hidden column:

	A		D	E	F
1					
2					
3					

**Note:** You can only display one hidden column at a time.

**Using the mouse to display hidden Rows**

- Begin by placing the mouse pointer between the two row headers where row(s) are hidden.
- Move the mouse pointer down slightly until it changes from a single-lined drag cursor to a double-lined drag cursor .
- Drag the row border to down to display the hidden row:

	A	D	E	F
1				
5				
6				
7				

**Note:** You can only display one hidden row at a time.

## Review Questions

### How would you:

- Create a new style?
- Apply a style?
- Change the formatting of a style?
- Remove a style from cells?
- Delete a style?
- Use conditional formatting?
- Change conditional formatting?
- Delete conditional formatting?
- Find cells with conditional formatting?
- Copy and apply cell formatting with the Format Painter?
- Copy and apply column width or row height with the Format Painter?
- Copy and apply cell formatting with the Format Painter?
- Copy and apply the Format Painter in multiple locations?
- Change the color of the Gridlines?
- Turn off the onscreen Gridlines?
- Print Gridlines?
- Hide Columns?
- Hide Rows?
- Use the mouse to hide Columns?
- Use the mouse to hide Rows?
- Display hidden Columns?
- Display hidden Rows?
- Use the mouse to display hidden Columns?
- Use the mouse to display hidden Rows?

SAMPLE

## More Formulas and Functions

**When you have completed this learning module you will have seen how to:**

- Use the Series Command
- Apply a list series
- Apply a numeric series
- Apply a basic numeric series
- Create a custom list series
- Display the Insert Function wizard
- Choose a function from the Insert Function wizard
- Enter Function Arguments in the Insert Function wizard
- Use the Most Recently Used function category
- Use the Financial function category
- Use the Date & Time function category
- Use the Math & Trig function category
- Use the Statistical function category
- Use the Lookup & Reference function category
- Use the Database function category
- Use the Text function category
- Use the Logical function category
- Use the Information function category
- Find and correct errors in Formulas
- Find error values
- Correct error values
- Use the Formula error checker
- Recheck ignored errors
- Customize the Formula error checker
- Display the Formula Auditing toolbar
- Use the Formula Auditing toolbar
- Trace Precedents
- Remove Precedent Arrows
- Trace Dependents
- Remove Dependent Arrows
- Add a new comment
- Evaluate Formulas one step at a time
- Use the Watch Window
- Add a Watch to a cell
- Add a Watch to all cells with Formulas
- Display a cell in the Watch Window
- Delete a Watch
- Hide the Watch Window

## Using the Series Command

### Using the Series Command

- Excel 2002 recognizes three different types of series:

**Linear:** series increases or decreases by a constant value.

**Growth:** series increases or decrease by a constant multiple.

**AutoFill:** Excel 2002 can extend various types of data by predicting the next items in the series. For example, Q1, Q2, Q3, and Q4.

### Applying a list series

- Type the first item of the list series into the cell you want.
- Place the mouse over the small square at the bottom-right corner of the selected cell (your mouse pointer will appear as a bold plus (+) sign).
- Drag in any direction and release the mouse button when you have reached the last cell in your list series:

	A	B
1	Q1	
2		
3		
4		
5		
6		Q4

**Note:** As you drag the mouse, a screen tip displays the last item in your series. When you release the mouse button, the selected cells will be filled with the list series:

	A	B
1	Q1	
2	Q2	
3	Q3	
4	Q4	
5		
6		

### Applying a numeric series

- Excel can create a linear or growth numeric series based on two starting numbers.
- Type the first number of the series into the cell you want, and type the second number of the series into the cell adjacent to the first number.
- Select both cells.
- Place the mouse over the small square at the bottom-right corner of the selected cells (your mouse pointer will appear as a bold plus (+) sign).

- Drag in any direction and release the mouse button when you have reached the last cell in your numeric series. When you release the mouse button, the selected cells will be filled with the numeric series:

	A	B	C	D	E	F	G
1	1	4					
2						16	
3							

**Note:** As you drag the mouse, a screen tip displays the last item in your series. To increment a series, drag the mouse down or to the right. To decrement a series, drag the mouse up or to the left.

### Applying a basic numeric series

- Excel can create a basic numeric series by incrementing or decrementing the starting number by one.
- Type the starting number of the basic numeric series into the cell you want.
- Place the mouse over the small square at the bottom-right corner of the selected cell (your mouse pointer will appear as a bold plus (+) sign).
- Hold down the **Ctrl** key, drag in any direction, and release the mouse button when you have reached the last cell in your basic numeric series. When you release the mouse button, the selected cells will be filled with the numeric series:

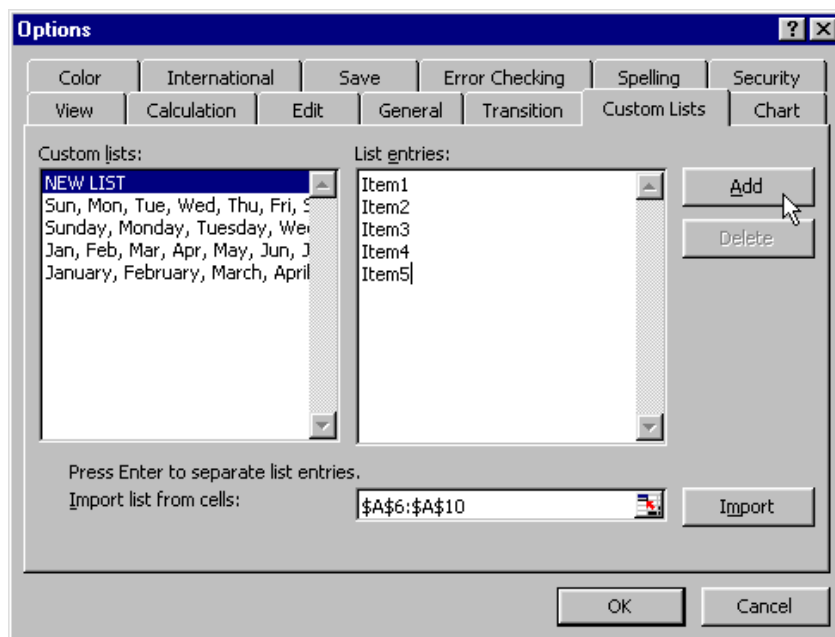
	A	B	C
1			
2			
3			
4			
5			
6			
7			
8			123
9			

**Note:** To increment a series, drag the mouse down or to the right. To decrement a series, drag the mouse up or to the left.

### Creating a custom list series

- With Excel, you can create a custom list series for future use.
- From the main menu, choose **Tools > Options** to display the **Options** dialog box, and click on the **Custom Lists** tab.
- Select **NEW LIST** from the **Custom lists** text area, enter the list entries into the **List entries** text area, and click **Add** to add the series  
**OR** enter a range in the **Import list from cells** text box, and click **Import** to import an existing series.

- Click **OK**:



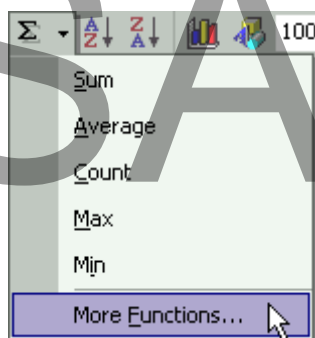
## Using the Insert Function Wizard

### Displaying the Insert Function wizard

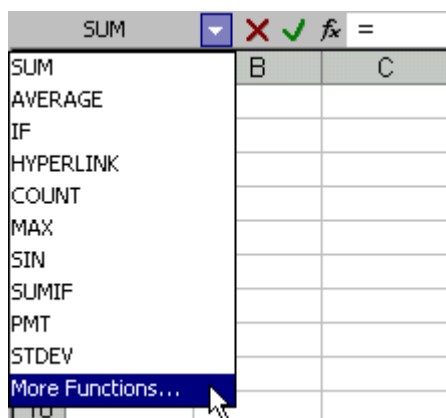
- A function can be inserted into a formula using the **Insert Function** wizard.
- To access the Insert Function wizard, begin by selecting the cell you want.
- From the main menu, choose **Insert > Function** to display the **Insert Function** wizard

**OR** click on the **Insert Function** icon  on the **Formula bar**

**OR** click on the **AutoSum** down arrow on the **Standard** toolbar, and choose **More Functions**:



**OR** type the equal (=) sign into the cell, click on the **Functions** down arrow, and choose **More Functions**:

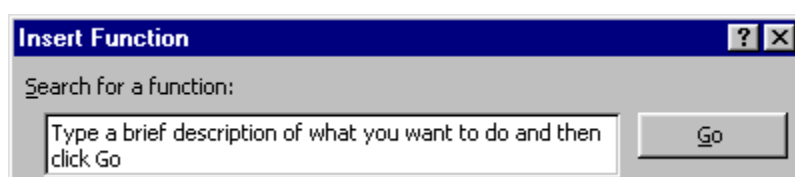


### Choosing a function from the Insert Function wizard

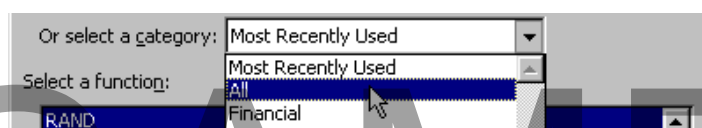
- From the **Insert Function** wizard, locate the function you want, and click **OK** to display the **Function Arguments** dialog box.

**Note:** You can use the following features of the Insert Function wizard to help you find the function you want.

- Type in a brief description of the function in the **Search for a function** text box, and click on the **Go** button:



- Click on the **Select a category** down arrow and choose a category to display the functions in a category or choose **All** to display all functions:



- Click on a function in the **Select a function** text area to display a brief description of the function and its arguments. Click on **Help on this function** to see the detailed description of the function and its arguments:



### Entering Function Arguments in the Insert Function wizard

- After selecting a function to insert, the **Insert Function** wizard will prompt you for arguments with the **Function Arguments** dialog box. Each argument in the function will be listed with its own text box. Arguments that

are in bold typeface are required for the function; arguments in normal typeface are optional.

- Click in an argument text box to display a brief description of the argument.
- Enter a value, cell reference, or range reference into the argument text box.
- Check the **Formula result** area to see the results, and adjust the arguments as needed.
- Click **OK** to insert the function into the selected cell:

**Function Arguments**

PMT

**Rate** .01 = 0.01

**Nper** 60 = 60

**Pv** 30000 = 30000

**Fv** 0 = 0

**Type** 0 = 0

= -667.3334305


Calculates the payment for a loan based on constant payments and a constant interest rate.

**Type** is a logical value: payment at the beginning of the period = 1; payment at the end of the period = 0 or omitted.

Formula result = -667.3334305

[Help on this function](#)

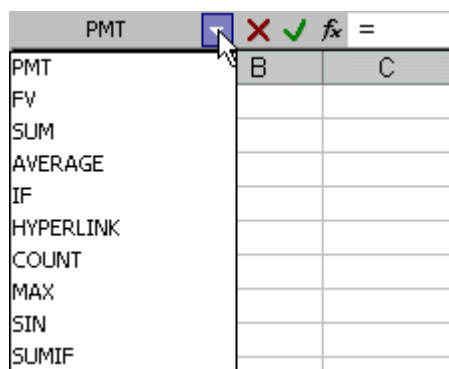
OK Cancel

**Note:** You can click on the **Minimize Dialog** icon  to the right of the argument text boxes to minimize the **Function Arguments** dialog box, and select the cell or range you want to use from the Workbook window. Press the **Enter** key to return to the **Function Arguments** dialog box.

## Using the Excel Function Categories

### Using the Most Recently Used function category

- Excel organizes its database of Functions into categories, and keeps track of your most recently used functions so that you can access them quickly. You can display the functions in this category by using the following methods.
- Type the equal (=) sign into the cell, click on the **Functions** down arrow, and choose the most recently used function you want:



**OR** you can access this category from the **Insert Function** wizard.

**Note:** The Insert Function wizard defaults to display the **Most Recently Used** function.

### Using the Financial function category

- The **Financial** function category has the most common financial calculations including the following:

**db** Calculates the fixed-declining depreciation of an asset.

**ddb** Calculates the double-declining depreciation of an asset.

**fv** Calculates the future value of an investment.

**ipmt** Calculates the interest payment of an investment.

**irr** Calculates the internal rate of return for a series of cash flows.

**ispmt** Calculates the interest paid of an investment.

**mirr** Calculates the internal rate of return for a series of cash flows, including cost of investment and interest on reinvestment.

**nper** Calculates the number of period for an investment.

**Npv** Calculates the new present value of an investment.

**pmt** Calculates the payment for a loan.

**ppmt** Calculates the payment on the principal for an investment.

**pv** Calculates the present value of an investment.

**rate** Calculates the interest rate per period of a loan or an investment.

**sln** Calculates the straight-line depreciation of an asset.

**syd** Calculates the sum-of-year' digits depreciation of an asset.

**vdb** Calculates the depreciation of an asset for any period you specify using the double-declining balance method or some other method.

---

### Using the Date & Time function category

- The **Date & Time** category has functions for working with date and time. Excel uses serial numbers to store dates, giving each day of each year a unique number. The serial numbers then can be manipulated mathematically.

For example, to find out a date that is 45 days from December 12, 2001, you would use the **DATE** function to convert the date into a serial number then add 45. In this example, the formula would be: **=DATE(2001,12,3)+45**

- The following lists the Date & Time functions in Excel:

**DATE** Returns the serial number of a particular date.

**DATEVALUE** Converts a date in the form of text to a serial number.

**DAY** Converts a serial number to a day of the month.

**DAYS360** Calculates the number of days between two dates based on a 360-day year.

**HOUR** Converts a serial number to an hour.

**MINUTE** Converts a serial number to a minute.

**MONTH** Converts a serial number to a month.

**NOW** Returns the serial number of the current date and time.

**SECOND** Converts a serial number to a second.

**TIME** Returns the serial number of a particular time.

**TIMEVALUE** Converts a time in the form of text to a serial number.

**TODAY** Returns the serial number of the current date.

**WEEKDAY** Converts a serial number to a day of the week.

**YEAR** Converts a serial number to a year.

## Using the Math & Trig function category

- The **Math & Trig** function category has the most common mathematical and trigonometry calculations including the following:

### **ABS**

Returns the absolute value of a number.

### **ACOS**

Returns the arccosine of a number in radians.

### **ACOSH**

Returns the inverse hyperbolic cosine of a number.

### **ASIN**

Returns the arcsine of a number in radians.

### **ASINH**

Returns the inverse hyperbolic sine of a number.

### **ATAN**

Returns the arctangent of a number in radians.

### **ATAN2**

Returns the arctangent of the specified x- and y- coordinates in radians.

### **ATANH**

Returns the inverse hyperbolic tangent of a number.

### **CEILING**

Rounds a number up, to the nearest integer or to the nearest multiple of significance.

### **COMBIN**

Returns the number of combinations for a given number of items.

### **COS**

Returns the cosine of an angle.

### **COSH**

Returns the hyperbolic cosine of a number.

### **DEGREES**

Converts radians to degrees.

### **EVEN**

Rounds a number to the nearest even integer.

### **EXP**

Returns e raised to the power of a given number.

### **FACT**

Returns the factorial of a number.

**FLOOR**

Rounds a number down, toward zero, to the nearest multiple of significance.

**INT**

Rounds a number down to the nearest integer.

**LN**

Returns the natural logarithm of a number.

**LOG**

Returns the logarithm of a number to the base you specify.

**LOG10**

Returns the base-10 logarithm of a number.

**MDETERM**

Returns the matrix determinant of an array.

**MINVERSE**

Returns the inverse matrix for the matrix stored in an array.

**MMULT**

Returns the matrix product of two arrays.

**MOD**

Returns the remainder of a division.

**ODD**

Rounds a number to the nearest odd integer.

**PI**

Returns the value of Pi.

**POWER**

Returns the result of a number raised to a power.

**PRODUCT**

Multiples all the arguments.

**RADIANS**

Converts degrees to radians.

**RAND**

Returns a random number between 0 and 1.

**ROMAN**

Converts an Arabic numeral to Roman.

**ROUND**

Rounds a number to a specified number of digits.

**ROUNDDOWN**

Rounds a number down, toward zero.

**ROUNDUP**

Rounds a number up.

**SIGN**

Returns the sign of a number.

**SIN**

Returns the sine of an angle.

**SINH**

Returns the hyperbolic sine of a number.

**SQRT**

Returns the square root of a number.

**SUBTOTAL**

Returns a subtotal in a list or database.

**SUM**

Adds all the numbers in a range of cells.

**SUMIF**

Adds the cells specified by a given condition or criteria.

**SUMPRODUCT**

Returns the sum of the products of corresponding ranges or arrays.

**SUMSQ**

Returns the sum of squares of the arguments.

**SUMX2MY2**

Sums the difference between the squares of two corresponding ranges or arrays.

**SUMX2PY2**

Returns the sum total of the sums of squares of numbers in two corresponding ranges or arrays.

**SUMXMY2**

Sums the squares of the differences in two corresponding ranges or arrays.

**TAN**

Returns the tangent of an angle.

**TANH**

Returns the hyperbolic tangent of a number.

### **TRUNC**

Truncates a number to an integer.

---

## **Using the Statistical function category**

- The **Statistical** function category has a wide range of statistical calculations.
- The following provides a sample of the calculations available:

### **AVERAGE**

Calculates the average of the arguments.

### **BETADIST**

Calculates the cumulative beta probability density function.

### **BINOMDIST**

Calculates the individual term binomial distribution probability.

### **CHIDIST**

Calculates the one-tailed probability of the chi-squared distribution.

### **CHITEST**

Returns the test for independence.

### **CONFIDENCE**

Returns the confidence interval for a population mean.

### **COUNT**

Counts the number of cells containing data.

### **COUNTA**

Counts the number of cells that are not empty.

### **COUNTBLANK**

Counts the number of empty cells in a range.

### **COUNTIF**

Counts the number of cells that meet the given condition.

### **COVAR**

Returns the covariance of two data sets.

### **DEVSQ**

Returns the sum of squares of deviations of data points from the mean.

### **EXPONDIST**

Returns the exponential distribution.

### **FDIST**

Returns the F probability distribution for two data sets.

**FORECAST**

Predicts a future value using existing values.

**FREQUENCY**

Calculates how often values occur.

**FTEST**

Returns the result of an F-test.

**GEOMEAN**

Returns the geometric mean of an array.

**GROWTH**

Returns numbers in an exponential growth trend matching known data points.

**INTERCEPT**

Calculates the point at which a line will intersect the y-axis using best-fit regression.

**LARGE**

Returns the n-th largest value, where n is the level.

**MAX**

Returns the largest value in a range.

**MEDIAN**

Returns the median.

**MIN**

Returns the smallest value in a range.

**MODE**

Returns the most frequently occurring value in a range.

**NORMDIST**

Returns the normal cumulative distribution for a specified mean and standard deviation.

**PERCENTILE**

Returns the n-th percentile of values in a range.

**PERMUT**

Returns the number of permutations for a given number of objects that can be selected from the total number of objects.

**POISSON**

Returns the Poisson distribution.

**PROB**

Returns the probability that values in a range are between two limits or equal to a lower limit.

**QUARTILE**

Returns the quartile of a data set.

**SKEW**

Returns the skewness of a distribution.

**SLOPE**

Returns the slope of a linear regression line.

**SMALL**

Returns the n-th smallest value, where n is the level.

**STANDARDIZE**

Returns a normalized value from a distribution.

**STDEV**

Estimates standard deviation based on a sample.

**STEYX**

Returns the standard error of the predicted y-value for each x in a regression.

**TDIST**

Returns the Student's t-distribution.

**TREND**

Returns numbers in a linear trend using the least squares method.

**TTEST**

Returns the probability associated with a Student's t-Test.

**VAR**

Estimates variance based on a sample.

**ZTEST**

Returns the two-tailed P-value of a z-test.

---

**Using the Lookup & Reference function category**

- The **Lookup & Reference** category has the functions to access information. For example, the **HLOOKUP** and **VLOOKUP** functions can be used to look up values in a table, or use the **CHOOSE** function to select a value from a list based on an index number.
  
- The following is a list of the Lookup & Reference functions:

**ADDRESS**

Creates a cell reference as text.

**AREAS**

Returns the number of areas in a reference.

**CHOOSE**

Chooses a value or action to perform from a list of values.

**COLUMN**

Returns the column number of a reference.

**COLUMNS**

Returns the number columns in an array or reference.

**GETPIVOTDATA**

Extracts data stored in a Pivot Table.

**HLOOKUP**

Returns the value of the specified row in a particular column heading.

**HYPERLINK**

Creates a link that opens a document locally or from the Internet.

**INDEX**

Returns the value of a particular row and column.

**INDIRECT**

Returns the reference specified by a text string.

**LOOKUP**

Looks up a value from a one-row or one-column range or from an array.

**MATCH**

Returns the relative position of an array item that matches a specified value and order.

**OFFSET**

Returns a reference that is off a given number of rows and columns from the starting reference.

**ROW**

Returns the row number of a reference.

**ROWS**

Returns the number of rows in an array or reference.

**RTD**

Retrieves real-time data from an application with COM automation support.

**TRANSPOSE**

Converts a vertical range to a horizontal range, or vice versa.

**VLOOKUP**

Returns the value of the specified column in a particular row heading.

---

### Using the Database function category

- The **Database** category has database manipulation functions, including the following:

#### **DAVERAGE**

Averages the record values that match specific conditions.

#### **DCOUNT**

Counts the cells containing numbers in the record values that match specific conditions.

#### **DCOUNTA**

Counts non-empty cells in the record values that match specific conditions.

#### **DGET**

Extracts a record that matches specific conditions.

#### **DMAX**

Returns the largest number in the record values that matches specific conditions.

#### **DMIN**

Returns the smallest number in the record values that matches specific conditions.

#### **DPRODUCT**

Multiplies the record values that matches specific conditions.

#### **DSTDEV**

Estimates the standard deviation based on a sample of records.

#### **DSTDEVP**

Calculates the standard deviation based on all the records.

#### **DSUM**

Adds the numbers in the record values that match specific conditions.

#### **DVAR**

Estimates variance based on a sample of records.

#### **DVARP**

Estimates variance based on all the records.

---

### Using the Text function category

- The **Text** category has the text manipulation functions, including the following:

**BAHTTEXT**

Converts a number to text.

**CHAR**

Returns the character specified by the code number.

**CLEAN**

Removes all nonprintable characters from text.

**CODE**

Returns a numeric code for the first character in a text string.

**CONCATENATE**

Joins several text items into one text item.

**DOLLAR**

Converts a number to text, using currency format.

**EXACT**

Checks to see if two text values are identical.

**FIND**

Finds one text value within another (case-sensitive).

**FIXED**

Formats a number as text with a fixed number of decimals.

**LEFT**

Returns the left-most characters from a text string.

**LEN**

Returns the number of characters in a text string.

**LOWER**

Converts text to lowercase.

**MID**

Returns a specific number of characters from a text string starting at the position you specify.

**PROPER**

Capitalizes the first letter in each word of a text string.

**REPLACE**

Replaces characters within a text string.

**REPT**

Repeats text a given number of times.

**RIGHT**

Returns the right-most characters from a text string.

### **SEARCH**

Finds one text string within another (not case-sensitive).

### **SUBSTITUTE**

Replaces new text for old text in a text string.

### **T**

Converts its arguments to text.

### **TEXT**

Formats a number and converts it to text.

### **TRIM**

Removes spaces from text.

### **UPPER**

Converts text to uppercase.

### **VALUE**

Converts a text string to a number.

---

## **Using the Logical function category**

- When carrying out calculation, you may need to make decisions based on the results. The **Logical** category has a number of functions that allow you to evaluate logical tests and make decisions based on the result of the evaluation. **Logical operators**, equal to (=), greater than (>), less than (<), greater than or equal to (>=), and less than or equal to (<=), are used to evaluate logical tests.
- The following is a list of the Logical functions:

### **AND**

Returns TRUE if all arguments are TRUE.

### **FALSE**

Returns the logical value FALSE.

### **IF**

Checks condition and returns the specified value for TRUE or FALSE.

### **NOT**

Changes FALSE to TRUE, and vice versa.

### **OR**

Returns TRUE if any one of the arguments are TRUE.

### **TRUE**

Returns the logical value TRUE.

## Using the Information function category

- The **Information** function category has the functions to validate data and to provide information on values. These functions are especially useful when designing templates or forms for other users.
- **The following is a list of the Information functions:**

### **CELL**

Returns information about the formatting, location, or contents of the upper-left cell in a reference.

### **ERROR,TYPE**

Returns a number matching an error value.

### **INFO**

Returns information about the current operating environment.

### **ISBLANK**

Returns TRUE if the value is blank.

### **ISERR**

Returns TRUE if the value is an error value (except #N/A).

### **ISERROR**

Returns TRUE if the value is any error value.

### **ISLOGICAL**

Returns TRUE if the value is a logical.

### **ISNA**

Returns TRUE if the value is a #N/A value.

### **ISNONTTEXT**

Returns TRUE if the value is not text.

### **ISNUMBER**

Returns TRUE if the value is a number.

### **ISREF**

Returns TRUE if the value is a reference.

### **ISTEXT**

Returns TRUE if the value is text.

### **N**

Converts non-numeric values to a number.

### **NA**

Returns the error value #N/A.

**TYPE**


Returns information on the data type of a value.

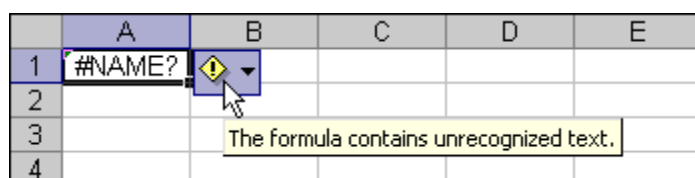
## Correcting Formulas

### Finding and correcting errors in Formulas

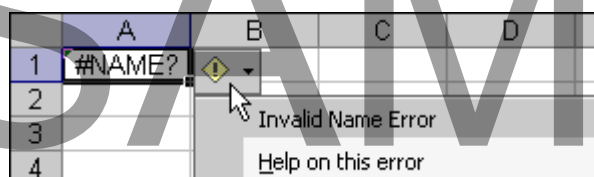
- Excel provides the following tools to help you find and correct errors in formulas.
- **Error values** identify formulas that cannot be evaluated, for example **#NAME?**.
- **Formula error checker** identifies formulas with common problems using predefined rules.
- Use the **Formula Auditing toolbar** to calculate your formula one step at a time and to trace relationships between cells as defined by formulas.
- **Watch Window** watches the formula and results of cells you identify.

### Finding error values

- When Excel cannot evaluate a formula result, an **error value** is displayed. The error value displayed depends on the type of error. Cells with error values are marked at the top-left corner with a triangle (usually green).
- To see the reason for the error value, begin by selecting the cell with the error value you want to correct.
- Place your mouse over the warning icon  to display the screen tip description:



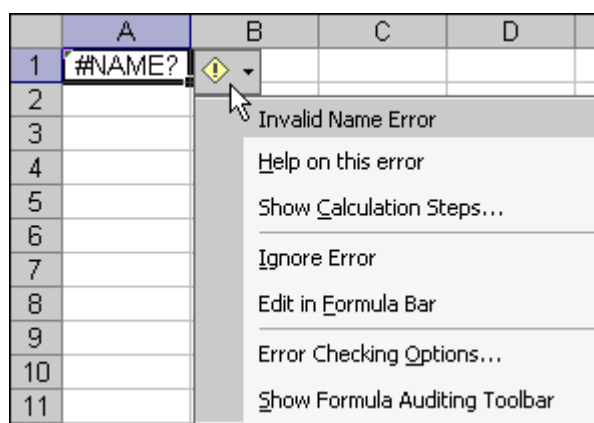
**OR** click on the warning icon to display the reason at the top of the popup menu:



### Correcting error values

- You can correct an **error value** by selecting an option from the warning icon popup menu. For some error values, the popup menu will include corrective actions to correct the error.

- To correct an error value, begin by selecting the cell with the error value you want to correct. Click on the warning icon, and select a corrective action or one of the following options.
- **Help on this error:** get a detailed explanation of the error.
- **Show Calculation Steps:** calculate your formula one step at a time to identify the location of the error.
- **Ignore Error:** ignore the error and remove the top-left triangle.
- **Edit in Formula Bar:** place the mouse cursor in the Formula Bar to edit the formula.
- **Error Checking Options:** display the Error Checking Options dialog box.
- **Show Formula Auditing Toolbar:** display the Formula Auditing toolbar:



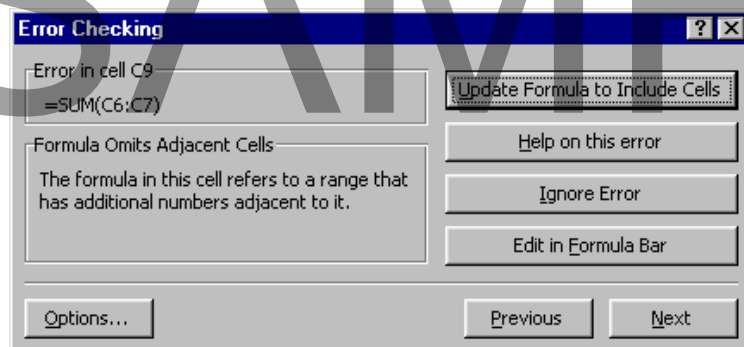
## Using the Formula Error Checker

### Using the Formula error checker

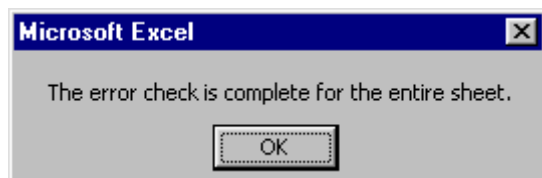
- The **Formula error checker** identifies formulas with common problems using predefined rules. Begin by selecting the Worksheet you want to check.
- From the main menu, choose **Tools > Error Checking**

**OR** from the **Formula Auditing** toolbar, click on the **Error Checking** icon

. If an error is found, the **Error Checking** dialog box appears:



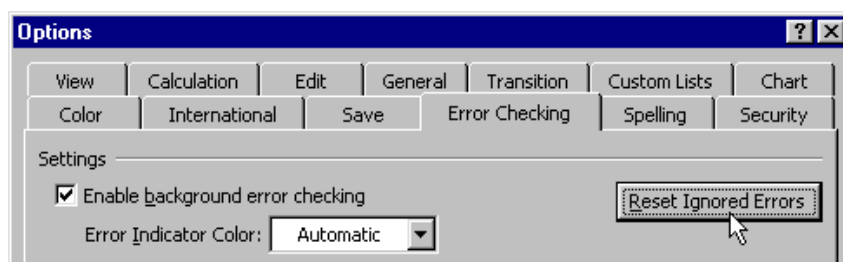
- Resolve the error by selecting a corrective action (**Update Formula to Include Cells** is the corrective action in the above example), or by ignoring the error.
- Click **Next**.
- Continue until the error check is complete message appears:



**Note:** Once a problem is ignored, it will not appear in future error checks.

### Rechecking ignored errors

- From the main menu, choose **Tools > Options**, and click the **Error Checking** tab.
- Click on the **Reset Ignored Errors** button.
- Click **OK**:



### Customizing the Formula error checker

- You can determine which common formula problems Excel checks for.
- From the main menu, choose **Tools > Options**, and click the **Error Checking** tab.
- Select the checkbox for the rules you want.
- Click **OK**:



## Using the Formula Auditing Toolbar

### Displaying the Formula Auditing toolbar

- From the main menu, choose **View > Toolbars > Formula Auditing**

*OR* from the main menu, choose **Tools > Formula Auditing > Show Formula Auditing** Toolbar.

### Using the Formula Auditing toolbar

- The **Formula Auditing toolbar** provides quick access to actions that can help you troubleshoot formula errors. Each action is represented by an icon. When you put your mouse pointer over an icon, it is highlighted in blue and a descriptive tool tip appears.
- Locate the icon for the action you want to use and click on the icon.
- The following are icons on the Formula Auditing toolbar:



**Error Checking** – start Error Checker.



**Trace Precedents** – identify the cells that are used in the formula.



**Remove Precedent Arrows** – remove the precedent arrows.



**Trace Dependents** – identify the cells that use the active cell in their formulas.



**Remove Dependent Arrows** – remove the dependent arrows.



**Remove All Arrows** – remove both precedent and dependent arrows.



**Trace Error** – trace errors of the active cell.



**New Comment** – add a comment.



**Circle Invalid Data** – data that do not meet their data validation criteria.



**Clear Validation Circles** – remove validation circles.



**Show Watch Window** – display Watch Window.



**Evaluate Formula** – evaluate formula step by step.

## Tracing Precedents

- To help you track errors, Excel provides a graphical view of the cells used in the calculation of the results in the active cell. Excel uses blue arrows to identify relationships and red arrows to identify cells that errors.
- From the **Formula Auditing** toolbar, click on the **Trace Precedents** icon



Salesperson	Desktop	Notebooks	Monitors	Printers	Scanners	Total Sales	Sales %
Ben	95	18	34	70	56	161720	0.1074
Frank	57	47	66	19	97	183440	0.12182
Mary	93	29	14	81	31	170720	0.11337
Nancy	60	52	38	8	70	178800	0.11874
Tom	96	43	29	39	87	203240	0.13497
Wendy	86	17	89	44	78	170360	0.11313
Total	487	206	693	899	1592	1505840	1

**Note:** You can click on the Trace Precedents icon again to identify the next level of precedents (the cells used in the calculation of the precedents of the active cell).

## Removing Precedent Arrows

- Precedent arrows can be remove one level at a time.
- From the **Formula Auditing** toolbar, click on the **Remove Precedent Arrows** icon



**Note:** You can click on the Remove Precedent Arrows icon again to remove the next level of precedent arrows.

## Tracing Dependents

- Excel also provides a graphical view of the cells that use the active cell in their calculation. Excel uses blue arrows to identify the relationship.
- From the **Formula Auditing** toolbar, click on the **Trace Dependents** icon



Salesperson	Desktop	Notebooks	Monitors	Printers	Scanners	Total Sales	Sales %
Ben	95	18	34	70	56	161720	0.1074
Frank	57	47	66	19	97	183440	0.12182
Mary	93	29	14	81	31	170720	0.11337
Nancy	60	52	38	8	70	178800	0.11874
Tom	96	43	29	39	87	203240	0.13497
Wendy	86	17	89	44	78	170360	0.11313
Total	487	206	693	899	1592	1505840	1

**Note:** You can click on the Trace Dependents icon again to identify the next level of dependents (the cells that use the dependents of the active cell in their formulas).


### Removing Dependent Arrows

- Precedent arrows can be removed one level at a time.
- From the **Formula Auditing** toolbar, click on the **Remove Dependent Arrows** icon



**Note:** You can click on the Remove Dependent Arrows icon again to remove the next level of dependent arrows.

### Adding a new comment

- From the **Formula Auditing** toolbar, click on the **New Comment** icon
- 
- Enter your comment; when finished, click outside of the comment box:

Tom	96	43	29	39
Wendy	86	17	89	44
Total	487	This is a comment.		899

**Note:** You can change how comments are displayed in the **View** tab of the **Options** dialog box.

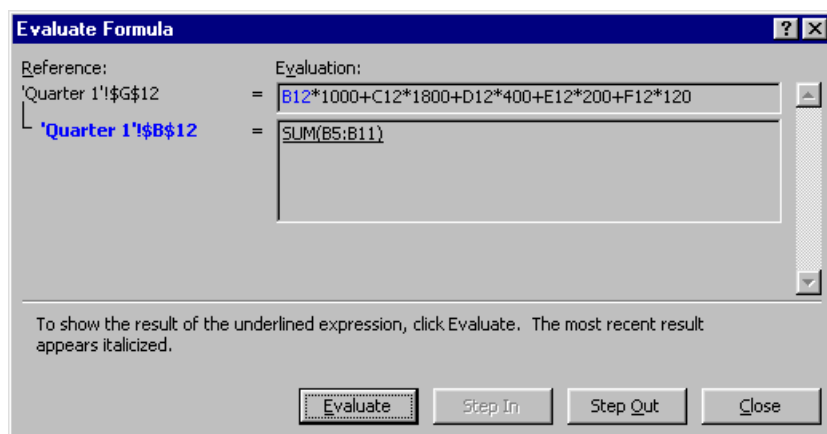
### Evaluating Formulas one step at a time

- To troubleshoot a formula, you can calculate your formula one step at a time. Begin by selecting the cell you want to evaluate.
- From the Formula Auditing toolbar, click Evaluate Formula.
- Click the **Evaluate** button to see the results (in italics) of the underlined part of the formula:

SAMPLE



(If the underlined part of the formula is a reference to another formula, you can click the **Step In** button to step through other formula in a new **Evaluation** box. Click the **Step Out** button to go back to the previous formula):



- Continue stepping through the formula until the entire formula has been evaluated.
- Click **Close** to end the evaluation.

**Note:** The Evaluate Formula feature evaluates some formulas slightly differently than in the Worksheet. Please refer to the Microsoft Excel Help for details on the differences.

SAMPLE

## End of the preview sample



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