

# Getting Started with Excel 2003

A University of Michigan Library Instructional Technology Workshop

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## ELEMENTS OF AN EXCEL DOCUMENT

When you open Excel, a blank workbook is automatically opened. A **workbook** is a file with one or more sheets; each **worksheet** (sometimes called “spreadsheet”) is a “page” in the workbook where you enter and work with your data. Each workbook starts with three sheets, but you can add more by going to the **Insert** menu, and selecting **Worksheet**. To change the name of the sheet, double-click on the sheet’s tab and then type the new name.

An Excel worksheet is made up of a series of **columns** (named with letters e.g. A, B, C...) and **rows** (named with numbers e.g. 1, 2, 3...) that define the cells – for example, “E3”. To enter data (text or numbers), click in the appropriate cell and start typing. When you type, the data goes into the currently selected cell, called the **active cell**. All the data you enter in the active cell appears in the Formula bar. If you need to change the data, you can double-click on the cell to activate the cursor in the cell, or click in the Formula bar and make the change there.

Selection reference (column and row) displayed in the **Name** box

Formula bar

Column headings

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1				Homework										
2	Last	First	ID-last 5	1	2	3	4	5	6	7	8	9	10	Total
3	Ape	Grape	19-1103	7	10	7	7	8	6	8	7	8	10	78
4	Bird	Big	30-5234	7	9	6	7	6	7	7	8	6	8	71
5	Brown	Charlie	19-2467	7	9	7	8	9	8	9	10	6	7	80
6	Bunny	Easter	20-9383	9	9	9	9	10	9	9	10	8	9	91

Row headings

Worksheet's name

Active Cell

To navigate more quickly in your worksheet, use the arrow keys on the keyboard to move left, right, up and down. In addition, you can use the following other keystrokes:

- *Enter* accepts your entry and moves the active cell down one; hold down the *Shift* key as well and you will move back up.
- *Tab* accepts your entry and moves the active cell to the right. Again, hold down the *Shift* key as well as the *Tab* key and you will move to the left.

The *Esc* key or red X in the Formula bar will abort your change.

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## RESIZING AND HIDING COLUMNS AND ROWS

You can change a column's width by putting your cursor between the one column letter heading and the next (between B and C at right) and dragging left or right when you see the two-headed arrow. Double-clicking on that same spot will "autofit" the column, making the column as wide as the largest piece of text/data in that column.

The same technique works for rows; put your cursor between the two row heading numbers until you see the two-headed arrow, and then drag or double-click.

To hide a column or row, right-click (*Control*-click on the Mac) on the letter or number for the column or row (A, B, C, etc. or 1, 2, 3, etc.) and select *Hide*. To unhide a column or row, select the columns or rows before and after the missing column or row, right-click, and select *Unhide*. You can also go to the **Format** menu, then **Rows** or **Columns** to hide or unhide a row or column, as well as set the exact height or width.

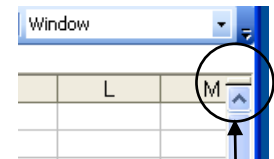
Column B's right edge

	A	B	C	D
1				Hom
2	Last	First	ID-last 5	1
3	Ape	Grape	19-1103	7
4	Bird	Big	30-5234	7
5	Brown	Charlie	19-2467	7
6	Bunny	Easter	20-9383	9

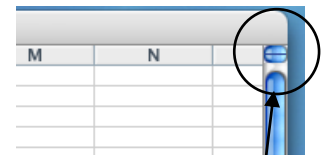
## USING PANES TO CREATE SPREADSHEET HEADERS

If your data set is large and it is difficult to see which values correspond to what heading, you can make the top rows and leftmost columns into headers that will stay put at the top and left as you scroll around the page. You first must drag the panes into position:

1. At the top of the vertical scroll bar, there is a thick bar. Move your cursor over this bar and it changes to two parallel lines with an arrow.
2. Click and drag to divide the window vertically into panes. Adjust the split so that the first row (or two) is the only row in the top pane.
3. To set a horizontal pane, use the similar thick bar at the lower right corner of the scroll bar and drag it to the left.



Split bar on PC



Split bar on Mac

You can scroll inside each pane independently. Usually, the top and left are headers, so you don't really want to scroll them. Note, you don't have to set them both; you can use just the vertical or just the horizontal. Once you have the windows correctly arranged, go to the **Window** menu, then **Freeze Panes** to lock them in place.

To get rid of the split or to be able to adjust the panes again, go to the **Window** menu and then **Unfreeze Panes** or **Remove Split**.

Once you have the column and row headings in place, you can scroll left to right and top to bottom and they will remain in place. This can be very useful to manipulate your data – see the [Sorting Data](#) section on page [15](#) for more information.

	A	B	C	D	E	F
2	Dog	Under	13-8957		77	68
9	Fudd	Elmer	19-4412		72	72
10	Woman	Wonder	13-1977		85	80
11	Williams	Bill	21-9427		70	66
12	Johnson	Joe	13-8435		82	88
13	Leprechaun	Lucky	13-1313		75	93
14	Brown	Charlie	19-2467		80	85

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## USING THE AUTOFILL COMMAND

Excel has a feature that helps you automatically enter data. If you are entering a predictable series (e.g. 1, 2, 3...; days of the week; hours of the day) you can use the **AutoFill** command to automatically extend the sequence. You can also use this for formulas – set up the formula once, then use the AutoFill to propagate it to the other cells.

## USING AUTOFILL FOR SEQUENCES

For Excel to know how to fill in the series, you usually need to provide two or three examples. In the case of months, weekdays, and hours, you only need to provide one example.

1. Type in either the first element (e.g. January or any month) or the first two elements (e.g. 1, 2) of a series.
2. Select the cell(s) you just typed in.
3. Move the cursor over the little block in the lower right corner of the active cell, and the cursor changes to a hairline plus sign (+), as opposed to the usual block plus sign.
4. Click and hold on the fill handle and drag to the right (or down) to fill in the series. Note that Excel can only extend series by adding to the sequence (that is, the next month, adding the same number, etc.), not other kinds of math such as square, multiplication, etc.

	A	B	C	D	E	F
1						
2		January	February	March		
3						
4						
5						

## USING AUTOFILL FOR FORMULAS

To use AutoFill with formulas, insert the formula and make sure it works (more about working with formulas later in this document!).

1. Select the cell(s) with the formula and move the cursor over the little block in the lower right corner of the active cell, and the cursor changes to a hairline plus sign (+), as opposed to the usual block plus sign.
2. Click and hold on the fill handle and drag to the right (or down) to fill in the other cells. Excel automatically adjusts the formula for the row it is now on (so, in the example at right, Big Bird's total formula would read  $=SUM(D4:M4)$  and so on.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1				Homework											
2	Last	First	ID-last 5	1	2	3	4	5	6	7	8	9	10	Total	Average
3	Ape	Grape	19-1103	7	10	7	7	8	6	8	7	8	10	78	
4	Bird	Big	30-5234	7	9	6	7	6	7	7	8	6	8		
5	Brown	Charlie	19-2467	7	9	7	8	9	8	9	10	6	7		
6	Bunny	Easter	20-9383	9	9	9	9	10	9	9	10	8	9		
7	Clay	Santa	20-6167	8	6	8	7	8	8	7	8	7	8		

### A Note about using AutoFill with functions:

If you want a constant reference (for example, each column should be divided by a certain cell's data), add a dollar sign (\$) in front of that cell's reference in the Formula bar. For example, if  $=D8*P\$8$  is in the Formula bar and you AutoFill from this cell, the next cell would read  $=D9*P\$8$ , changing the first cell, but keeping the second cell reference constant – otherwise, it would read  $=D9*P9$ . Another way to accomplish this would be to define the constant and then reference the constant, as seen in the [Creating Weighted Averages](#) section on page 8.

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## USING FORMULAS AND FUNCTIONS

**Formulas** in Excel are useful to perform various mathematical, statistical, and logical operations. You can type in a formula (though you have to be sure it's exactly right) or you can use Excel's preset formulas called **functions**. Excel can perform simple tasks like a calculator; for example, if you typed in `=5*6` then pushed *Enter/Return* on the keyboard, what would appear in the cell would be 30. If you selected the cell again, though, you would see the **formula** `=5*6`. If you type in the formula, you must start with an equal sign, so Excel knows that the data in the cell is a formula. After the `=`, what comes next depends on what you're trying to do. If you were multiplying numbers (like in the above example), you would just type in the appropriate numbers and mathematical symbol (`*` for multiply).

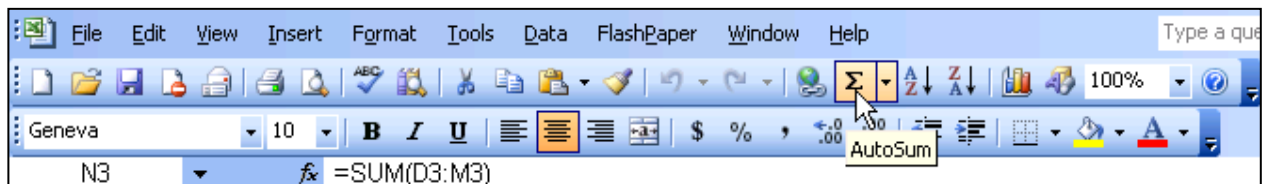
The power of Excel, however, is to do more complicated calculations, including calculations for the cell itself, no matter what the content (meaning, if the content of the cell changes from a 5 to a 8, for example), and more complex formulas (such as averages, sums, etc., beyond basic math). Just like a basic formula, you need to start with the equal sign. After that, you would put the function name, then the range of cells inside parentheses, separated with a colon. For example: `=SUM(B2:B5)`.

	A	B	C	D
1		Houra Worked		
2		6		
3		10		
4		14		
5		20		
6	Month Total:	=SUM(B2:B5)		
7				

Luckily, Excel has many preset functions, so you don't have to remember exactly what to type in – just remember the name of the function.

## USING THE AUTOSUM COMMAND

Since adding is used so frequently in Excel, there is an icon on the Standard Toolbar that will attempt to do it automatically. When you use the AutoSum command, Excel guesses what data you want to sum together (usually a block of cells next to the cell where the formula is). To use the AutoSum, go to the cell where you want the summation result to appear, click on the AutoSum icon, and verify that Excel's guess is correct. If it is not correct, select the cells you wish to add to the formula by clicking on the first cell and dragging to the last one. Then press *Enter/Return* on the keyboard. The sum of the data of the selected range of cells will appear in the cell with the formula. If any of the values in this range of cells are changed, the cell with the summation formula will automatically update to reflect the new sum.



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

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## INSERTING A FUNCTION

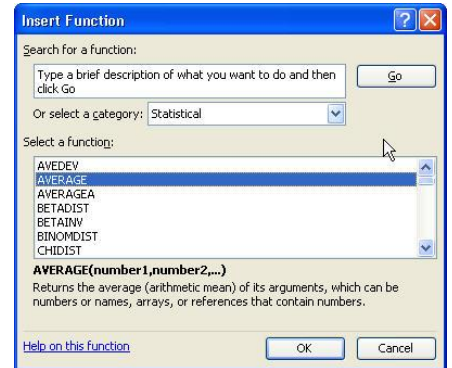
There are several ways to insert functions. Before anything, you need to make sure your cursor is in the cell in which you want the result. Once in the correct cell, you can

- Go to the **Insert** menu and select **Function...**
- Click on the arrow next to the **Auto Sum**  icon to get the list of functions, or
- Click the **Paste Function**  icon in the Formula Bar (in the Standard Toolbar on the Mac).

All methods lead you to the same place – the **Paste Function** dialog box – which gives you a list of operations that Excel can perform.

Choose a category from the *Select a category:* pulldown menu (PC) or list (Mac) and then choose a particular function from the *Select a function:* pulldown (*Function name:* area on the Mac).

Another dialog box opens which asks you to select the cells you would like to involve in the formula. To select, use the mouse to click on the first cell and drag through the cells you would like to add. Note that for each function, this second window will look different.



If you're not sure how to use a particular function, you can click the *Help on this function* link in the **Insert Function** dialog box, and that will bring up Excel's Help.

Once the function is in the cell, you can copy and then paste it into another cell to do the same function for that different range of cells. You can also use the **AutoFill** command (click cell with the function, then drag to the right or down). The formula adjusts automatically for the new values.

As mentioned before, if you want a constant reference (for example, each column should be divided by a certain cell's data), add a dollar sign (\$) in front that cell's reference in the Formula bar. For example, if `=D8*$P$8` is in the Formula bar and you AutoFill from this cell, the next cell would read `=D9*$P$8`, changing the first cell, but keeping the second cell reference constant – otherwise, it would read `=D9*P9`. Another way to accomplish this would be to define the constant and then reference the constant, as seen below in the [Creating Weighted Averages](#) section.

There are so many different functions in Excel that it would be difficult to cover them all, but we will include a few below in addition to the AutoSum that was explained above on page [6](#).

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## CREATING WEIGHTED AVERAGES EXERCISE

Suppose the final exam is 50% of the grade, and the homework and midterm are 25% each. To make a weighted average, each score is multiplied by the decimal equivalent of its weight, and the weighted scores are added up. The only restriction on a weighted average is that the weights must sum to 1 (or 100%). You could type this in by hand, for example:  $=0.25*q3+0.25*r3+0.5*s3$  but the problem with that is you would have to get into each cell to make the change if you need to alter the weights for a different semester or class.

### Quick Reference:

1. Enter weights
2. Select cells and name weights
3. Insert the **sumproduct** function
  - a. *Array 1* = first student's scores
  - b. *Array 2* = Weights
4. Click OK and AutoFill

Excel has a function called **sumproduct**, which adds the products within a range of cells, so by using that function, we can avoid having to type in all that in the example above. In addition, because functions can refer to cell contents – and thereby change as the cell content changes – we use the cell references for our weights, and so if they change, our formula results will automatically change. For example, if the weights change (so the final exam is now worth 40%, and the midterm and homework are now 30% each), as long as the cells themselves are referenced (rather than the specific numeric value), the formula will automatically update.

If we add the weights above each column heading, insert the sumproduct function, choose the student's scores (*Array1*) and then the weights (*Array2*), the formula will be correct for the first student. If we try to use the AutoFill command, however, as we discussed in the [Using AutoFill for Formulas](#) on page 5, both cell references will move down – so the second student's formula would be incorrect (as shown at right).

We can either use the \$ (dollar sign) to “lock in” the cell references for the weights, or we can define a named area referencing the cells with the weight information, and then use that name in the formula to reference those cells.

Before we start, create a new column for the weighted averages for all of the students. This way we can compare the weighted averages with the non-weighted averages.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
			Weights:	0.25	0.25	0.5										
1st	First	ID-last 5	HW	Midterm	Final	Weighted Score										
2nd	Grape	19-1103	78	81	90											
3rd	Big	30-5234	71	77	85											
4th	Charlie	19-2467	80	89	86											
5th	Easter	20-9363	91	92	85											
6th	Santa	30-5167	77	94	88											
7th	Captain	14-5349	78	78	77											
8th	Under	13-8957	83	95	92											
9th	Elmer	19-4412	80	82	85											
10th	Magilla	20-1835	89	95	91											
11th	Joe	13-8435	77	80	80											
12th	Lucky	13-1313	83	82	88											
13th	Bill	21-9427	91	75	93											
14th	Wonder	13-1977	72	80	85											

	A	B	C	D	E	F	G	H	I	J
			Weights:	0.25	0.25	0.5				
1st	First	ID-last 5	HW	Midterm	Final	Weighted Score				
2nd	Grape	19-1103	78	81	90	84.75				
3rd	Big	30-5234	71	77	85					
4th	Charlie	19-2467	80	89	86					

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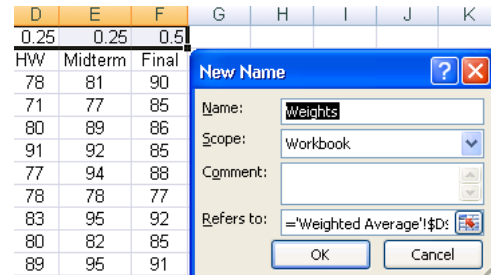


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## DEFINING A NAMED AREA

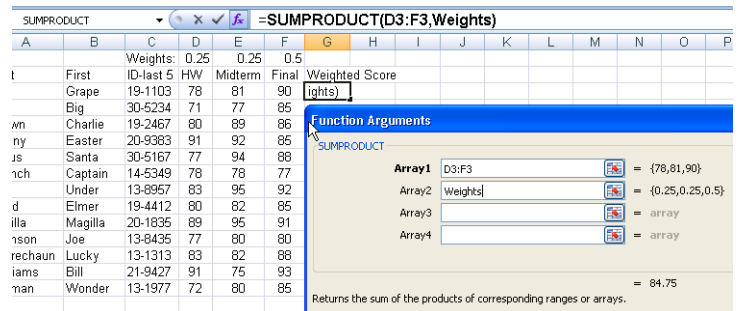
1. Enter a set of weights for each score at the top or bottom of each grade column (e.g. .25, .25, .50). Make sure the weighting adds up to 1.
2. Select the cells containing the weights.
3. Go to the **Insert** menu, select **Name**, and then **Define....**
4. In the New Name dialog box, type a name in the *Name:* field – note, Excel may guess at a name if an adjacent cell seems to be the label.
5. If you've already selected the cells (as we suggested in step 2), the *Refers To:* field will already have the correct cell information.
6. Click **OK** to accept the name for these cells – in our example here, “Weights”.



## USING THE NAMED AREA IN A FORMULA

In the Weighted Score column you created, click in the empty cell for the first student's score. To insert the sumproduct function:

1. Click the **Paste Function** (fx) icon on the toolbar, and in the subsequent dialog box, select *Math&Trig* in the *Select a category:* pulldown menu, then select *SUMPRODUCT* in the *Select a function:* list, and click **OK**.
2. Select the cells with the first student's scores for *Array1*.
3. Type in the name *Weights* (or whatever you called it) in *Array2*. Note this field is case-sensitive - you'll know you have it correct with the contents of the cells displays next to the field, and the result will display in the lower right of the dialog box.
4. Click **OK** to exit the dialog box.
5. Use the fill handle to extend the formula to all students.



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## SUBSTITUTING LETTER GRADES EXERCISE

Rather than entering letter grades by hand, Excel can do it for you. This also allows you to try different grading curves with a minimum of effort. We will create a table that has the numeric value of the student scores and the corresponding letter grade, and then use the **vlookup** function (vertical lookup) to compare each student's score to the table and return the proper letter grade.

1. Create a column for the students called **Grade** (or whatever you want).
2. Off to the side, add two other column headings for **Scale** and **Letter Grade**. This area is what we will compare to the student's score.
  - a. Under **Scale**, enter a straight scale by typing 0, 60, 70, 80, 90, down the column. For automatic grade assignment, you **must start with the low score** and increase as you go down.

B	C	D	E	F	G	H	I	J	K	L
	Weights:	0.3	0.25	0.5						
					Weighted					Letter
rst	ID-last 5	HW	Midterm	Final	Score	Grade			Scale	Grade
rape	19-1103	78	81	90	84.75				0 E	
g	30-5234	71	77	85	79.5				60 D	
harlie	19-2467	80	89	86	85.25				70 C	
aster	20-9383	91	92	85	88.25				80 B	
anta	30-5167	77	94	88	86.75				90 A	

### Quick Reference:

1. Create columns for scale and grades
2. Select the scale and letters and name them
3. Insert the vlookup function
  - a. *Look\_up value* = first students score
  - b. *Table\_array* = Scale
  - c. *Col\_index\_num* = 2
4. Click OK and AutoFill formula

- b. Under **Letter Grade**, enter 'E', 'D', 'C', 'B', 'A'. Your scale can be as detailed as you'd like (meaning, you can use A, A-, B+, B, etc.), but you need to set that up before you name the area (as in steps 3-6 below). If you change your mind later, you will need to redefine the area.

To use the same scale for all of the students, we will name that area, and then use the name in the formula (as we did with the weighted averages). Otherwise, if we copy the formula down (or use AutoFill), the references to the cells that contain the scores and grades would change, and the result would be incorrect.

3. Select the cells containing the scale and the letter grades, but not the headings themselves (as shown in the picture above).
4. Go to the **Insert** menu, then **Name**, and then **Define....**
5. In the New Name dialog box, type a name in the *Name:* field, for example, "scale."
6. If you've already selected the cells, the *Refers To:* field will already have the correct cell information. Click *OK* to accept the name.

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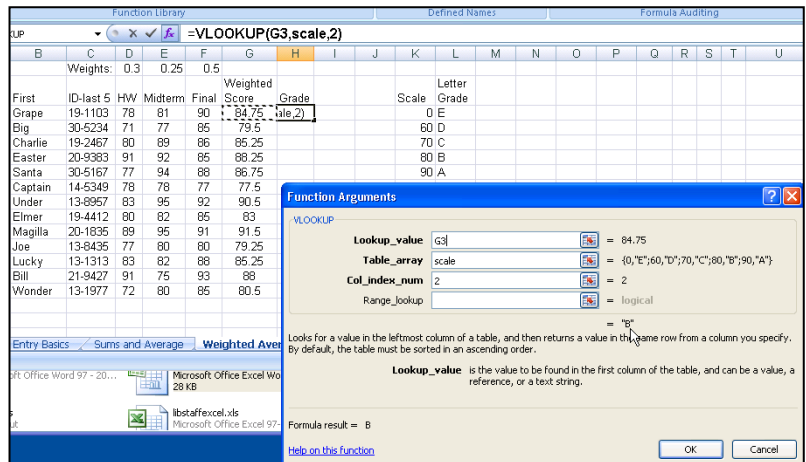
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Now we're ready to use that newly named area to assign grades. The **vlookup** function looks up a value in the first column of a table (where the values in the first column are increasing) and returns the value in any other column of the table. In our case, then, we will compare the student's weighted score to the first column of the table (our scale) and return the value in the second column (the letter grade). Because we have defined this area with a name, if we change the scale to grade on a curve (so, to get a B you only need 75 instead of 80, for example), the letter grades will automatically adjust.

7. Put your cursor in the **Grade** column for the first student, click on the **Paste Function** () button, select *Lookup & Reference* in the *Select a category:* pulldown menu, then select *VLOOKUP* in the *Select a function:* list, (short for vertical table lookup), and select *OK*.
8. In the **Function Arguments** dialog box:
  - a. Click in the *Lookup\_value* field, and then click on the first student's weighted score.
  - b. In the *Table\_array* field, type in what you called the scale and letter grades area – remember, this is case-sensitive, but you'll know you're correct if the scale and letter grades appear to the right of the field (as in the example at right).
  - c. In the *Col\_index\_num* field, put in the column number that has the result you would like to appear – in our case, it's column **2** that has the letter grades we want to appear next to each student's weighted score. The correct letter grade should appear to the right and below the fields in the dialog box.
  - d. Note the *range\_lookup* argument is not bold. That means it's optional.
  - e. Click *OK*, and the grade that corresponds with the student's score should appear.
9. Use the fill handle to fill the formula in to the rest of the students. Note that we don't have to worry about the reference to our scale because we used a name.



First	ID-last	HW	Midterm	Final	Score	Grade	Scale	Letter
Grape	19-1103	78	81	90	84.75	B	80	E
Big	30-5234	71	77	85	79.5	D	60	D
Charlie	19-2467	80	89	86	85.25	C	70	C
Easter	20-9363	91	92	85	88.25	B	80	B
Santa	30-5167	77	94	88	86.75	A	90	A
Captain	14-5349	78	78	77	77.5	F	50	F
Under	13-8957	83	95	92	90.5	A	90	A
Elmer	19-4412	80	82	85	83	D	60	D
Magilla	20-1835	89	95	91	91.5	A	90	A
Joe	13-8435	77	80	80	79.25	F	50	F
Lucky	13-1313	83	82	88	85.25	C	70	C
Bill	21-9427	91	75	93	88	B	80	B
Wonder	13-1977	72	80	85	80.5	D	60	D

You can change the curve to something else (e.g. 55, 65, 75, 85) and see how that influences the grades.

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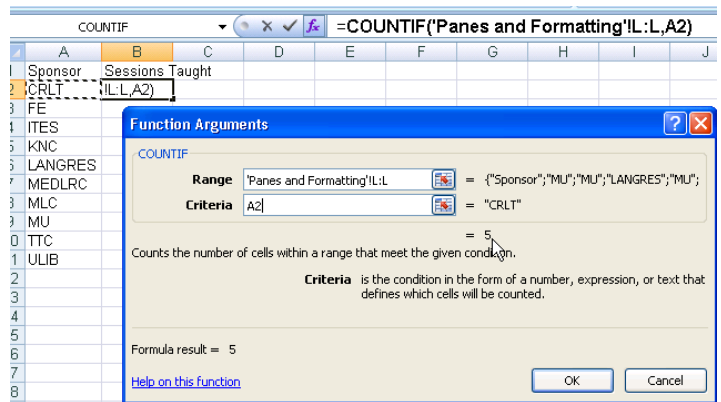
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## COUNTIF EXERCISE

COUNTIF is a useful function that will only count the data if the data meets certain criteria. It is an easy way to get a count of unique values – staying with the example above, let's say we want to count how many sessions each sponsor taught. We can use the advanced filter (as described above) to select unique values (so, one occurrence of each sponsor) and then copy and paste them to a new spreadsheet.

1. As with any function, place your cursor in the cell where you would like the result to display.
2. Go to the **Insert** menu and select **Function....**
3. In the Paste **Function** dialog box find the *countif* function and click the *OK* button.
4. In the dialog box, click in the *Range* field and then select the data you wish to count – in our example, the *Panes and Formatting* sheet, column *L*. Notice that items in the column will display to the right of the *Range* field.
5. Click in the *Criteria* field and then click on the cell that contains the data you wish to count – in our example, cell A1. Again, the contents of that cell should display to the right of the *Criteria* field, and the result should display below.
6. Click *OK* to exit the dialog box.



Since we've referenced cells in both fields of the dialog box, you can use the AutoFill feature as we've discussed before.

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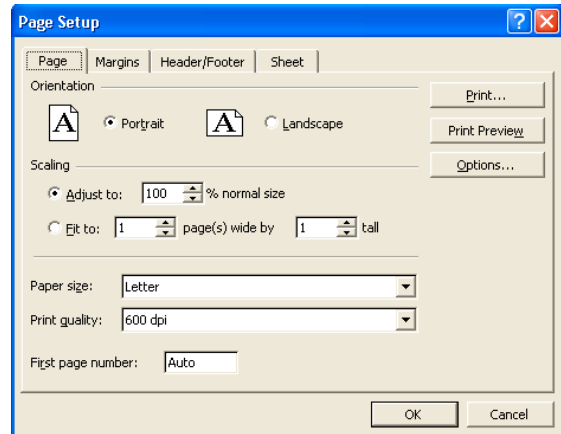
## FORMATTING THE WHOLE DOCUMENT

When you go to the **File** and choose **Page Setup**, the Page Setup dialog box appears with four tabs to help you format your worksheet.

### PAGE OPTIONS

Under the *Page* tab, you can set your worksheet's orientation, scaling, and printer options. In the *Scaling* section, you have the option to print the normal size of your worksheet, or you can fit your worksheet to a set number of pages. The second option may reduce the size and readability of a worksheet, depending on the size.

If you have used the **Page Break View** (see the section on page 14) to resize the pages, you will see the *Adjust to:* has been changed. You can put in 100% to reset it to normal.



### MARGINS AND HEADER/FOOTER OPTIONS

Under the *Margins* tab, you can edit the size of the margins of the spreadsheet as well as the Header or Footer area.

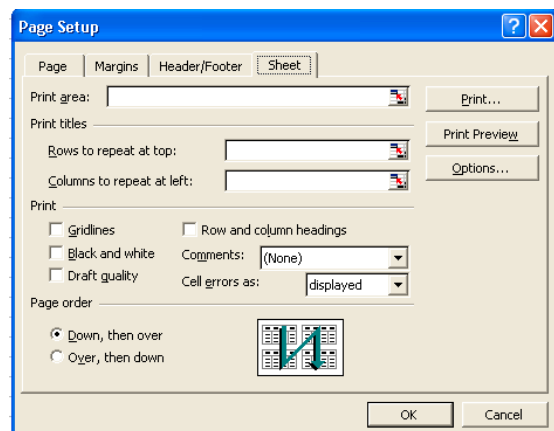
Under the *Header/Footer* tab, you can choose a standard header/footer from the list, or create your own by clicking on *Custom Header...* or *Custom Footer...*

### SHEET OPTIONS

The last tab is the *Sheet* tab. In the *Print Area:* box, you can specify specific cells by typing or using the button (📄) provided.

On a worksheet that will be printing on multiple pages, you are given the option to reprint certain rows/columns on top/left of each printed page. Using the *Rows to repeat at top:* and *Columns to repeat at left:* boxes, you can choose the rows/columns to have printed on each page.

You choose to print gridlines (rather than having to add a border to all of your cells) by checking the appropriate box under the *Print* section of this dialog box. Check any of the other boxes that you feel will be best for your document.



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## PAGE BREAK PREVIEW

As data in your worksheet accumulates, it can exceed the size of a single page. **Page Break Preview** gives you a big overview of how your worksheet breaks into pages. Go to the **View** menu and then choose **Page Break Preview**. Adjust where the page breaks onto the next page by the page breaks by clicking and dragging the blue borders with your mouse. To return to the normal view, go to the **View** menu, and then choose **Normal**.

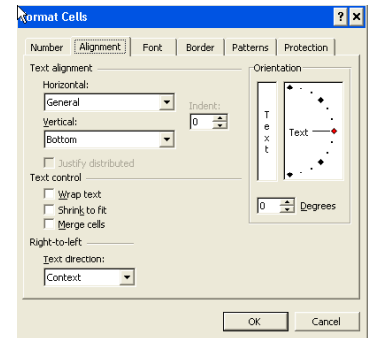
## FORMATTING CELLS, ROWS, AND COLUMNS

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You can format the font, number, alignment, border, pattern, etc. by selecting the cells, rows or columns you want to change then going to the **Format** menu, and then **Cells...** Choose **Cells...** even if you have a whole row or column selected, because you are still changing the formatting the cells themselves in that row or column.

The **Format Cells** dialog box has a different tab for each type of formatting:

- **Number:** Changes the format of the number. For example if the data in column A should be currency, choose the *Number* tab, then select the *Currency* category.
- **Alignment:** Changes the alignment and orientation of the text. You can also choose to wrap text in a cell in this tab, or merge cells.
- **Font:** Changes the type of the font, its size and color.
- **Border:** Inserts borders around the select cell(s).
- **Patterns:** Changes the background color of the selected cell(s).
- **Protection:** Locks the cell(s)' formula or hide it.



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## FILTERING DATA

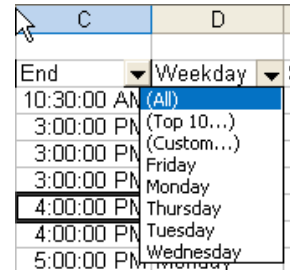
In addition to sorting, you may find that adding a **filter** allows you to better analyze your data. When data is filtered, only rows that meet the filter criteria will display, and other rows will be hidden. With data filtered, you can then copy, format, print, etc., your data, without having to sort or move it first. To activate the AutoFilter feature, go to the **Data** menu, then **Filter**, and then select **AutoFilter**.

You will notice that all of your column headings now have an arrow next to the heading name.

Click on the arrow next to the heading by which you want to filter, and you will see a list of all the unique values in that column – choose the criteria you wish to match, and only those will now display.

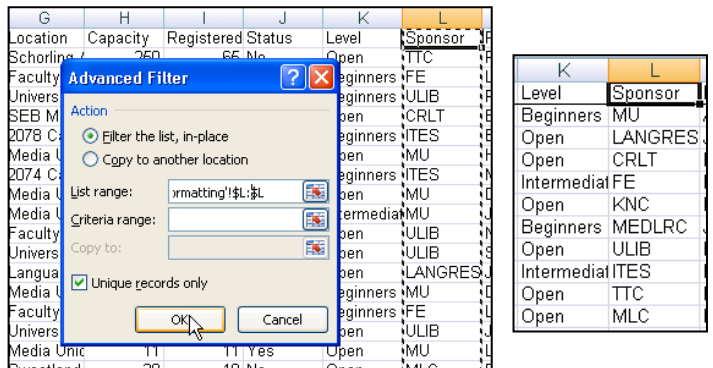
The black arrows next to the headings will turn blue once a filter is applied. To apply another filter, select the arrow of a different heading and choose your criteria like you did before.

To clear a filter, click on the arrow next to the filtered heading and choose (*All*) or go to the **Data** menu, then **Filter**, then **Show All**.




## ADVANCED FILTER

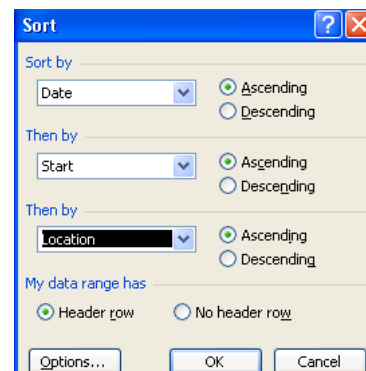
You can have a more specialized filter by going to the **Data** menu, then **Filters**, and then selecting **Advanced Filter...** The Advanced Filter dialog box allows you to set a particular criteria, copy results to another location (other location must be in the same sheet), and capture unique values. In the example at right, only unique values for the Sponsor column are displayed, ready to be copied to a new location.



## SORTING DATA

For a quick sort, choose the ascending or descending icon () in the Standard Toolbar.

For a more complex sort, go to the **Data** menu and select **Sort...** In the Sort dialog box, you can choose to sort by up to three columns, sort ascending or descending, and choose to use a header row in your sort. In addition, there are some special options for the first sort field that can be reached by clicking on the *Options...* button in the Sort dialog box.



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## CREATING CHARTS

To insert a Chart, go to the **Insert** menu, and then choose **Chart...** or click on the Chart Wizard icon () in the toolbar. A Chart Wizard dialog box will pop up and guide you through the creation of your chart.

### STEP 1: CHART TYPE

Select the type of chart you wish to create. You must select a *Chart type* first and then select a *Chart sub-type*. In the example at the right, the chart type selected is *Bar* and the sub-type is *Clustered Bar*. For each sub-type there is a description in the lower right. If you don't have any data selected yet, Excel guesses at your selection so the chart that previews when you click *Press and hold to view sample* may not look like your final chart.

Click on the *Next* button to go to the next step.

Chart Types

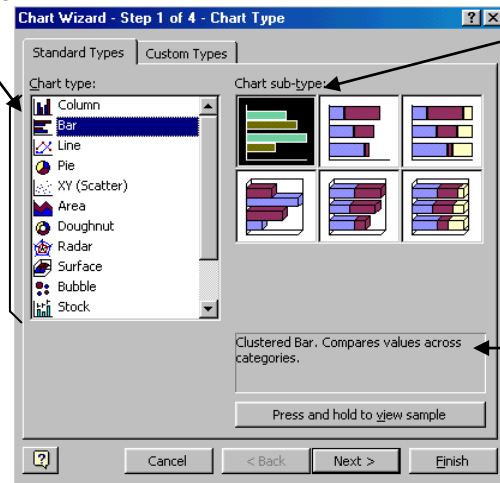


Chart sub-type selected

Sub-type description

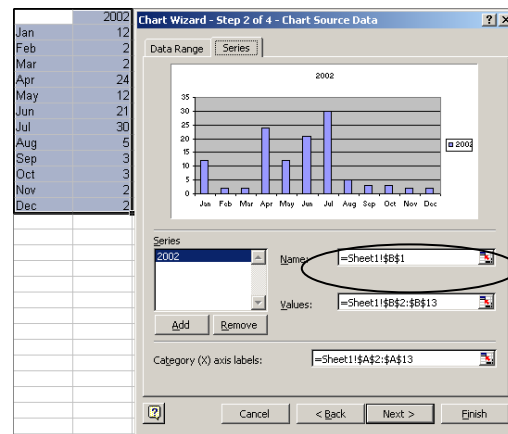
### STEP 2: CHART SOURCE DATA

You can select the block of cells (or data range) that you wish to include in your chart by clicking and dragging through the correct cells in your data sheet either before you click on the Chart Wizard or after it is open. Note that when you are selecting the cells, the Chart Wizard window minimizes itself, showing only the selection, but when you are done selecting, the window “reappears” showing you a preview of the chart.

To name a series, click on the *Series* tab, select the correct series from the *Series* list, then type a name in the *Name* box or click a cell on your datasheet containing the name you prefer (note that the name is shown as a “formula” in your *Name* box). If you selected the headings of your columns or rows as part of your data range (in this example 2002) in the first place, these headings will show as names of your series.

**Note:** To select noncontiguous data, hold down the *Control* (PC) or *Apple* (Mac) key on the keyboard and select your data.

Click on the *Next* button to go to the next step.



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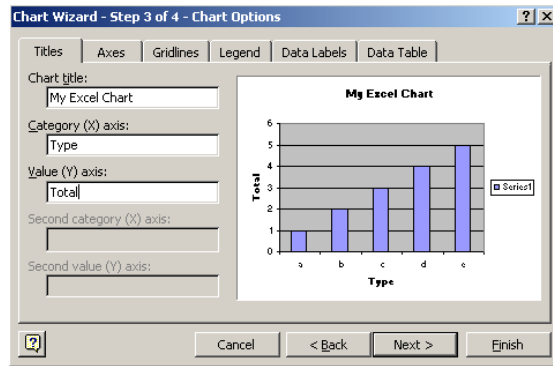
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## STEP 3: CHART OPTIONS

Generally, there are six tabs with different formatting options, though some chart types might not have these options or may have different options. Note that a preview of your graph with the format changes is shown on the right side of this window.

- **Titles:** Add a title to your chart, and to either axis.
- **Axes:** Show or hide the values of either axis and format the values for the x-axis.
- **Gridlines:** Show or hide gridlines for both axes.
- **Legend:** Show or hide the legend, and decide placement. In this preview, the legend is at the right of the chart.
- **Data Labels:** Show exact values in your chart from either axis.
- **Data Table:** Show your data along with the chart.



← Preview

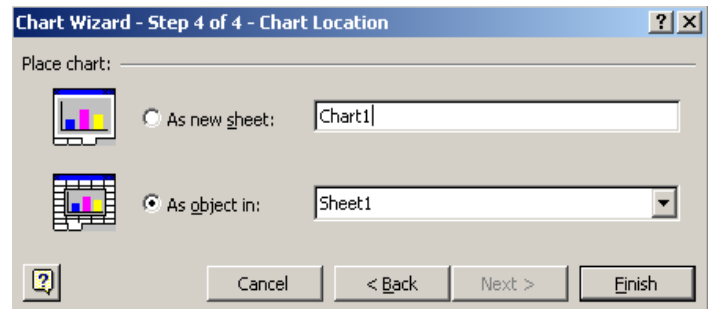
Go through all the tabs, and add/remove options to show the chart the way you want it. When you are finished, click on the *Next* button to go to the next step. Once you've created the chart, remember you can always come back and change anything by selecting the chart then going to the **Chart** menu and then **Chart Options...**

## STEP 4: CHART LOCATION

Your chart can be inserted as an object in the datasheet or on a new sheet. If you want to use your chart in Word or PowerPoint, we find it works easier to put it on a new sheet.

Choose your location, naming the new sheet if appropriate, and click *Finish*.

Note that a Chart toolbar automatically pops up whenever you select your chart. This toolbar allows you to modify all the options you selected in the Chart Wizard, and other options such as *Scale*, *Plot Area*, and *Category Axis*.



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## MODIFYING YOUR CHART IN EXCEL

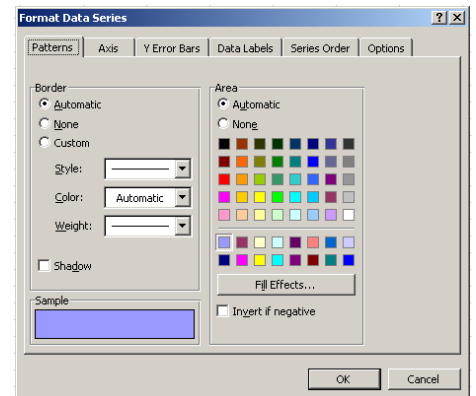
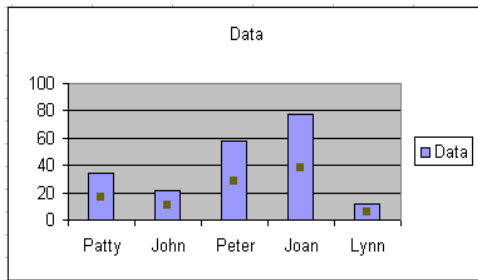
Sometimes you may not like the color scheme of your chart, you may want to add titles to your chart, or you may want to change the chart type. Depending on what you are trying to do, you can accomplish your goal in a few different ways.

### CHART MENU


When your chart is selected, the **Chart** menu appears. From the **Chart** menu, you can change the chart type, the source data, the chart options, or the location (all explained in the previous section: [Creating Charts](#)). In addition, you can add data (described in Step 2 of the previous section) or change the dimensionality of your elements (**3-D view**, though this option will depend on your chart type).

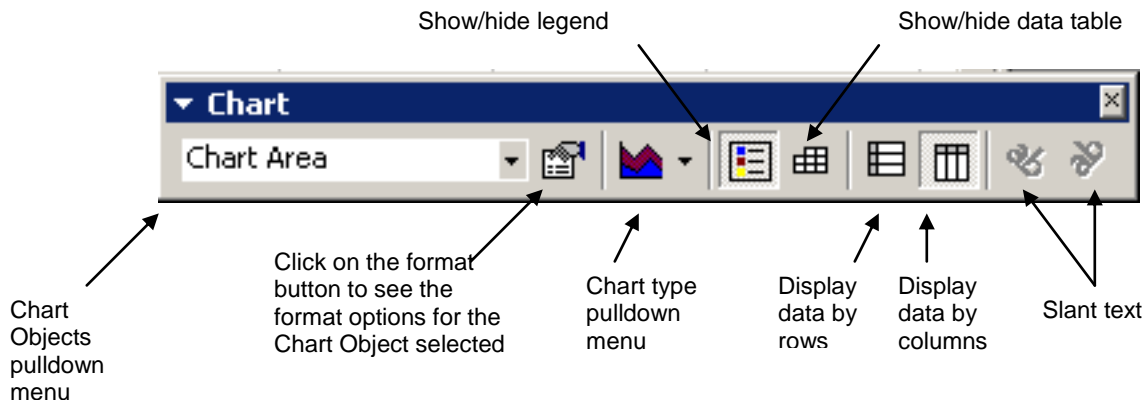
### DOUBLE-CLICKING ELEMENTS

To change settings in your chart, double-click on the part of the chart that you want to change. Depending on the element selected, a different dialog box will appear. Often times, as in the example at right, there are several tabs to choose from within each dialog box.



### CHART TOOLBAR

When your chart is selected the Chart Toolbar also appears (if the Chart Toolbar isn't displayed, go to the **View** menu, **Toolbars**, then **Chart**). With the Chart Toolbar, you can select different chart elements from the *Chart Object* pulldown menu (shown below), and then click on the *Format* button (  ) to get the appropriate dialog box.



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## CREATING OVERLAPPING CHARTS IN EXCEL


There are two main ways to create charts with overlapping data, though both involve using Custom Chart Types. In the first method, you choose a custom type from the different chart types, add all your data, then Excel splits the data into the two chart types (i.e., line or column). With the second method – most useful when you have two separate sets of data – you create your chart with one set of data, add the second set to it with the **Paste Special** command, and then change the chart to a custom type.


## CREATING A CUSTOM CHART TYPE

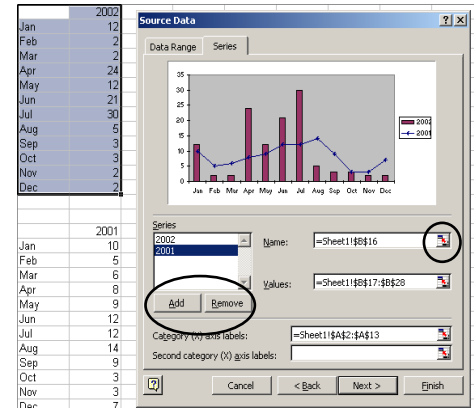
To insert a chart, click on the Chart Wizard icon () in the toolbar, or go to the **Insert** menu, and choose on **Chart...**

To have overlapping graphs you must choose the *Custom Types* tab of the *Chart Types* and then select the style you prefer. (Line-Column works well). Click *Next*.


Define the *Data Range* by clicking and dragging through the correct cells (contiguous columns or rows) in your data sheet either before you click on the Chart Wizard or after it is open. Be sure to specify if the *Series* is going to be presented by rows or by columns and to name your series in the *Series* tab if you wish.

If your chart uses a set of data that is noncontiguous on your data sheet, you may add series to your chart one at a time. In the *Series* tab, under *Series*, click *Add*. Then click on  next to the *Values:* box. The Chart Wizard window minimizes itself. On your data sheet, select the series you wish to add to your chart.

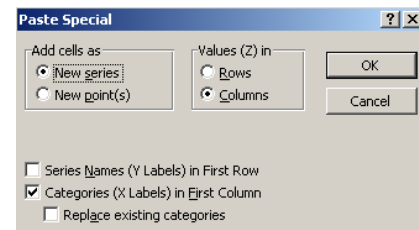
When your selection is made, click on  and the Chart Wizard window will reappear. An updated chart with its new series should now be displayed. Note that Excel splits your series so that half your series will show up as one type and half the other (for example as columns and lines). Click *Next* and follow the Chart Wizard steps explained previously (just like any chart).



## USING THE PASTE SPECIAL COMMAND

To insert a Chart, go to the **Insert** menu, and then choose on **Chart...** or click on the Chart Wizard icon () in the toolbar as you did before, using your first set of data to create the chart. Once your chart has been created, highlight the additional data, go to the **Edit** menu, and then select **Copy**.

Click once on your chart to select it, then go to the **Edit** menu and select **Paste Special...** Under the *Add cells as*, select *New series*, and click *OK*. Using the **Chart** menu or toolbar, change the **Chart Type** to the appropriate *Custom Chart Type*. Remember, you can rename your new series as mentioned previously.



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