

Intermediate MS EXCEL 97 for PC



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This document has been prepared for you by W&MF staff so that you can further your understanding of Microsoft Excel 97 for Windows NT. This document is meant to serve as a future reference for you. Not all the information mentioned in this document will be covered in the **Intermediate Excel** class. Before taking this course, you should have completed the Introduction to MS Excel, and be familiar with the Windows NT computing environment or have completed the Introduction to the PC class.

What you should know before taking this course:

- Using the Mouse
- Window Control
- File Management -- Open, New, Worksheet Name, Save and Save As....
- Data Entry
- Editing -- Cell Selection, Insert, Delete, Clear, Cut, Copy, Paste, Fills
- Basic Formatting -- Column Width, Row Height
- Formula Entry -- Writing a Formula, using the Function Wizard, Relative and Absolute Referencing, Autofill
- Printing -- Worksheet

What you will learn in this intermediate course:

- Review -- Basic Controls, Cell Selection, Formula Entry
- Making a Chart -- Using the Chart Wizard
- Editing a Chart -- Moving, Resizing, Changing Chart Type, Adding and Deleting Axis Labels, working with Legend
- Formatting a Chart - Chart Type, Chart Area, Plot Area, Data Series, Axis, Legend, Data Point
- Sorting
- More Worksheet Features -- Quick Insert and Delete, Split Screen, Freeze Panel, Hide and Unhide, Outlines

Items covered in Beginning Excel that are not necessary for this course:

- Basic Formatting -- Font, Point Size, Text Alignment, Border, Patterns
- Printing

Before We Begin....A little Review



• Data Entry

- You can enter data in a cell by selecting the cell and typing. To enter data quickly into several adjacent cells, first select the range of cells (highlighting). You can then make cell entries, one after another, in successive cells. See *Table 1 - Basic Controls* below for a quick reference guide on moving around in Excel 97.

Action	Keys	
	General Scrolling	When Highlighted
Move down one cell	down arrow	enter
Move up one cell	up arrow	shift+enter
Move right one cell	right arrow / tab	tab
Move left one cell	left arrow / shift tab	shift tab

Table 1 - Basic Controls

***Important reminder:** Do not use the arrow keys when you are entering data or when you have cells highlighted. Using your arrow keys will result in selecting a new active cell.

- You can complete a cell entry or an edit you've made to an entry by clicking the *enter box*  or by pressing ENTER. You can cancel an entry or edit by clicking the *cancel box*  or by pressing ESC.

• Cell Selection

- Before we can edit any cell entry/entries, we must select the cells we want to edit. See *Table 2 - Cell Selection* for a quick reference guide on cell selection.

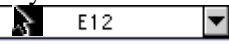
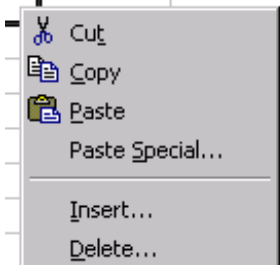
Action	Keys
Selecting a single cell	1. Mouse / 2. Arrow keys / 3. Using Coordinate 
Selecting an entire row	1. Click on the row header of the row you want to select
Selecting an entire column	1. Click on the column header of the column you want to select
Selecting an entire worksheet	1. Click on the box where the column and row headers meet
Selecting multiple adjacent cells	1. <u>Drag</u> the mouse over the cells you want to select or, 2. Using the mouse or arrow keys, select the first cell (top most corner) of the cells you want, then <u>hold down the shift key</u> and select the last cell (bottom most opposite corner) of the cells you want.
Selecting multiple adjacent columns or rows	1. Drag the mouse over the row/column header of the rows/ column you want to select, or 2. Using the mouse or arrow keys select the first row / column of the rows/ column you want, then <u>hold down the shift key</u> and select the last row / column header of the rows / columns you want.
Selecting multiple non-adjacent cells	1. Using the mouse, select the first cell of the cells you want, then <u>hold down the control key</u> and select the rest of the cells you want.
Selecting multiple non adjacent rows or columns	1. Using the mouse select the first row / column of the rows/ column you want, then <u>hold down the control key</u> and select the rest of the rows / columns you want.

Table 2 - Cell Selection

• Quick Edit Menu



To activate the Quick Edit Menu:

- Press the right hand mouse button.

To activate the commands in the Quick Edit Menu:

- Drag the mouse pointer to the command you want and release the mouse button to activate.

What's the difference between Clear and Delete?

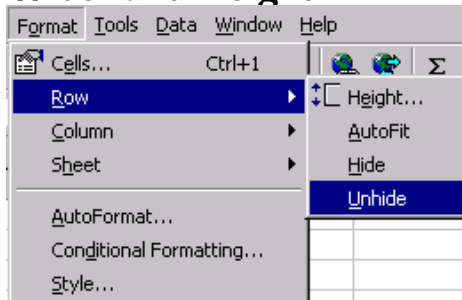
- If a cell content is **cleared**, its value is zero and the cell remains. However when a cell is **deleted**, the cell is completely removed causing adjacent cells to shift upward or to the right. This causes two main problems.

Aesthetics - Clearing a cell lets the cell remain while deleted cells will have to be replaced by an already existing nearby cell. Thus, shifting your worksheet data around.

Formulas - if you enter the formula =A1*B1 in a cell and then cleared cell B1, the result of the formula will be zero (A1*0). But if B1 was deleted, the cell containing the formula =A1*B1 is changed to =A1*#REF! and produces the #REF! error value to let you know that you need to adjust your formula.

- This is a common error among Excel users who are just trying to clear the existing cell of old data or formats so that they can enter a new set of data or formats. But by deleting the existing cell, they no longer have the correct cell(s) or space to enter their new information.

• Width and Height



- To change the height or width of a cell:

Select the cell you want to format

Activate the **Format** menu and chose **row** then **height** or **column** then **width**

- changing a cell width will automatically change the width of the whole column and changing a cell height will automatically change the row height.

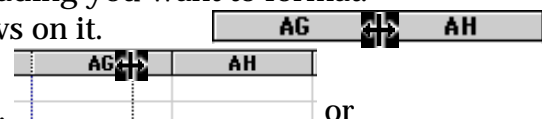
Using auto fit to change the width of a column and height of a row.

AutoFit will automatically fit your cell to the exact size of the entry in you cell. However, if a column is selected when you activate the **AutoFit** command, Excel will automatically size each cell to the widest cell in that particular column or make the row height equal to the tallest entry of the row if a row is selected.

Changing Column Width and Row Height without the using the Format menu

Put cursor on the line between the column or row heading you want to format.

The cursor should turn into a symbol with two arrows on it.



Now drag the symbol to your desire height or width.

Double click the mouse button to autofit the entire row or column.

Worksheet Basics

• Creating a Series

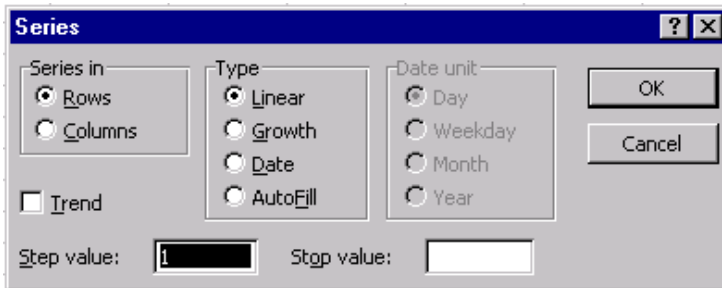
- Several types of data repeat in logical sequence. Days of the week and months, for example, repeat predictable patterns, These data types and their sequences are listed in the following table. Excel can repeat several such sequences when you create a series. You can create a series using the **Fill Series** menu or by **dragging**.

To create a series with the Fill command:

In the first cell where you want to start the series, enter a starting value.

Select the cells in the row or column in which you want to extend the series, starting at the cell in which you entered the starting value of the series.

From the **Edit** menu, chose **Fill Series...** .



- Chose the series type (linear, exponential)
- Chose the linear increment, or growth factor you want to use
- Chose when you want Excel to stop extending the series.
- Hit **OK** when finish

To create a series by dragging:

Select a range of two cells and enter the first two values for the series. Leave the range selected.

Move cursor over to the bottom right corner of the selected range called the **fill handle**.



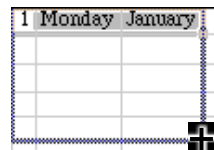
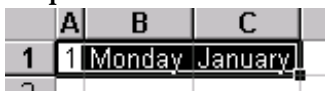
Cursor should turn into black cross.



Drag the fill handle and release the mouse button at the end of the range into which you want to fill.

- Excel determines the incremental changes between the cells and adjusts the values of the series by the same amount. Excel in not always accurate with its determination.

Step 3



Step 4



- Result

• Formula Entry

A formula is a simple way to evaluate a series of values. Each formula starts with an equals sign “=” followed by either a *cell reference* (such as “A1”) or a *value* (such as “1875”). Usually a formula contains several series of values of cell references each separated by a *math operator*. (see Table 3)

A typical formula might look like this = X2 * (D2 - B2)

** Remember to use parenthesis to show what operations should be done first.

Function	Sign
Division	/
Multiplication	*
Subtracting	-
Addition	+
Power	^

Table 3 Math Operators

• Relative Referencing

- A relative reference tells Excel how to find another cell, starting from the cell containing the formula. Reference such as C4 and F7 are relative references.
- When you copy formulas and functions, Excel automatically adjusts the cell references so that it works correctly. Excel calls this method of adjusting the references relative addressing, which means that as you copy the cell to another location, Excel adjusts the references in a relative manner. Thus if you copy the formula “A1+B2” in cell E1 over to cell F3, Excel adjusts the formula to “B3+C4” by “adding” a column and two rows to the references in the current function.

• Absolute Referencing

- An absolute reference tells Excel how to find a cell based on the exact location of that cell in the worksheet.
- When you have a reference that must stay fixed, you mark it as an absolute reference. An absolute reference is a cell reference that Excel does not adjust when you copy or move the cell.

To mark an absolute reference:

Select the cell reference that you must mark as an absolute reference

Mark an absolute references in your formula with a dollar sign (\$) before the column letter or the row number or both.

Ex. Your formula multiples cell A5 with cell C1 (=A5*C1) and you copy the formula to another cell, both references will change. You can create an absolute reference to cell C1 by placing a dollar sign (\$) before the parts of the reference that do not change. To create an absolute reference to cell C1, for example, add dollar signs to the formula as follows:

=A5*\$C\$1

How can I decide when to use Relative or Absolute References?

Use a relative reference (such as B5) if you want to refer to cells relative to the cell containing the formula, even if you copy the formula. Use an absolute reference when you want to refer to the same cell regardless of where the formula is located on the worksheet.

For Example:

	X	Y	AA
1	Month	Spending	% of Total
2	January	\$ 1,025	=Y2/\$Y\$14
3	February	\$ 1,542	
4	March	\$ 1,624	
5	April	\$ 1,300	
6	May	\$ 987	
7	June	\$ 1,245	
8	July	\$ 1,841	
9	August	\$ 1,623	
10	September	\$ 1,436	
11	October	\$ 1,154	
12	November	\$ 1,312	
13	December	\$ 1,614	
14	Total	\$ 16,703	

- If you want to know the monthly spending as a percentage of the total spending. You would divide January Spending by Total Spending. Thus, you would write the formula “=Y2/\$Y\$14” or “Y2/Y14” for the month of January.

- If you wrote “=Y2/\$Y\$14”, as you fill or copy the formula to the cell AA3 the formula will automatically change to “=Y3/\$Y\$14”. The relative reference “Y2” ,January Spending, will change to “Y3”, February Spending, while your absolute reference “\$Y\$14”, Total Spending”, stays the same.

	X	Y	AA
1	Month	Spending	% of Total
2	January	\$ 1,025	6.14%
3	February	\$ 1,542	=Y3/\$Y\$14

- correct use of reference

	X	Y	AA
1	Month	Spending	% of Total
2	January	\$ 1,025	6.14%
3	February	\$ 1,542	=Y3/Y15

- wrong use of reference

- However, if you wrote the formula “Y2/Y14” for the month of January, as you fill or copy the formula to the cell AA3, the formula with the relative reference “Y2” ,January Spending, will change to “Y3”, February Spending. But the relative reference “Y14” which referred the Total Spending will change to “Y15”, which has a value of Zero. This will lead to a wrong value.

You could type the formula into each cell. Thus having to avoid the error of relative referencing.

• Functions

- A function is a special prewriting formula that takes a value or values, performs an operation, and returns a value or values. Functions can be used alone or as building blocks in other formulas. Using functions simplifies and shortens formulas in your worksheets, especially those that perform lengthy or complex calculations. For example, instead of typing the formula “=A1+A2+A3+A4+A5”, you can use the Sum function Σ to build the formula =SUM(A1:A4). The necessary data such as “A1:A4” are called arguments.

To input any function:

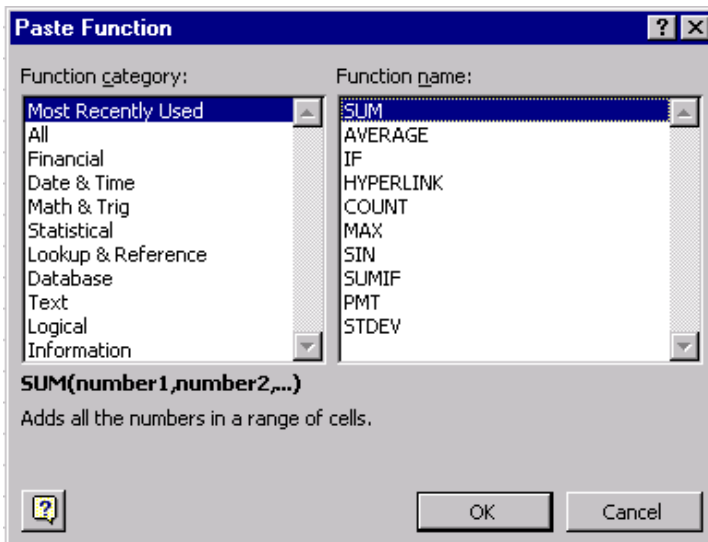
Write in any function with the correct arguments into your formula. or

Click on the **FUNCTION WIZARD** Icon , or go to **Function...** under the **Insert** Menu

- **Using the Function Wizard**

The Function Wizard will let you paste the correct function with the right inputs for the necessary arguments.

- **Step 1**

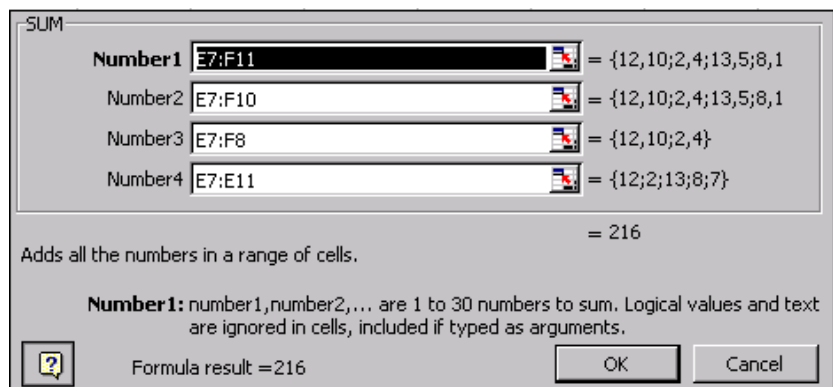


- Step 1 of the function Wizard allows you to pick the function that you want.

- Simply highlight the function that you want and hit **OK**.

- **Step 2**

- Step 2 of the Function Wizard will give you a description at the bottom detailing how many arguments can be used and what will be done to them. Depending on which argument that you are at, Excel will give you a description on what values are needed in the specific argument.



Number1, Number2,... refer to selected areas. With this option, groups of cells from different parts of the sheet can be included into the function.

To input the range of data necessary for each argument:

Type in the correct range or

Select the range from your worksheet using your mouse. or

If the require data input for the argument is a function, then hit the function wizard icon next to the argument and repeat steps one and two to create the necessary input. When you are done, hit the **OK** button or hit **Cancel** to change your function.

- **Copying values of formulas to Adjacent Cells**

You can create a series using the Data menu or by dragging.

To create a series with the Fill command:

Select the cell or cells you want to copy and the adjacent cells you want to fill.
From the **Edit** menu, chose **Fill and the direction you want to fill**.

To create a series by dragging:

Select the cell or cells you want to copy.

Move cursor over to the bottom right corner of the selected range called the **fill handle**.
Cursor should turn into black cross.

Drag the fill handle and release the mouse button at the end of the range into which you want to copy.

☞ You can always un-fill by dragging in the opposite direction.

Excel determines the incremental changes between the cells and adjusts the values of the series by the same amount. If you don't want Excel to adjust for the incremental change, hold down the **control** key.

Making A Chart

Creating A Chart

Where do you want your Chart?

Before making a chart in excel, first you must decide where to put the graph. There are two options. Make the chart on the current worksheet or make the chart on a new worksheet.

If you have lots of data and only making a chart out of a few data points, make a chart on a new worksheet so that your worksheet does not become too cluttered. But if you want your data next to the chart, you might opt for the chart on the current worksheet.

To create a chart on a New worksheet:

Select the data you want to plot. Include cells containing labels for rows and columns that you want used in the chart.

Click the **Chart Wizard** tool or go under the **Insert** menu and select **Chart**.

Go through all of the steps, then select the option **As a new sheet**.

To create a chart on the Current worksheet:

Select the data you want to plot. Include cells containing labels for rows and columns that you want used in the chart.

Click the **Chart Wizard** tool or go under the **Insert** menu and select **Chart**.

Go through all of the steps, then select the option **As object in** and select the desired sheet.

- **Step 1**

Amounts Spent on Food			
	January	February	Total
Breakfast	\$ 45.00	\$ 41.00	\$ 86.00
Lunch	\$ 60.19	\$ 56.89	\$ 117.08
Dinner	\$ 76.35	\$ 70.64	\$ 146.99
Snacks	\$ 103.06	\$ 50.32	\$ 153.38

- Step 1 of the Chart Wizard is to select all of the cells that will be used in the chart.

- Activate the Chart Wizard by clicking on the chart button or selecting it from the **Insert** menu.

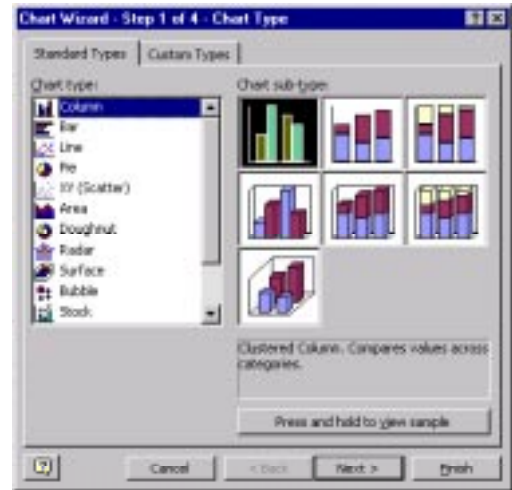


- **Step 2**

- Step 2 of the Chart Wizard allows you to select the type of chart that you want.

- A select format for the chart type can be selected in the menu named **Chart sub-type**.

- Select **Next** when you are done or **Cancel** if you have made a mistake in the previous step.



What's the difference between a Line chart and a (XY) Scatter chart?

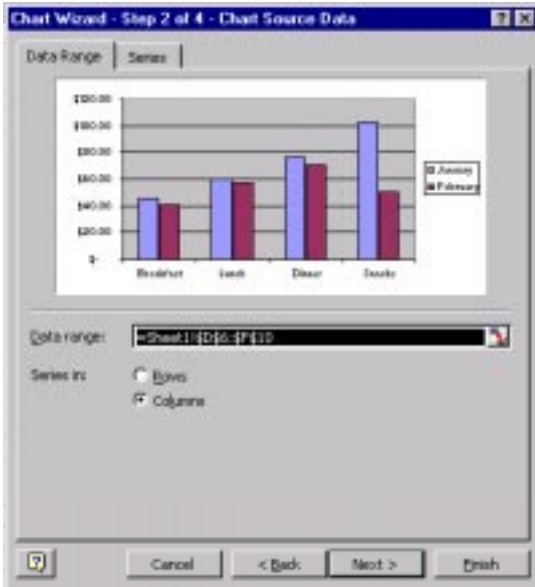
Don't let the picture fool you. Many users are unaware of the difference between a line and scatter chart. Know the difference.

The line chart emphasizes time flow and the rate of change, rather than amount of change. Which means that the line chart will plot each data point one tick mark apart regardless of how far apart the x-data is. It only shows the difference between one point to the next.

The xy- scatter however will show the relationship or degree of relationship between the numeric values in several chart data series. This means that Excel will calculate the scale and tick-mark labels for the x-axis, just as it does for the y-axis. You will have the ability to plot a line through xy-scatter.

An Example: If you were to plot pig numbers vs. how much they weigh. The numerical value for the pig should not affect how the data is plotted since all pigs are equal. However, if you were plotting Time vs. growth, both time and growth are dependent and must be plotted according to scale.

• Step 3



- Step 3 of the Chart Wizard allows you to select the data range of your chart if you haven't done so already. Click on the small chart button to the right of the entry field to select new data.

- The Series option allows you to manipulate the data that the chart displays.

- Select **Next** when you are done or **Back** if you have made a mistake in the previous step.

• Step 4

- Step 4 of the Chart Wizard allows you to preview how your chart will look. You can also add titles for the x-axis and y-axis as well as change gridlines, the legend, and other features of your chart.

- Select **Next** when you are done or **Back** if you have made a mistake in the previous step.



Data Series - select **Rows** if your data was enter in a rows (across) or select **Columns** if your data was enter in a column form (up/down).

Use First Column(s)/Row(s) for Category (x) axis labels - use **1** if your first column/row of your selected data are your label for the x axis or use **2** if your first 2 rows of your selected data are your labels for the x axis. Select **0** if the first column/row of your selected data is data that should be plotted.

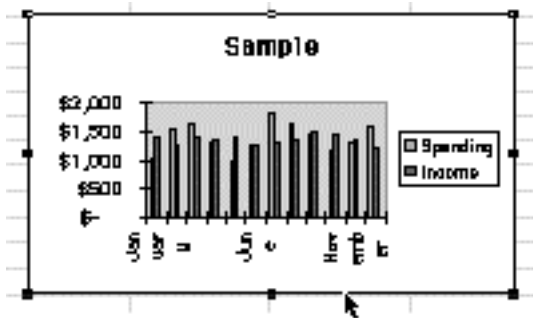
Use First Column(s)/Row(s) for Legend Text. - use **1** if your first column/row of your selected data are your label for a legend or use **2** if your first 2 rows of your selected data are your labels for a legend. Select **0** if the first column/row of your selected data is data that should be plotted.

- You have now created a chart.....



Don't worry if you forgot to add a chart title or an axis label or even picked out the wrong chart, we can always edit the chart after we are done.

Working With A Chart



- **Selecting A Chart**

- Select a chart by clicking one time on the chart. Selected chart will have eight tiny boxes around the edge called handles.

- **Resizing the Chart**

If the chart you have created is too big or too small for your needs. You can resize any charts by:

Select the chart you would like to resize.

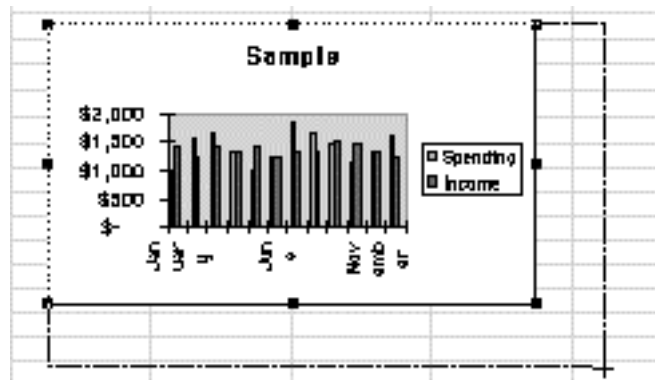
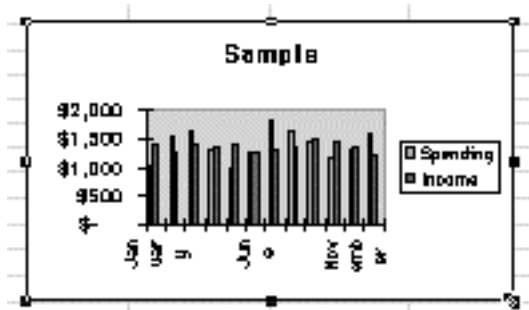
Selected chart will have eight tiny boxes around the edge called handles.

Select the appropriate handle.

When the handle is placed over a handle, it turns into a double arrow.

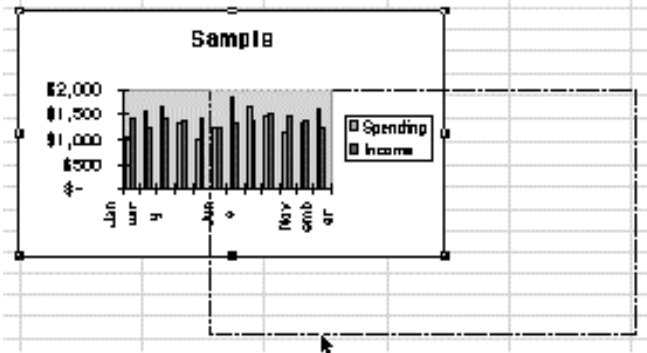
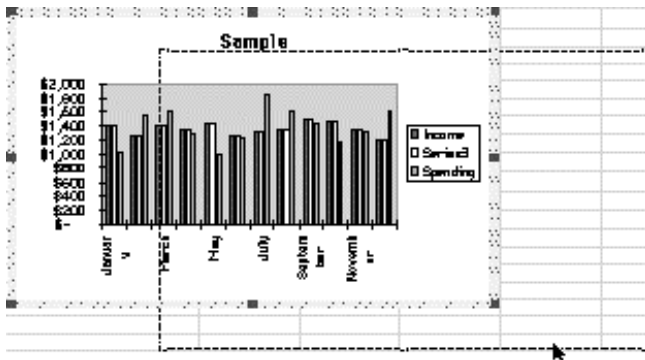


☞ Drag the chart to a new size.



- **Moving a Chart and its Contents**

Moving a chart is similar to move a cell. Select the chart you want to move and drag it to the new location.



You can move an open chart by dragging the chart by its border.

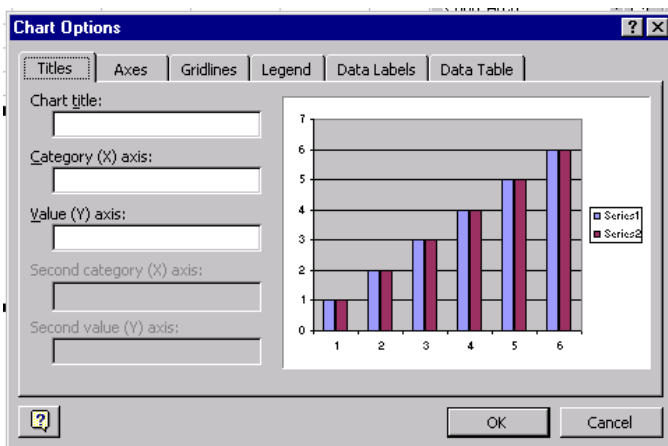
You can also move the Title, Legend, Axis Labels and even the plot itself from the opened chart.

Select the Object you are trying to move.

Selected Object within the chart should have boxes around it.

Move the object by dragging the object by its border.

Editing a Chart



The Chart menu has the option **Chart options** that allows you to modify the chart after you had finished. Lets say you wanted to add a title you forgot when you were making the chart. Click on the chart to activate the chart functions (the chart menu only appears when the charts are selected). Click on the **Titles** tab to type in your title. The same goes for the legends,

Another option is to use the chart bar that

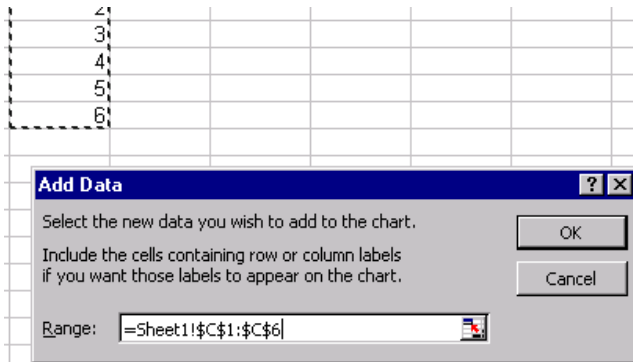


- **New Series or Data**

To add a new series or Data to a chart

Select the Chart you want to add the new data or series to.

Under the Chart menu, select **Add data...**



- Select the new data that you want to add.
- Depending on whether it was a row or not, Excel will add the data to your chart accordingly.

• Delete

To Delete Legend, Chart Title, Axis Labels or any Series

Select the object you want to delete (remember selected object will have handles on them)
Hit the **delete** key or go to the **Edit** menu and select **Clear All.** and **Clear Series** for deleting series.

• Format

With the **Format menu**, you can customize you chart by changing the chart type, the font of the chart text, the horizontal and vertical alignment and rotate text to a vertical orientation. You can also change the pattern and color of the chart and the color, and style of you chart text.

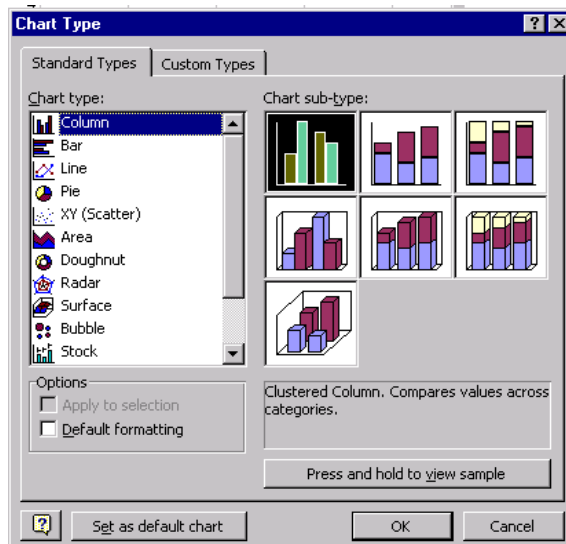
Remember that you have to have you chart selected before you can select the items of the chart and format it.

The first line of the **Format** menu changes with whatever item you have selected.

✓ Chart Type

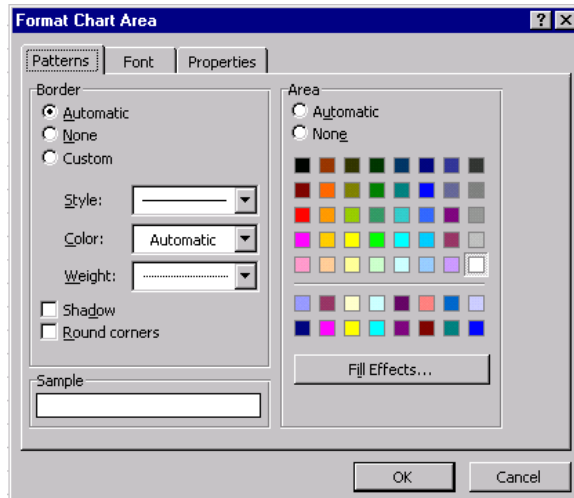
You can change the type of chart by clicking on the chart selection button.  on the chart bar or Open the chart you want to change and select **Chart Type..** under the **Chart** menu.

Using the Chart Type menu will allow you to have more choices such as Style of chart, and Series Order.



✓ Chart Area

You can change the background color to the chart or the text on the chart by double-clicking the chart area. The format window will appear and allow you to make the changes in the **Patterns** tab.

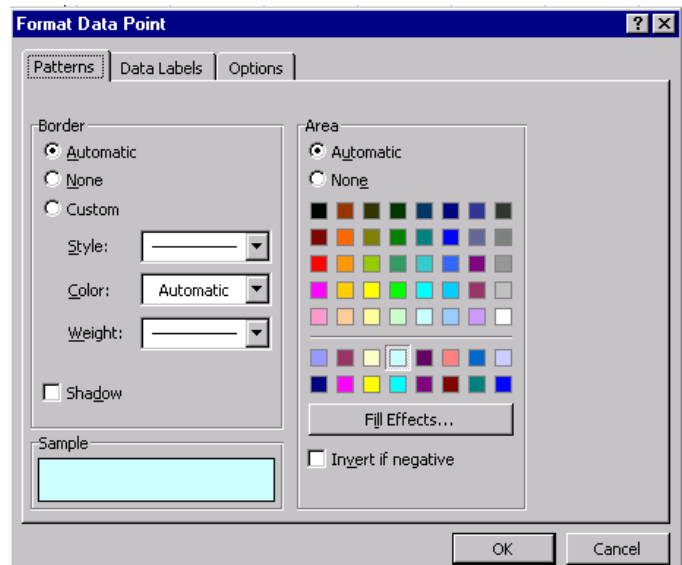


✓ Plot Area

The default plot border and area for Excel 5.0 is gray. You can change that by double-clicking on the plot area to bring up a format window and changing the color of the area and border to your desire color.

✓ Data Series

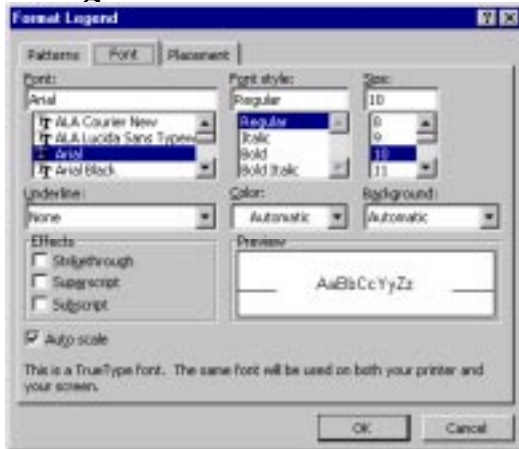
- By selecting and formatting the data series you can rename your series, change the pattern (color and markers) of your series, and add error bars or data labels to your series.



✓ Axis

By double-clicking the Axis you want to change, you can change the scale of the plot, the tick marks of the axis, the orientation and font of the labels.

✓ Legend



You can change the font, placement and pattern of the Legend.

More Worksheet Features

• Sorting

Excel allows you to sort the data that you have by Ascending or Descending order. Excel will sort alphabetically or by numbers, unless its in a series format that excel recognizes such as Dates or Months.

To sort the data that you have:

Select the data and all the related data that you want sorted. (This is very important, don't just select the data that you are going to sort or don't select data that is unrelated to the data being sorted.)

From the **Data** menu, select **Sort...**

From the **Sort Menu**, chose the data column or row that you want to sort and its order.

If you have column or row headers, it will ask you to sort by the header name.

(Remember that you are not sorting independently here. In the example, you are telling

Excel to sort the last name first and them from the last name sort the first name.)

Common mistakes in sorting

There are two common mistakes in sorting. Many users forget or don't select all the related data. In the example, even though you are trying to sort by name, you must select their phone number and addresses. Otherwise Excel will not sort the un-selected objects. In Excel 5.0, Excel will sometimes it give you a warning that there is data adjacent to the selected data and do you want Excel to select it before you sort.

The second mistake many users make is that they don't use the dependent sorting. Selecting the data and sorting it by their last name and then re-selecting the data and sorting it by first name will give you a list alphabeticalize by first names. This is different than the dependent sorting which will give you a list alphabeticalized by it last and first name.

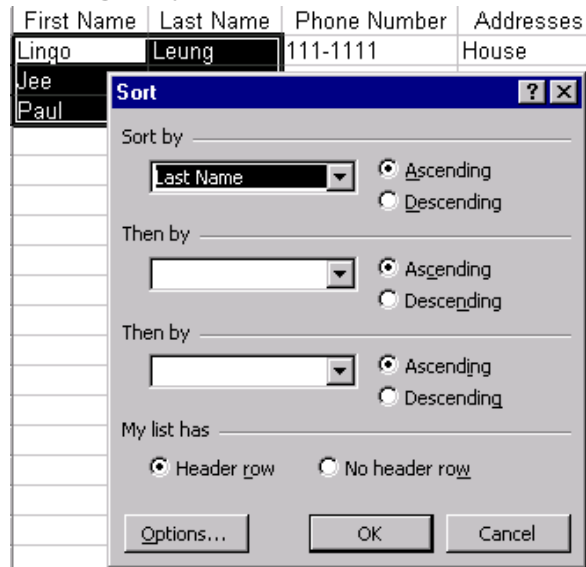
Right Way



Result:

First Name	Last Name	Phone Number	Addresses
Lingo	Leung	111-1111	House
Paul	Shim	333-3333	Den
Jee	Won	222-2222	Box

Wrong Way



Result:

First Name	Last Name	Phone Number	Addresses
Lingo	Leung	111-1111	House
Paul	Shim	222-2222	Box
Jee	Won	333-3333	Den

• Quick Fill Menu



To activate the Quick Fill Menu, hold down the control key when using auto fill.

• Quick Insert and Delete

To quickly insert new cell(s), column(s) and row(s):

Select the cell(s) or column(s) or row(s) you are trying shift to open space for the new row or column or cell.

Position the mouse pointer over the fill handle.



Press Shift and drag the fill handle  down for row or toward the  right for columns or either direction for cells and select the number of rows or columns or cells you want to insert.

Release the mouse button

To quickly delete cell(s), column(s) and row(s):

Select the cell(s) or column(s) or row(s) that you are trying to delete

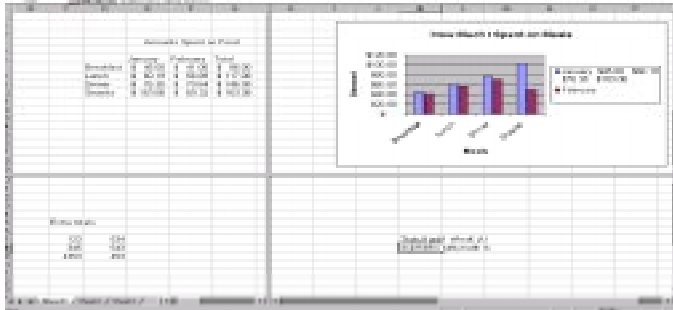
Position the mouse pointer over the fill handle.

Press Shift and drag the fill handle  up for row or toward the  left for columns or either direction (up or left) for cells and select the rows or columns or cells you want to delete. (Dragging past the selection will result in inserting new cells)

Release the mouse button.

• Split Screen




- Sometime when your worksheet becomes really enormous, that are data you want to see that can't be fit into one screen. For example, if you wanted to enter on column AZ and you row headers are on column A. Excel will allow you to split you screen to allow you to view more than one part of your worksheet at the same time.



- You can split the window in 4 by selecting **Split** under the **Window** menu.

The windows of Excel can display 2 (or 4) separate parts of the worksheet simultaneously.

Simply click and hold down the mouse button on the small black area just left of the left scroll arrow or just above the up scroll arrow.

Your cursor should change from  to  (if you are clicking above the up scroll arrow) or  (if you are clicking left of the left scroll arrow). This means that you can now place one the window dividers anywhere along the length of the axis. Each axis can have but one divider, but both the X and the Y axis can have it's own axis, for a total of 4 different "panes".

• Freeze Panel

If there is a certain part of the worksheet that you always want on your screen (like your row headers)

After you have split the screen and isolated the column(s) or row(s) you like to freeze, select **Freeze Panel** from the **Window** menu. Excel will freeze the upper right panel.

Month	Spending	Income
January	\$ 1,025	\$ 1,400
February	\$ 1,542	\$ 1,250
March	\$ 1,524	\$ 1,400
April	\$ 1,300	\$ 1,350
May	\$ 987	\$ 1,420
June	\$ 1,345	\$ 1,250
July	\$ 1,841	\$ 1,320
August	\$ 1,623	\$ 1,340
September	\$ 1,436	\$ 1,500
October	\$ 1,154	\$ 1,450
November	\$ 1,312	\$ 1,360
December	\$ 1,614	\$ 1,200

Month	Income
January	\$ 1,400
February	\$ 1,250
March	\$ 1,400
April	\$ 1,350
May	\$ 1,420
June	\$ 1,250
July	\$ 1,320
August	\$ 1,340
September	\$ 1,500
October	\$ 1,450
November	\$ 1,360
December	\$ 1,200

- **Hide and Unhide**

Excel allows you to hide columns and rows. You might want to hide data that is only use for calculation but is not necessary for the report or data that is confidential to some parties. Hidden column(s) are not printed.

To hide of unhide a column(s) or row(s):

Select or column(s) or row(s) that you are tying to hide

Under the **Format** menu, select **Column/Row Hide or Unhide**.

- **Outlines**

Outlines allows you to hide and unhide columns and rows quickly. Outlining makes it easy to move through many rows of data, rearrange parts of a worksheet, and create charts form similar levels of data from different parts of a worksheet.