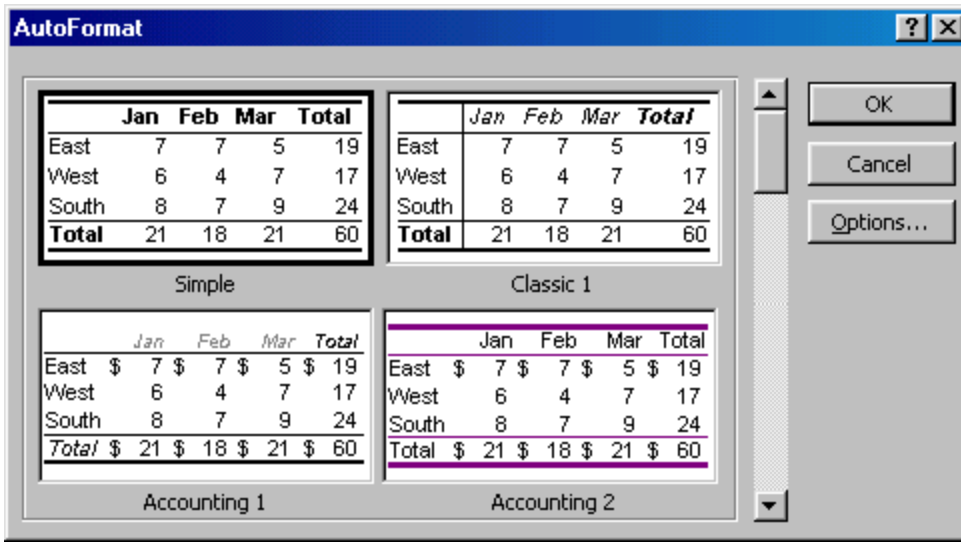


- On the AutoFormat dialog box, select the format you want to apply to the table by clicking on it with the mouse. Use the scroll bar to view all of the formats available.



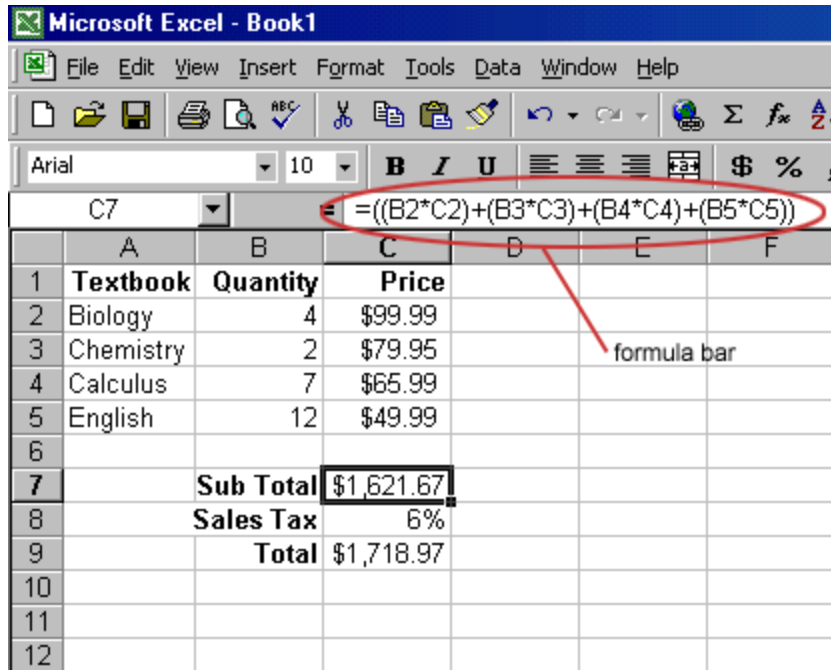
- Click the **Options...** button to select the elements that the formatting will apply to.
- Click **OK** when finished.

	A	B	C	D
1	<b>Textbook</b>	<b>Quantity</b>	<b>Price</b>	
2	Biology	4	\$99.99	
3	Chemistry	2	\$79.95	
4	Calculus	7	\$65.99	
5	English	12	\$49.99	

The distinguishing feature of a spreadsheet program such as Excel is that it allows you to create mathematical formulas and execute functions. Otherwise, it is not much more than a large table for displaying text. This page will show you how to create these calculations.

### Formulas

Formulas are entered in the worksheet cell and must begin with an equal sign "=". The formula then includes the addresses of the cells whose values will be manipulated with appropriate operands placed in between. After the formula is typed into the cell, the calculation executes immediately and the formula itself is visible in the formula bar. See the example below to view the formula for calculating the sub total for a number of textbooks. The formula multiplies the quantity and price of each textbook and adds the subtotal for each book.



**Linking Worksheets**

You may want to use the value from a cell in another worksheet within the same workbook in a formula. For example, the value of cell A1 in the current worksheet and cell A2 in the second worksheet can be added using the format "sheetname!celladdress". The formula for this example would be "=A1+Sheet2!A2" where the value of cell A1 in the current worksheet is added to the value of cell A2 in the worksheet named "Sheet2".

**Relative, Absolute, and Mixed Referencing**

Calling cells by just their column and row labels (such as "A1") is called **relative referencing**. When a formula contains relative referencing and it is copied from one cell to another, Excel does not create an exact copy of the formula. It will change cell addresses relative to the row and column they are moved to. For example, if a simple addition formula in cell C1 "= (A1+B1)" is copied to cell C2, the formula would change to "= (A2+B2)" to reflect the new row. To prevent this change, cells must be called by **absolute referencing** and this is accomplished by placing dollar signs "\$" within the cell addresses in the formula. Continuing the previous example, the formula in cell C1 would read "= (\$A\$1+\$B\$1)" if the value of cell C2 should be the sum of cells A1 and B1. Both the column and row of both cells are absolute and will not change when copied. **Mixed referencing** can also be used where only the row OR column fixed. For example, in the formula "= (A\$1+\$B2)", the row of cell A1 is fixed and the column of cell B2 is fixed.

**Basic Functions**

Functions can be a more efficient way of performing mathematical operations than formulas. For example, if you wanted to add the values of cells D1 through D10, you would type the formula "=D1+D2+D3+D4+D5+D6+D7+D8+D9+D10". A shorter way would be to use the SUM function and simply type "=SUM(D1:D10)". Several other functions and examples are given in the table below:

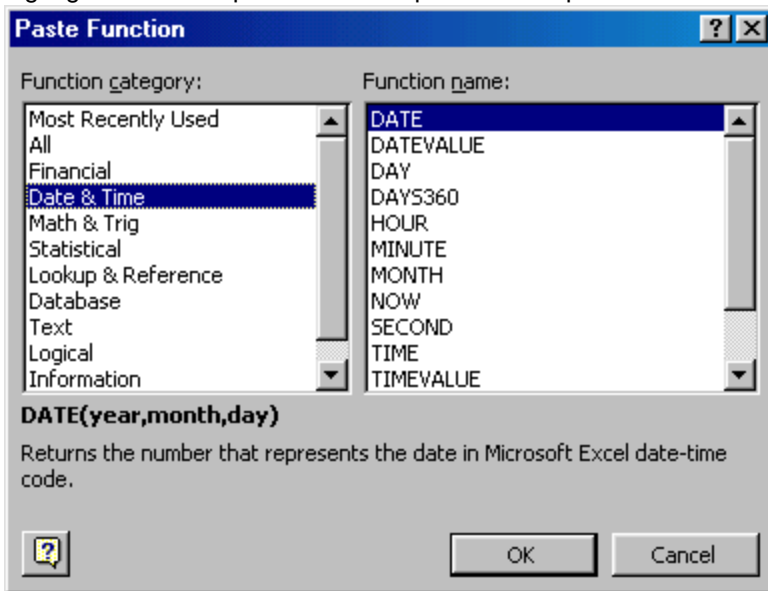
Function	Example	Description
SUM	=SUM(A1:100)	finds the sum of cells A1 through A100
AVERAGE	=AVERAGE(B1:B10)	finds the average of cells B1 through B10
MAX	=MAX(C1:C100)	returns the highest number from cells C1 through C100
MIN	=MIN(D1:D100)	returns the lowest number from cells D1 through D100
SQRT	=SQRT(D10)	finds the square root of the value in cell D10

TODAY	=TODAY()	returns the current date (leave the parentheses empty)
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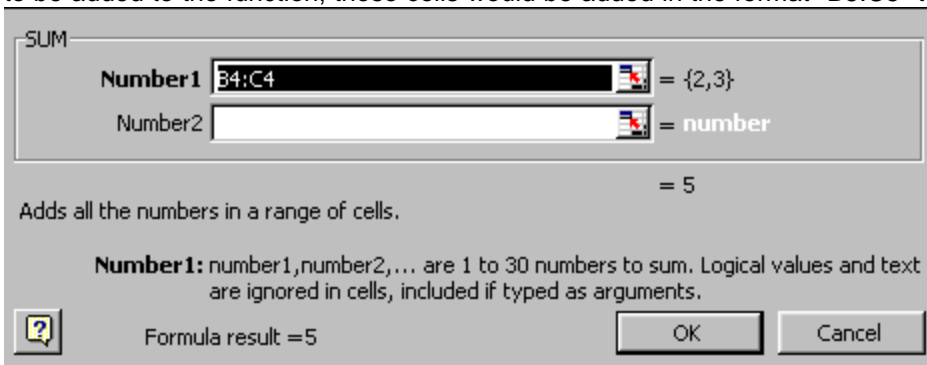
**Function Wizard** 

View all functions available in Excel by using the Function Wizard.

1. Activate the cell where the function will be placed and click the **Function Wizard** button on the standard toolbar.
2. From the **Paste Function** dialog box, browse through the functions by clicking in the **Function category** menu on the left and select the function from the **Function name** choices on the right. As each function name is highlighted a description and example of use is provided below the two boxes.



3. Click **OK** to select a function.
4. The next window allows you to choose the cells that will be included in the function. In the example below, cells B4 and C4 were automatically selected for the sum function by Excel. The cell values {2, 3} are located to the right of the **Number 1** field where the cell addresses are listed. If another set of cells, such as B5 and C5, needed to be added to the function, those cells would be added in the format "B5:C5" to the **Number 2** field.




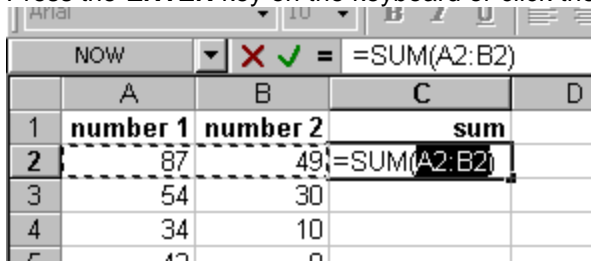
5. Click **OK** when all the cells for the function have been selected.

**Autosum** 

Use the Autosum function to add the contents of a cluster of adjacent cells.

1. Select the cell that the sum will appear in that is outside the cluster of cells whose values will be added. Cell C2 was used in this example.
2. Click the **Autosum** button (Greek letter sigma) on the standard toolbar.
3. Highlight the group of cells that will be summed (cells A2 through B2 in this example).

- Press the **ENTER** key on the keyboard or click the green check mark button on the formula bar .



	A	B	C	D
1	number 1	number 2	sum	
2	87	49	=SUM(A2:B2)	
3	54	30		
4	34	10		

### Basic Sorts

To execute a basic descending or ascending sort based on one column, highlight the cells that will be sorted and click the **Sort Ascending (A-Z)** button or **Sort Descending (Z-A)** button on the standard toolbar.

### Complex Sorts

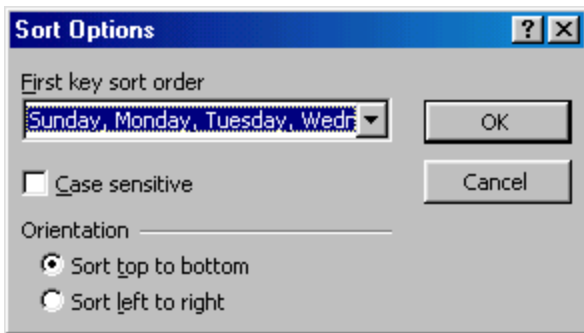
To sort by multiple columns, follow these steps:

- Highlight the cells, rows, or columns that will be sorted.
- Select **Data|Sort** from the menu bar.
- From the **Sort** dialog box, select the first column for sorting from the **Sort By** drop-down menu and choose either ascending or descending.
- Select the second column and, if necessary, the third sort column from the **Then By** drop-down menus.



- If the cells you highlighted included the text headings in the first row, mark **My list has..Header row** and the first row will remain at the top of the worksheet.

- Click the **Options** button for special non-alphabetic or numeric sorts such as months of the year and days of the week.



- Click **OK** to execute the sort.

### Autofill

The Autofill feature allows you to quickly fill cells with repetitive or sequential data such as chronological dates or numbers, and repeated text.

- Type the beginning number or date of an incrementing series or the text that will be repeated into a cell.
- Select the handle at the bottom, right corner of the cell with the left mouse button and drag it down as many cells as you want to fill.
- Release the mouse button.

If you want to autofill a column with cells displaying the same number or date you must enter identical data to two adjacent cells in a column. Highlight the *two* cells and drag the handle of the selection with the mouse.

### Alternating Text and Numbers with Autofill

The Autofill feature can also be used for alternating text or numbers. For example, to make a repeating list of the days of the week, type the seven days into seven adjacent cells in a column. Highlight the seven cells and drag down with the mouse.

### Autofilling Functions

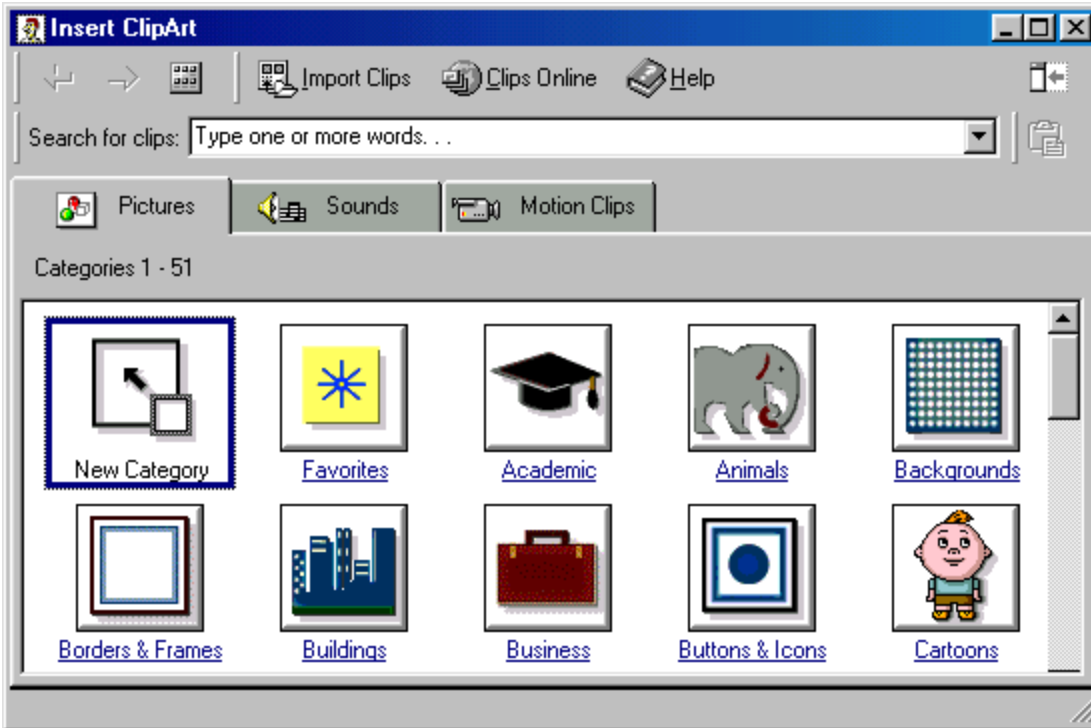
Autofill can also be used to copy functions. In the example below, column A and column B each contain lists of numbers and column C contains the sums of columns A and B for each row. The function in cell C2 would be "`=SUM(A2:B2)`". This function can then be copied to the remaining cells of column C by activating cell C2 and dragging the handle down to fill in the remaining cells. The autofill feature will automatically update the row numbers as shown below if the cells are reference relatively.

	C2	=	=SUM(A2:B2)		C11	=	=SUM(A11:B11)	
	A	B	C	D	A	B	C	D
1	number 1	number 2	sum		1	number 1	number 2	sum
2	87	49	136		2	87	49	136
3	54	30			3	54	30	84
4	34	10			4	34	10	44
5	43	8			5	43	8	51
6	24	23			6	24	23	47
7	93	97			7	93	97	190
8	40	32			8	40	32	72
9	59	30			9	59	30	89
10	82	87			10	82	87	169
11	39	57			11	39	57	96

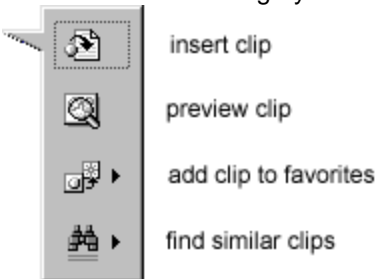
**Adding Clip Art**

To add a clip art image to the worksheet, follow these steps:

1. Select **Insert|Picture|Clip Art** from the menu bar.



2. To find an image, click in the white box following **Search for clips**. Delete the words "Type one or more words. . ." and enter keywords describing the image you want to use.  
- OR -  
Click one of the category icons.
3. Click once on the image you want to add to the worksheet and the following popup menu will appear:



- o **Insert Clip** to add the image to the worksheet.

- **Preview Clip** to view the image full-size before adding it to the worksheet. Drag the bottom, right corner of the preview window to resize the image and click the "x" close button to end the preview.

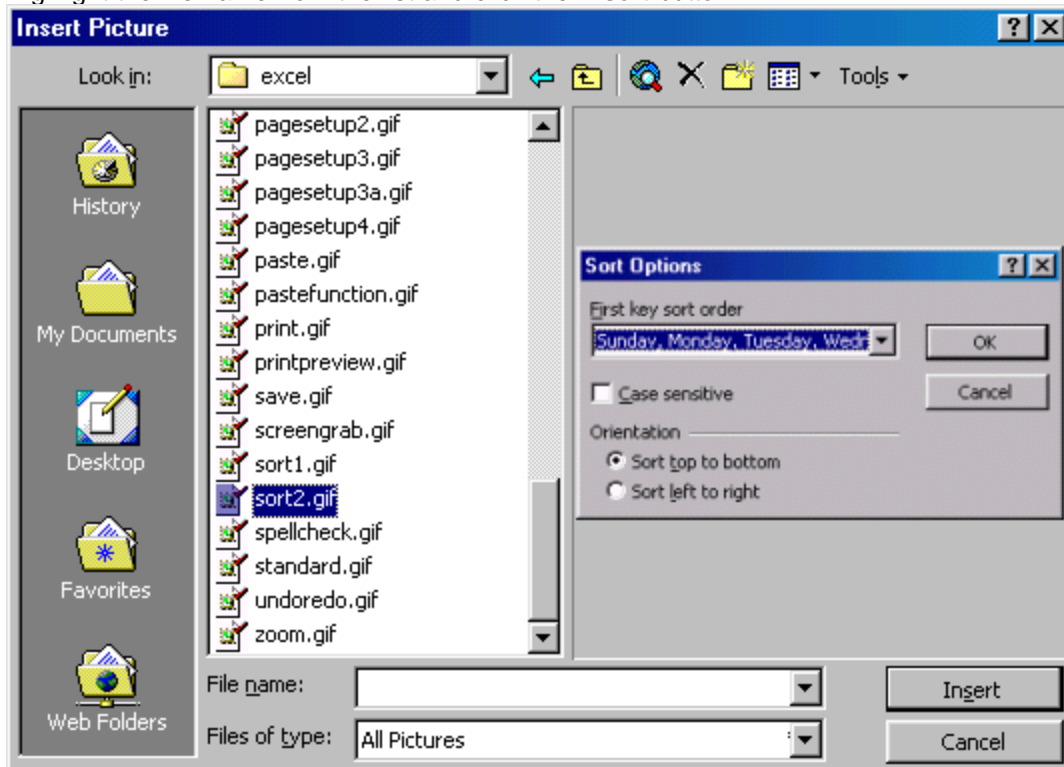


- **Add Clip to Favorites** will add the selected image to your favorites directory that can be chosen from the **Insert ClipArt** dialog box.
  - **Find Similar Clips** will retrieve images similar to the one you have chosen.
4. Continue selecting images to add to the worksheet and click the **Close** button in the top, right corner of the **Insert ClipArt** window to stop adding clip art to the worksheet.

**Add An Image from a File**

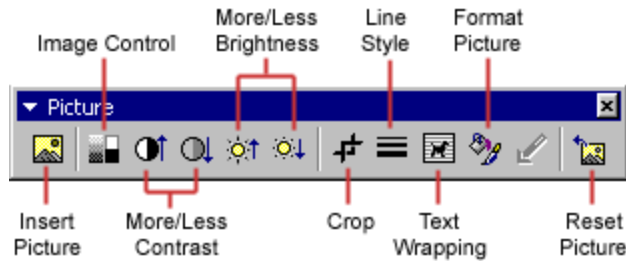
Follow these steps to add a photo or graphic from an existing file:

1. Select **Insert|Picture|From File** on the menu bar.
2. Click the down arrow button on the right of the **Look in:** window to find the image on your computer.
3. Highlight the file name from the list and click the **Insert** button.



### Editing A Graphic

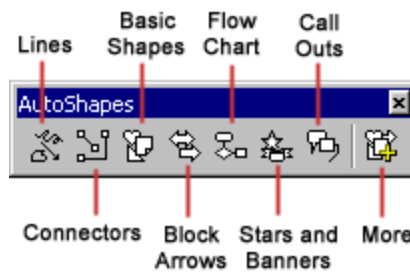
Activate the image you wish to edit by clicking on it once with the mouse. Nine handles will appear around the graphic. Click and drag these handles to resize the image. The handles on the corners will resize proportionally while the handles on the straight lines will stretch the image. More picture effects can be changed using the Picture toolbar. The **Picture toolbar** should appear when you click on the image. Otherwise, select **View|Toolbars|Picture** from the menu bar to activate it.



- **Insert Picture** will display the image selection window and allows you to change the image.
- **Image Control** allows to to make the image gray scale, black and white, or a watermark.
- **More/Less Contrast** modifies the contrast between the colors of the image.
- **More/Less Brightness** will darken or brighten the image.
- Click **Crop** and drag the handles on the activated image to delete outer portions of the image.
- **Line Style** will add a variety of borders to the graphic.
- **Text Wrapping** will modify the way the worksheet text wraps around the graphic.
- **Format Picture** displays all the image properties in a separate window.
- **Reset Picture** will delete all the modifications made to the image.

### AutoShapes

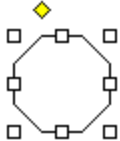
The AutoShapes toolbar will allow you to draw a number of geometrical shapes, arrows, flow chart elements, stars, and more on the worksheet. Activate the AutoShapes toolbar by selecting **Insert|Picture|AutoShapes** or **View|Toolbars|AutoShapes** from the menu bar. Click the button on the toolbar to view the options for drawing the shape.




- **Lines** - After clicking the Lines button on the AutoShapes toolbar, draw a **straight line**, **arrow**, or **double-ended arrow** from the first row of options by clicking the respective button. Click in the worksheet where you would like the line to begin and click again where it should end. To draw a **curved line** or **freeform shape**, select curved

lines from the menu (first and second buttons of second row), click in the worksheet where the line should appear, and click the mouse every time a curve should begin. End creating the graphic by clicking on the starting end or pressing the **ESC** key. To **scribble**, click the last button in the second row, click the mouse in the worksheet and hold down the left button while you draw the design. Let go of the mouse button to stop drawing.

- **Connectors** - Draw these lines to connect flow chart elements.
- **Basic Shapes** - Click the Basic Shapes button on the AutoShapes toolbar to select from many **two- and three-dimensional shapes, icons, braces, and brackets**. Use the drag-and-drop method to draw the shape in the worksheet. When the shape has been made, it can be resized using the open box handles and other adjustments specific to each shape can be modified using the yellow diamond handles.



- **Block Arrows** - Select Block Arrows to choose from many types of **two- and three-dimensional arrows**. Drag-and-drop the arrow in the worksheet and use the open box and yellow diamond handles to adjust the arrowheads. Each AutoShape can also be rotated by first clicking the **Free Rotate** button on the drawing toolbar . Click and drag the green handles around the image to rotate it. The tree image below was created from an arrow rotated 90 degrees.



- **Flow Chart** - Choose from the flow chart menu to add **flow chart elements** to the worksheet and use the line menu to draw connections between the elements.
- **Stars and Banners** - Click the button to select **stars, bursts, banners, and scrolls**
- **Call Outs** - Select from the **speech and thought bubbles, and line call outs**. Enter the call out text in the text box that is made.
- **More AutoShapes** - Click this button to choose from a list of clip art categories.

Each of the submenus on the AutoShapes toolbar can become a separate toolbar. Just click and drag the gray bar across the top of the submenus off of the toolbar and it will become a separate floating toolbar.

