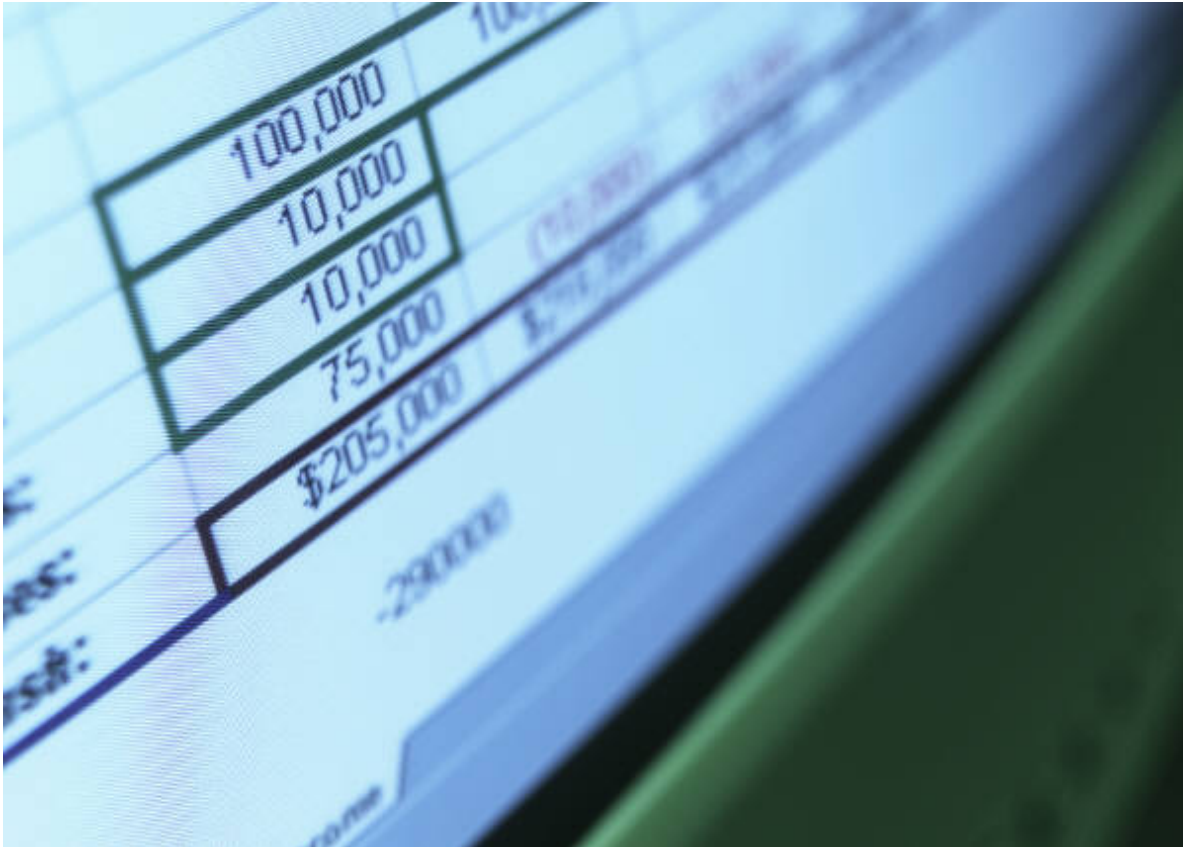# The
New York Society Library
Presents:

Introduction to Microsoft Excel
(for versions 2003 and earlier)

Carolyn Waters
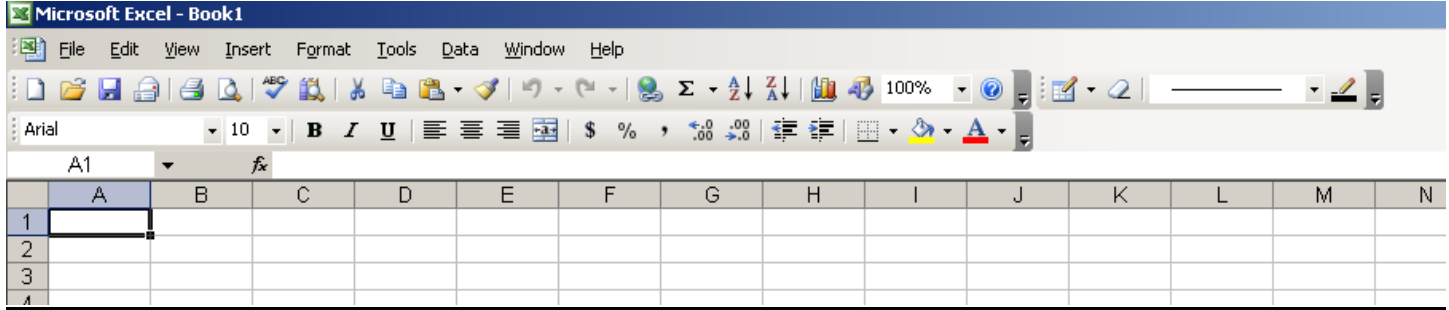### Acquisitions & Reference Librarian
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OVERVIEW

MICROSOFT EXCEL

Microsoft Excel, first released for the Mac in 1985, is a spreadsheet application used for accounting and sorting text.

Versions include:
- Excel 7.0   (aka Office 95)   1995
- Excel 8.0   (aka Office 97)   1997
- Excel 9.0   (aka Office 2000)   1999
- Excel 10.0   (aka Office XP)   2001
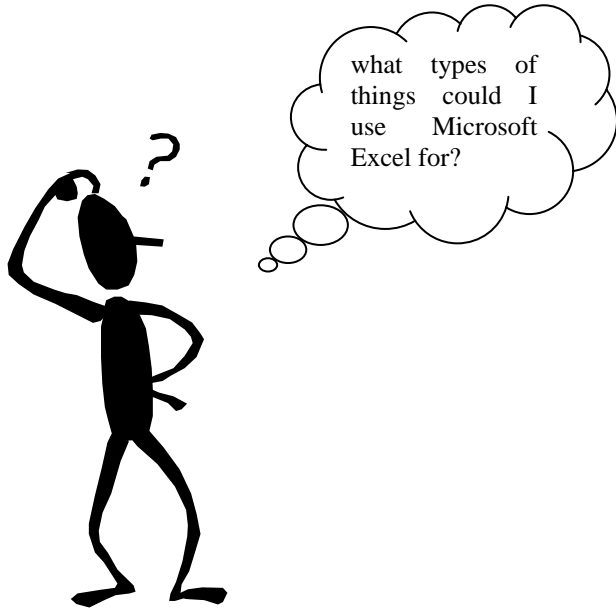- Excel 11.0   (aka Office 2003)   2003
- Excel 12.0*   (aka Office 2007)   2007

*today's class will only cover Microsoft Excel versions 2003 and earlier

ABOUT EXCEL

Microsoft Excel is a spreadsheet application ideal for accounting (you can change interest rates, starting balances, etc. in one cell and each dependent cell will also change) and sorting uncomplicated data (such as a list of names).

- ➲ An excel file (.xls) is also called a WORKBOOK
- ➲ A workbook is comprised of one or more *worksheets*, also called *spreadsheets* or *sheets*

what types of things could I use Microsoft Excel for?

Personal Budgets

Calendars

Lists and Inventories

THE EXCEL SPREADSHEET

Excel worksheets are divided into three major parts:
1. The **drop-down menus** and **toolbars** at the top of the screen
2. The **Formula bar** signified by the letters *fx*
3. The **Grid of cells**. Each cell in a worksheet is identified by the intersection of a column and a row. Columns are assigned letters; rows are assigned numbers. In the example below, the cell **C5** is selected (also called the *active* cell).

The active cell is always identified in the formula bar
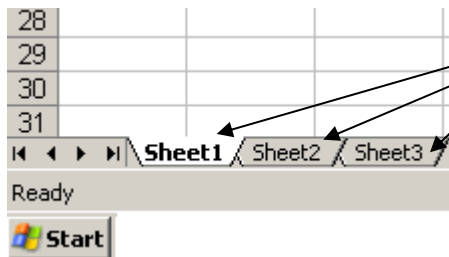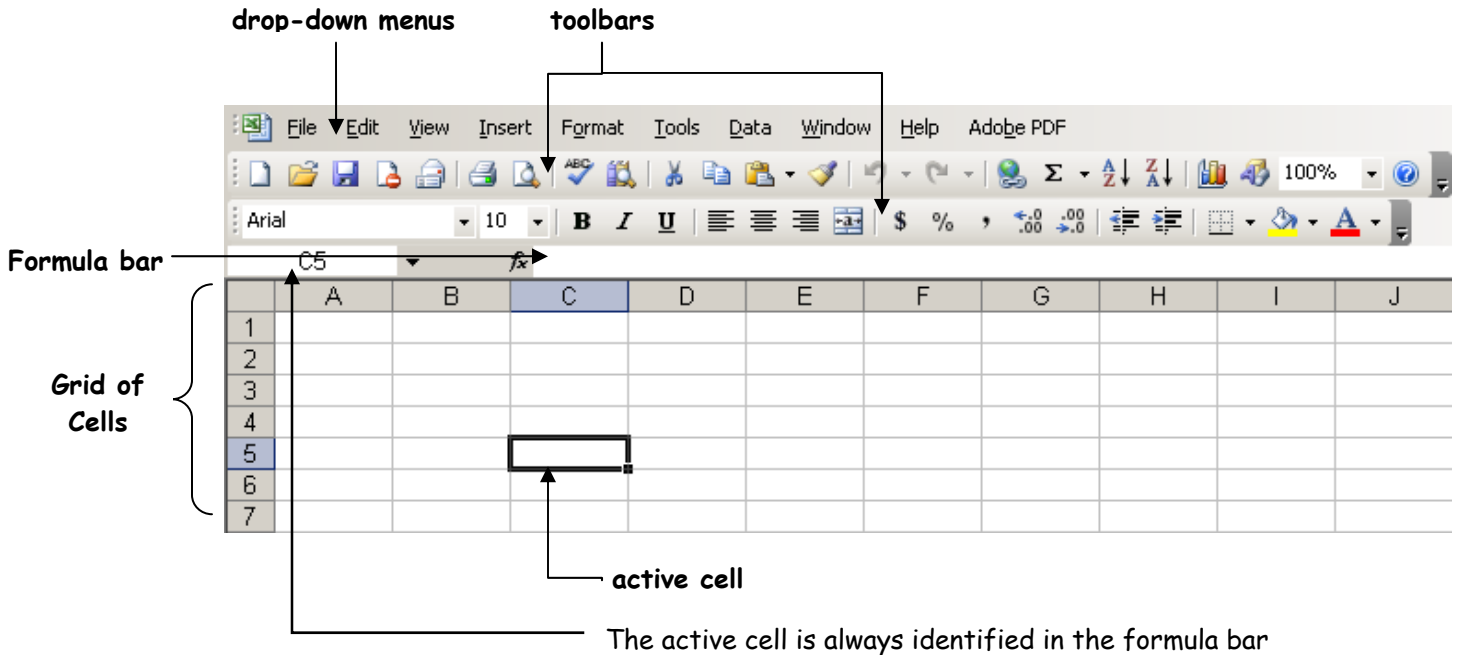
Each new workbook consists of 3 worksheets (also called spreadsheets or simply sheets) but many more sheets can be added

Only 1 sheet will be active at a time. In this example, **Sheet 1** is the active sheet.

➲ Left-click on a particular sheet tab at the bottom to make it the active sheet
➲ Right-click to delete or rename the sheet, or to insert a new sheet into the workbook

STARTING OUT

ENTERING DATA IN THE SPREADSHEET

- ➲ **Type directly in the active cell**
  The data or text you type will also be reflected after the = sign on the formula bar. You can either type straight data (words, numbers) or relational formulas (=sum (A1:A2).

- ➲ **Copy/Cut and Paste**
  Data can be copied or cut from another program, from another Excel spreadsheet or file, or from within the spreadsheet you're currently working and then pasted into your active worksheet.

- ➲ **Edit→Fill**
  The fill function allows you to automatically fill a range of cells with the same information or with data in a series *(in the example below, I filled column A with a number series from 1 to 7 with a step value of 1)*.
 - ▪ Input the text/data or the number you want the series to begin with in your first cell
  - ▪ Highlight the range of cells in the column that you want to fill
  - ▪ Select **Edit→Fill→Down** to fill the range with the same data
    OR select **Edit→Fill→Series** and select the step value to complete the data range

	A	B	C	D	E	F	G
				D5	= Wolitzer, Meg		
1	Ref.	Read?	Title	Author	Genre	Notes	Date Finished
2	1	X	Pride and Prejudice	Austen, Jane	literary fiction		03/03/08
3	2	X	Oracle Night	Auser, Paul	fiction		03/31/08
4	3	X	Marco Polo	Bergreen, Laurence	biography		04/03/08
5	4		The Ten Year Nap	Wolitzer, Meg			
6	5						
7	6						
8	7						
9							

active cell is D5

SORTING DATA
- ▪ Click **CTRL-A** to select the entire spreadsheet (or highlight just the range of data you want to sort)
- ▪ Select **Data→Sort** to bring up the **Sort** dialog box
- ▪ If your list has header rows (rows that define what's in the columns, and that should not be included in any sorting action, like row 1 in my example above), click the **My list has Header row** box
- ▪ Select the column(s) that you want to sort by and choose to sort in either ascending or descending order
- ▪ Click **OK**
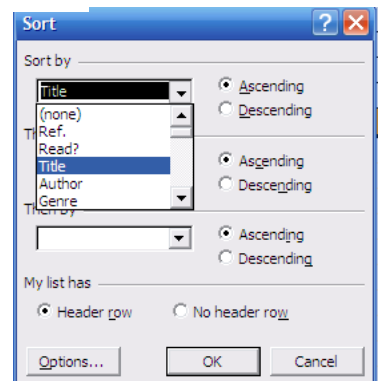
STARTING OUT continued

INSERTING COLUMNS AND ROWS
Columns will be inserted to the left and rows will be inserted above the highlighted (active) cell.
- Click in the spreadsheet where you want a column or row to be inserted
- Select **Insert→Column** OR **Insert→Row** as appropriate

DELETING COLUMNS AND ROWS
- Click on the column header (the letter) or the row header (the number for the row) to highlight everything in that section
- Select **Edit→Delete**

RESIZING ROWS OR COLUMNS
To adjust the size of a row or column, left-click on the border between the column header (eg. between the B and C in the picture below) or the border between the row and drag the mouse to the intended size.

MERGING COLUMNS OR ROWS
Merging joins 2 or more cells into one larger cell, where the resulting merged cell is always identified by the leftmost column letter and row number. In the example below, the cells A1 through G1 have been merged into 1 cell, now identified as cell **A1**. The text "**Reading List**" has been typed and centered in the merged cell.
- Highlight the cells you want to merge
- Select **Format→Cell→Alignment→Merge cells**

*Warning: Be aware that if you merge cells, the merged cells cannot be sorted unless all of the columns in the range are the same size. To sort the reading list now, you will need to highlight everything but the cell A1 and then perform your sort.

	A1		=	Reading List			
	A	**B**	**C**	**D**	**E**	**F**	**G**
1				Reading List			
2	Ref.	Read?	Title	Author	Genre	Notes	Date Finished
3	1	X	Pride and Prejudice	Austen, Jane	literary fiction		03/03/08
4	2	X	Oracle Night	Auser, Paul	fiction		03/31/08
5	3	X	Marco Polo	Bergreen, Laurence	biography		04/03/08
6	4		The Ten Year Nap	Wolitzer, Meg			
7	5						
8	6						
9	7						
10		3					

PERFORMING CALCULATIONS

Calculations can be performed across rows or down columns of data. Excel can perform hundreds of different types of calculations using special operators or functions.

▬▬▬▬ In all cases, an equal sign is necessary for Excel to recognize that a calculation is
▬▬▬▬ to be performed

| G112 | ▼ | fx | =SUM(G100:G111) | | | | |

	A	B	C	D	E	F	G	J
1		AUDIO	CHILDREN	CS	LOBBY	NEW	STACKS	TOTAL
100	Jan-06	209	1,035	61	1,945	517	3,195	6,966
101	Feb-06	219	911	21	2,027	554	2,995	6,728
102	Mar-06	234	970	31	2,232	661	3,570	7,706
103	Apr-06	185	952	25	2,041	531	3,163	6,902
104	May-06	212	875	36	1,943	59	3,196	6,858
105	Jun-06	345	899	37	2,218	881	4,253	8,636
106	Jul-06	140	308	14	1,030	315	2,004	3,815
107	Aug-06	241	471	28	1,882	644	2,751	6,020
108	Sep-06	244	883	30	1,964	635	2,930	6,696
109	Oct-06	201	981	33	2,119	641	2,964	6,944
110	Nov-06	228	961	22	2,167	686	3,099	7,166
111	Dec-06	208	727	26	1,876	603	2,821	6,265
112	TOTAL '06	2,666	9,973	364	23,444	6,727	36,941	80,702

ADDING NUMBERS

To add a column of numbers:
- Click on the cell where you want the total to appear
- ➲ Input the formula **=SUM (G100:G111)** (where G100 represents your starting cell and G111 is your ending cell)

- ➲ Alternatively, you can click the **AutoSum** button Σ on the toolbar and use your mouse to highlight the appropriate cells to be added (in our example, G100 to G111)
- Hit **ENTER** key

PERFORMING COMMON FUNCTIONS

The following are some common functions that you are likely to use on a regular basis:

| Function	Operator	Example	
Addition	+	=E112+F112	
Subtraction	-	=J112-B112-C112-D112	
Division	/	=G112/12	
Multiplication	*	=G112*12	
Average	average	=average(J100:J111)	averages the values in the range
Count	counta	=counta(A100:A111)	counts the number of items in a range
Date	today	=today()	returns today's date

PERFORMING CALCULATIONS continued

PERFORMING OTHER FUNCTIONS
Insert→Function
The Insert function dialog box allows you to select from hundreds of financial, mathematical, logical, statistical, and other functions.

- Click in the cell or range of cells where you want the result(s) of the calculation or function to appear
- Select **Insert→Function** to bring up the dialog box
- Select the function you want to perform and click **OK**
- Depending upon the function you select, additional dialog boxes will appear prompting you to choose the cells and or ranges where the appropriate data required to perform the calculation appears in your spreadsheet
- When all of the required information has been input or selected by highlighting, click **OK**
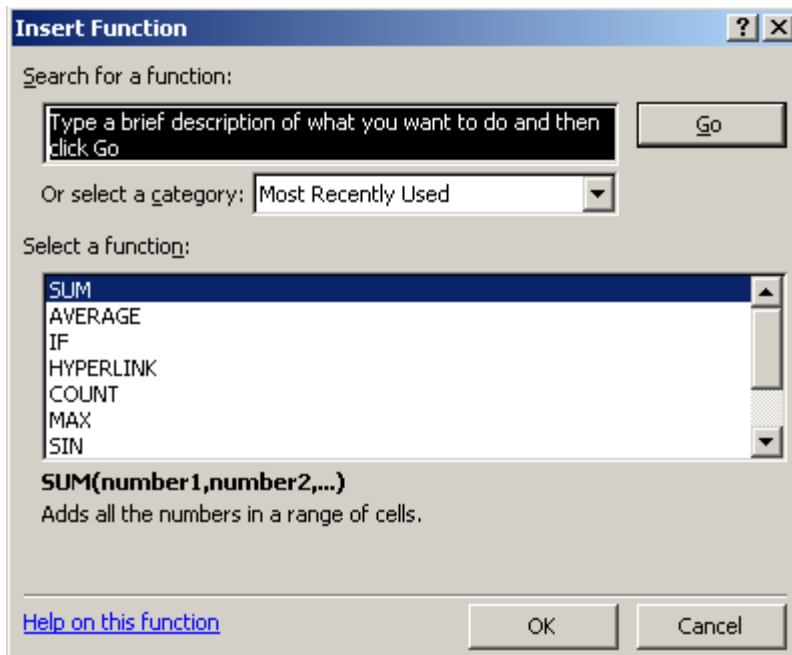
FORMATTING

Format→Cell

The format menu allows you to change the alignment of data in cells, change fonts, add borders and shading to cells, and format and add symbols (like % or $) to numbers.

- Highlight the cells, rows, and/or columns you want to format
- Select **Format→Cell** from the drop-down menu OR right-click the mouse and select **Format Cells**
- Click the appropriate tab in the **Format Cells** dialog box select formatting styles
  - ➢ **Number**: change the appearance of numbers

 | | |
    |---|---|
    | Number: | Treats number as operational number, no formatting |
    | Currency: | $XX.XX |
    | Date: | Treats numbers as dates |
    | Time: | Treats numbers as times |
    | Percentage: | Converts to percent |
    | Text: | Treats numbers as pure text |
    | Special: | Formats as zip codes, phone numbers and social security numbers |
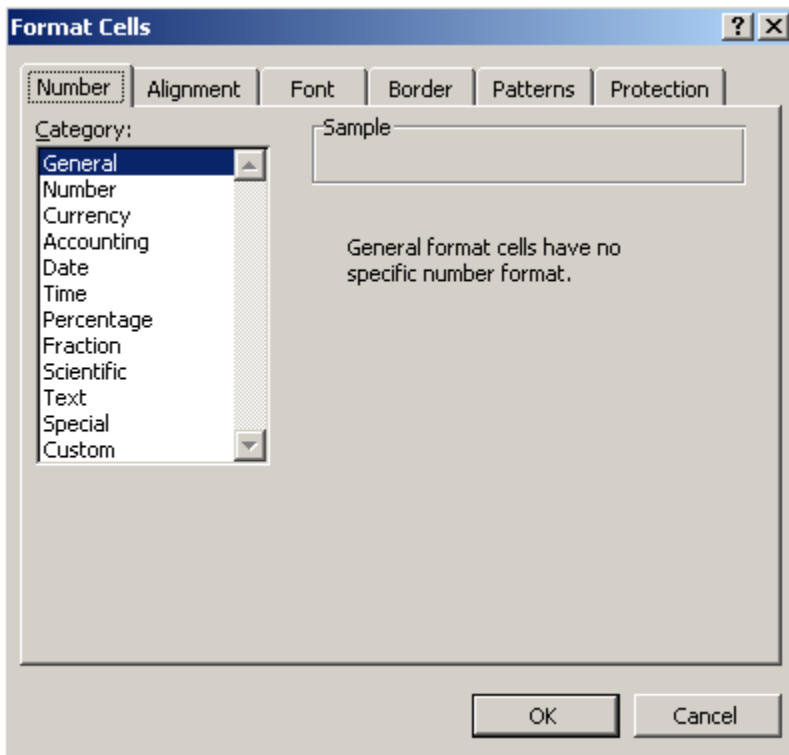
  - ➢ **Alignment**: change the position of text or data in cells, merge cells, or wrap text within a cell. When text or data is too large to fit within the confines of the cell, selecting **Wrap text** from the **Alignment** tab will enlarge the height of the row so that the entire text will be visible.
  - ➢ **Font**: change the font, size, or color, and add effects to text in the cells
  - ➢ **Border**: add different border styles to cells
  - ➢ **Patterns**: add shading in a range of colors to cells
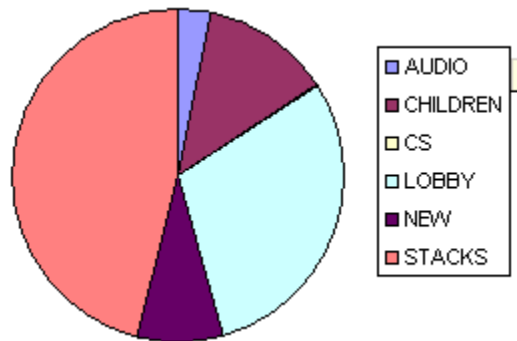
CREATING CHARTS
Insert→Chart

Charts (also called graphs) provide a visual representation of your data. They can enhance your comprehension of the data, and provide an effective way of presenting it, but the type of chart you choose to work with is extremely important. Some chart types only lend themselves to certain types of data. Three of the most common chart types are explained below:
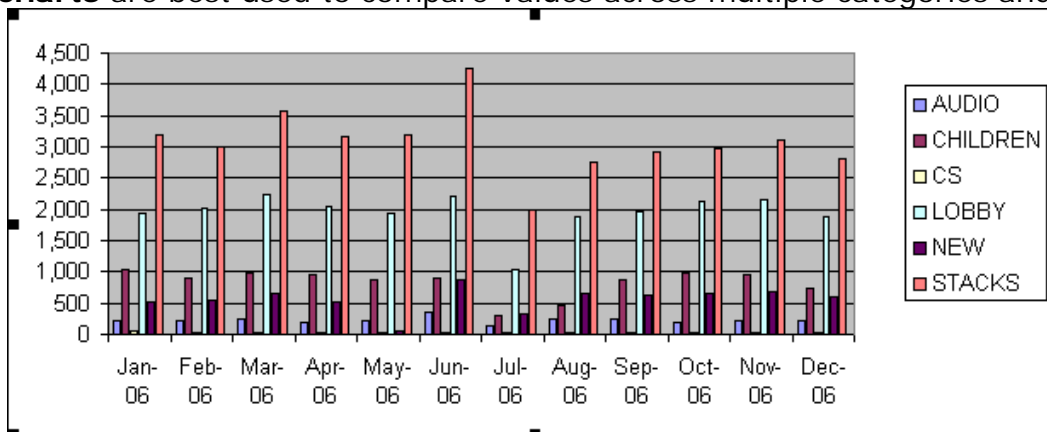
➲ Use **Line graphs** when you want to present data over periods of time, where your x-axis represents time and the y-axis represents the data values over that time period.
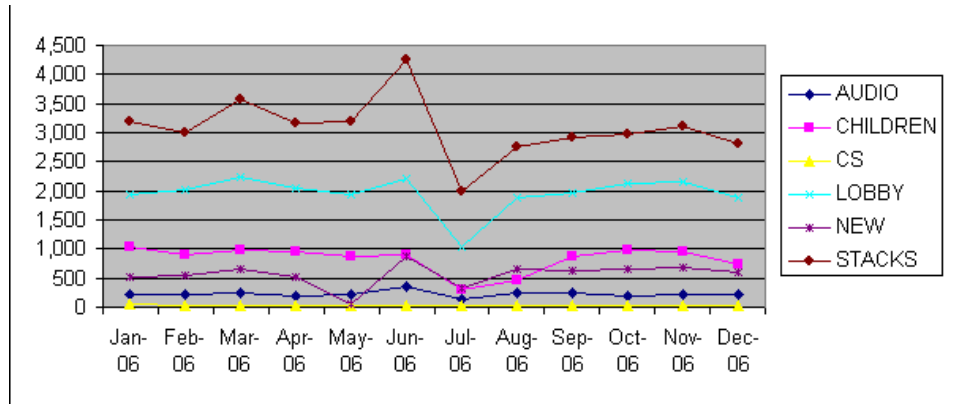
➲ **Pie charts** are especially effective for representing percentages of a total.
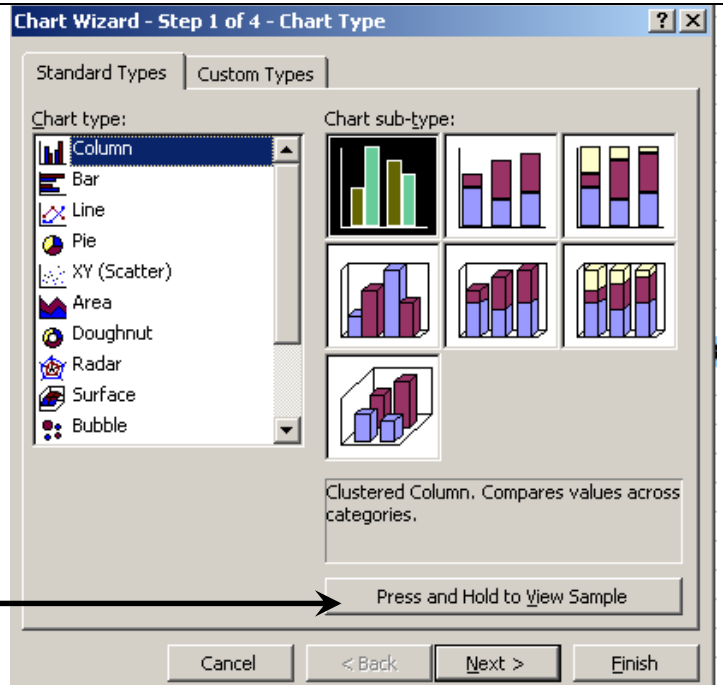
➲ **Column charts** are best used to compare values across multiple categories and across time.

CREATING CHARTS continued

|	

1. Select Chart Type
 	
  ▪ Highlight the cells in your spreadsheet that contain the data to be graphed
 	
  ▪ Choose **Insert →Chart**
 	
  ▪ Select type of chart you want
     o Column
     o Bar
     o Line
     o Pie
     o XY
     o Area
     o Doughnut
     o Radar
     o Surface
     o Bubble
     o Stock
     o Cylinder
     o Cone
     o Pyramid	

Each chart type has several sub-types to choose from. To see what each sub-type looks like, click the **Press and Hold to View Sample** *button*

  ▪ Click **Next >**

|	
2. Chart Source Data For a simple chart where the data range consists of one column or row of data plus labels (column or row headers), the highlighted data range is all you need. ▪ Click **Next>** ➲ For a more complicated chart like the one pictured here, where data may not be in consecutive columns or rows or is coming from different spreadsheets, you may need to specify what each column or row of data in your spreadsheet means and where it is coming from. Click the **Series** tab to select the data range, identify the names for the categories of data, and the x-axis labels for your chart.	
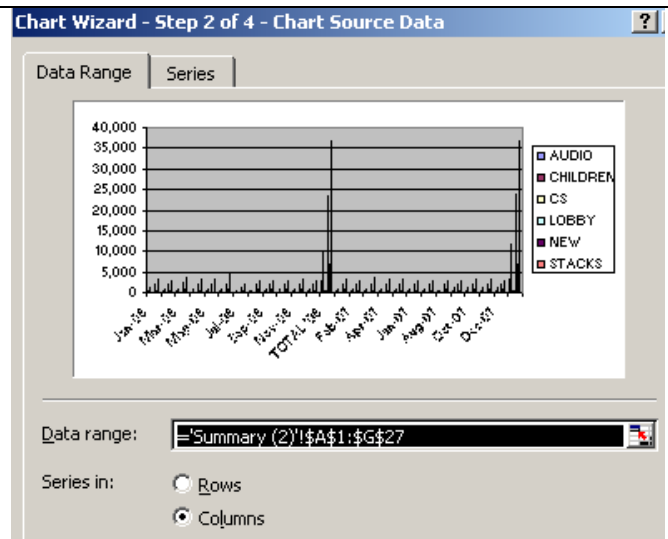
CREATING CHARTS continued

3. Chart Options
In this step, you will have an opportunity to give your chart some identifying details. Most of these options will make your chart look too busy and hard to read. However, the following are recommended to give your chart some clarity:

- *Titles*: input a name for your chart, as well as labels for the x- and y-axes.

- *Legend*: specify where you want the legend for your data to appear in relation to your chart (left, right, top, bottom, corner)

- Click **Next>** when finished choosing options.

legend
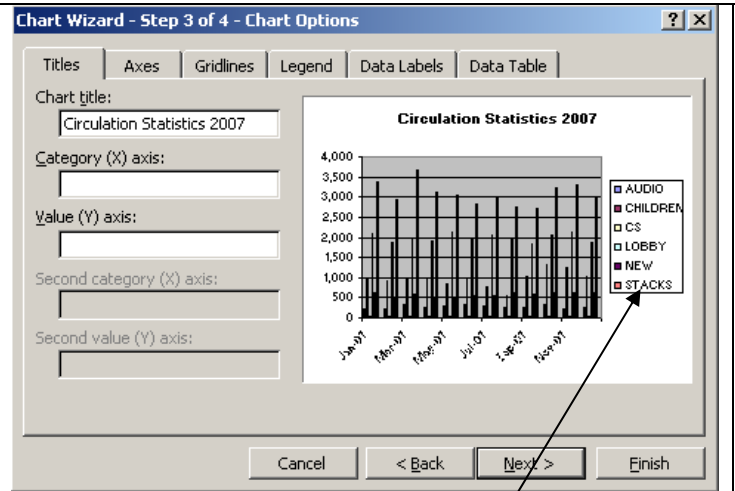
4. Chart Location
This step tells Excel where you want your chart to appear. You can have it appear in your current active worksheet or have it open up in a new sheet.

- Click New Sheet or select an existing sheet
- Click **Finish**

PRINTING
File→Page Setup

Page
- Select portrait or landscape **orientation**
- **Scaling** allows you to adjust the size of the spreadsheet on the printed page. Selecting the **Fit to** option is one way to get an entire spreadsheet (or selected print range) to print on one page. However, be aware that this may also reduce the size to such an extent that that it is impossible to read on the page.
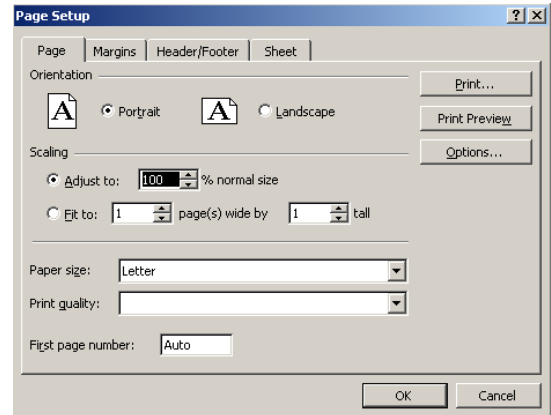
Margins
- Adjust the page margins to your desired dimensions
- Select **Center on page** to center the spreadsheet horizontally and/or vertically on the printed page

Header/Footer
- Input header and footer information
- Note that headers and footers will only appear in **Print Preview** mode and on printed documents

Sheet
Print Area: You have the option of printing the entire spreadsheet or a specified range of cells
- Click in the ***Print area*** box
- Input the print range beginning with the top & left-most cell followed by a colon and the bottom or right-most cell. Everything in between and inclusive of these cells will be printed.
- Alternatively, you can use your mouse to highlight the range of cells to print. Left-click on the icon in the far right of the ***Print area*** box. Then click and drag the mouse to highlight the range you want to print and press **Enter**
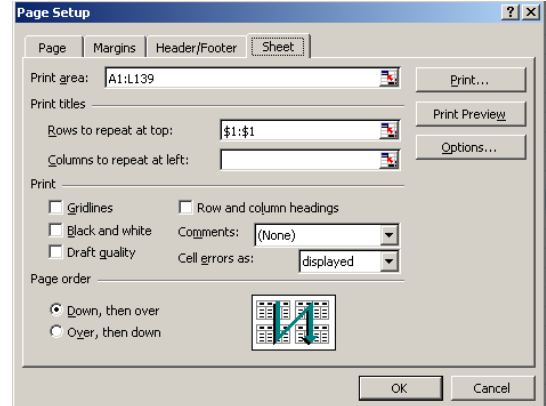
Print Titles: If you have a very large spreadsheet that will be printed over several pages, you will want your column headers and row headers to appear on every page. Otherwise, you will have data on subsequent pages, but nothing to identify what those rows and columns of data are.

To print your column and row headers on every page, click and type (or highlight as in Print Area) the cell address for the row or column to repeat on every page.

TROUBLESHOOTING TIPS

WHAT IS A CIRCULAR REFERENCE?
A circular reference is a formula that Excel cannot resolve.
The formula includes the cell where you want the result of the
calculation to appear.

For example, if the formula in cell A10 is *=A1+A10*, Excel will be
unable to calculate the result.

UNDERSTANDING ERROR VALUES
When Excel cannot understand an argument, error messages will appear in the cell. To fix the
problem, click in the cell with the error message (making it the active cell), then click in the
formula bar, and edit the formula.

Error	What it means
#DIV/0!	Formula is trying to divide by 0
#N/A	Value is not available
#NAME?	Uses a name that Excel doesn't recognize
#NULL!	Specifies an invalid intersection of two areas
#NUM!	Uses a number incorrectly
#REF!	Refers to a cell that is not valid
#VALUE!	Uses an incorrect argument or operator
#####	Produces a result that is too long to fit in the cell. Fix it by making the cell larger.

MENU OPTION COMMAND CHEAT SHEET

Try these quick commands:

CTRL+A   Selects the entire spreadsheet

CTRL+N   **File→New**
CTRL+O   **File→Open**
CTRL+S   **File→Save**
CTRL+P   **File→Print**

CTRL+Z   **Edit→Undo Last Action**
CTRL+Y   **Edit→Repeat Last Action**
CTRL+X   **Edit→Cut**
CTRL+C   **Edit→Copy**
CTRL+V   **Edit→Paste**
CTRL+F   **Edit→Find**
CTRL+H   **Edit→Replace**
CTRL+G   **Edit→Go To**
CTRL+D   **Edit→Fill Down**
CTRL+R   **Edit→Fill Right**

CTRL+1   brings up the ***Format Cells*** dialog box

And one more thing…
The **ALT** key
In addition to the quick commands above, you can also use **ALT** key and the underlined letter in the main menu to bring up each submenu. For example **ALT+F** brings up the file menu, **ALT+E** the Edit menu, etc…

APPENDIX