Introduction to Excel, Part II:

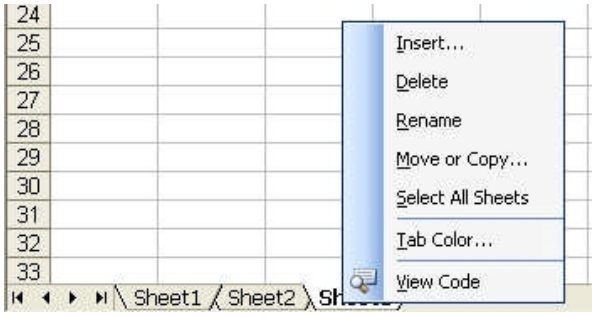
By Christopher Schnaars
The Morning Call

Where Are We Going?
This is the second of a four-part series of handouts to teach basic and intermediate skills in Microsoft Excel.

What Are We Going to Learn?
We're going to learn some helpful ways to move around your data. We'll look at how to display information from different parts of your sheet at the same time, how to protect your data and how to print your work. We'll also have a basic math lesson looking at the different ways to calculate an average, and we'll look at subtotals, rankings, rates and where to go for help.

Much of this lesson is going to fly through a lot of tips. Try out the mouse clicks and menu selections for the ones that sound useful or interesting to you and feel free to gloss over the rest.

Worksheets
If you recall, the Excel file you are working with is a workbook comprised of one or more worksheets. If you find yourself using only one sheet most of the time, you can tell Excel to default to only one sheet. Go to Tools, then Options in the Menu Bar and click the General tab. There is a "Sheets in new workbook" option here.



You can name a sheet whatever you want. (You can even choose a different color, if your right brain is so inclined.) Just double-click the name of the sheet on the tab at the bottom of your screen, such as Sheet1, or right-click this tab and select Rename. You also can change the order of sheets by just dragging the tabs to the order you want.

To insert a new sheet, right-click the tab where you want to insert the sheet and choose Insert. Similarly, you can right-click and Delete a sheet you don't need.
Finally, you can copy an entire sheet. Right-click the sheet, and select "Move or copy." From the window that opens you can select where you want to move this sheet. If you

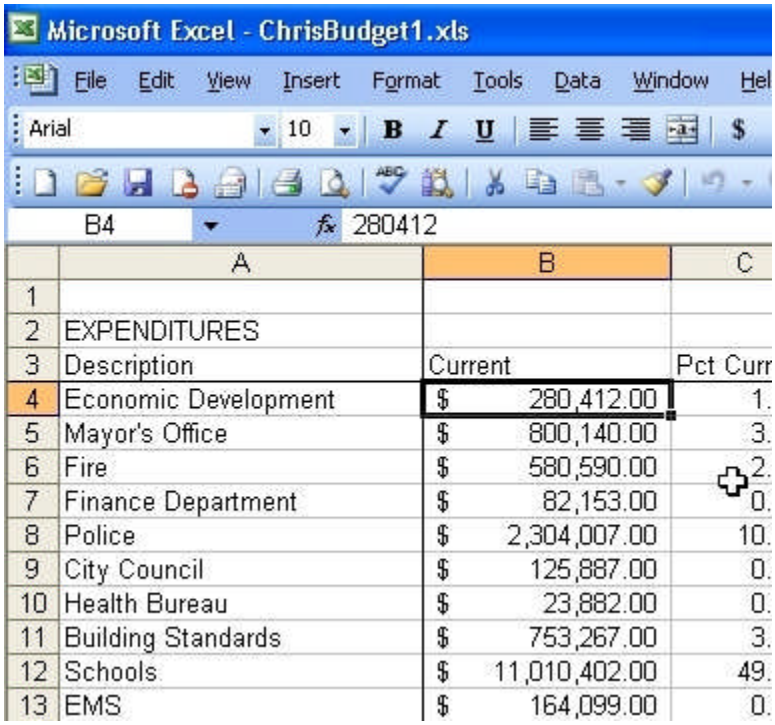
want to copy a sheet rather than just move it, check the box at the bottom of the window before you hit OK.

Keeping Your Column Headings Visible

Open the budget file that you were working with in Part One of the tutorial. This file is small enough that you can see all of your data at once. Scroll down to Row 100 (even though there is no data in that Row). Now what if you wanted to type something in the Pct Change column? Do you know which column that is without scrolling back to the top to see your column headings?

Most of the time, you will want to make sure your column headings and everything in Column A stay visible all the time. That way, no matter where you are in the sheet, you can easily tell what is in each column and each row.

To do this, you first need to click on the first cell that you don't mind scrolling out of view. In this case, we want everything in Row 3, because those are our column headings and everything in Column A because that is the name of our city departments and revenue sources. So the first cell we don't need to see all the time is B4. Click this cell, go to your Menu Bar and select Window, then Freeze Panes.



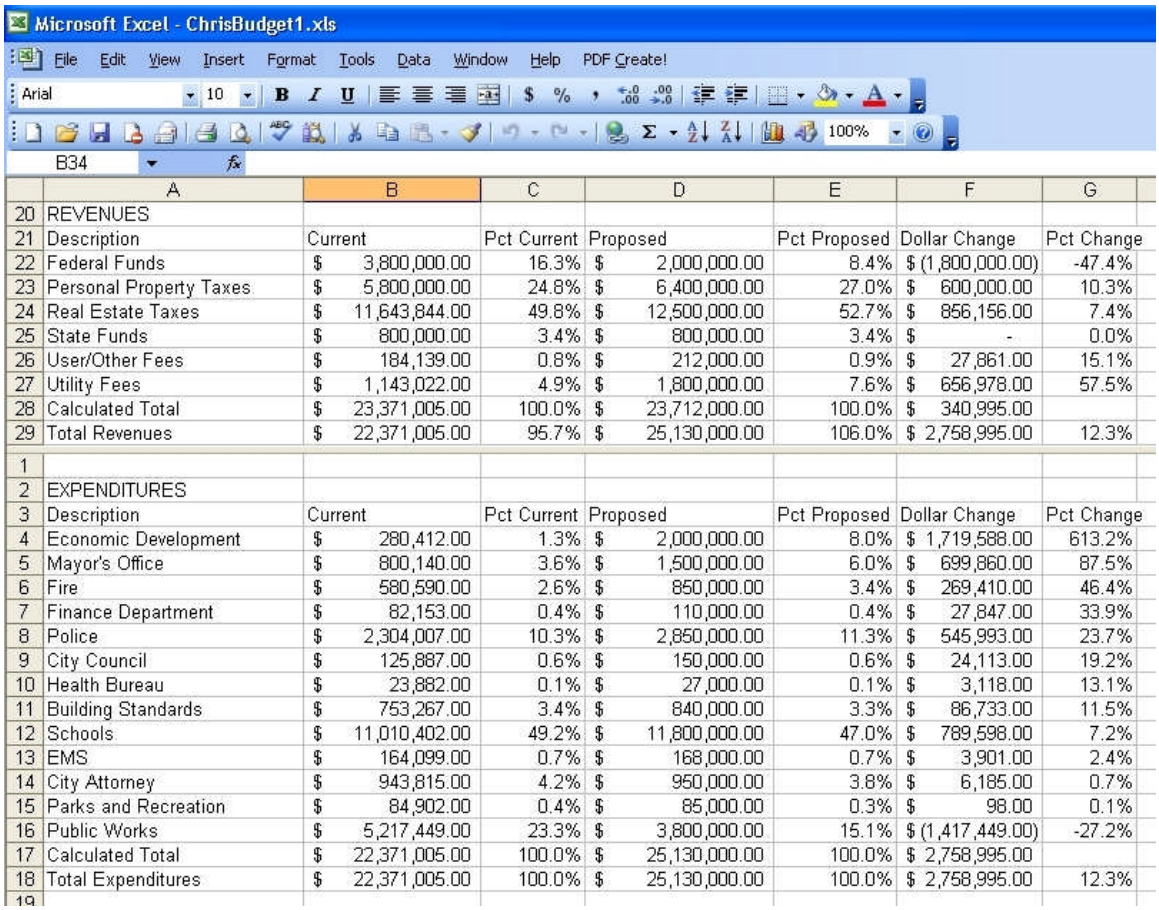
	A	B	C
1			
2	EXPENDITURES		
3	Description	Current	Pct Curr
4	Economic Development	$ 280,412.00	1.
5	Mayor's Office	$ 800,140.00	3.
6	Fire	$ 580,590.00	2.
7	Finance Department	$ 82,153.00	0.
8	Police	$ 2,304,007.00	10.
9	City Council	$ 125,887.00	0.
10	Health Bureau	$ 23,882.00	0.
11	Building Standards	$ 753,267.00	3.
12	Schools	$ 11,010,402.00	49.
13	EMS	$ 164,099.00	0.

Notice that thick black lines are drawn above and to the left of Cell B4. Now try scrolling down your document and to the right. No matter how far you go, all cells above and to the left of those lines remain visible.

This doesn't help us entirely, though, because we can't see the column headings for Revenues. There are two ways to deal with this. The first is to split the window. Go to your Menu Bar and select Window, then Split. This changes the black lines to thicker grey lines. This basically splits the worksheet into four windows, allowing you to view up to four areas of your sheet at the same time.

We really only need to view two areas, so double-click the thick vertical grey line between columns A and B to get rid of it. You also can drag these lines to make a section larger or smaller. Go to the top section and scroll down until Row 20 is at the top of the

screen, then drag the grey bar down seven rows so we can see the entire Revenues section. Now we can click on the lower section and move around the expenditures portion of the budget. The revenues will remain visible on top.



	A	B	C	D	E	F	G
20	REVENUES						
21	Description	Current	Pct Current	Proposed	Pct Proposed	Dollar Change	Pct Change
22	Federal Funds	$ 3,800,000.00	16.3%	$ 2,000,000.00	8.4%	$ (1,800,000.00)	-47.4%
23	Personal Property Taxes	$ 5,800,000.00	24.8%	$ 6,400,000.00	27.0%	$ 600,000.00	10.3%
24	Real Estate Taxes	$ 11,643,844.00	49.8%	$ 12,500,000.00	52.7%	$ 856,156.00	7.4%
25	State Funds	$ 800,000.00	3.4%	$ 800,000.00	3.4%	$ -	0.0%
26	User/Other Fees	$ 184,139.00	0.8%	$ 212,000.00	0.9%	$ 27,861.00	15.1%
27	Utility Fees	$ 1,143,022.00	4.9%	$ 1,800,000.00	7.6%	$ 656,978.00	57.5%
28	Calculated Total	$ 23,371,005.00	100.0%	$ 23,712,000.00	100.0%	$ 340,995.00	
29	Total Revenues	$ 22,371,005.00	95.7%	$ 25,130,000.00	106.0%	$ 2,758,995.00	12.3%
1							
2	EXPENDITURES						
3	Description	Current	Pct Current	Proposed	Pct Proposed	Dollar Change	Pct Change
4	Economic Development	$ 280,412.00	1.3%	$ 2,000,000.00	8.0%	$ 1,719,588.00	613.2%
5	Mayor's Office	$ 800,140.00	3.6%	$ 1,500,000.00	6.0%	$ 699,860.00	87.5%
6	Fire	$ 580,590.00	2.6%	$ 850,000.00	3.4%	$ 269,410.00	46.4%
7	Finance Department	$ 82,153.00	0.4%	$ 110,000.00	0.4%	$ 27,847.00	33.9%
8	Police	$ 2,304,007.00	10.3%	$ 2,850,000.00	11.3%	$ 545,993.00	23.7%
9	City Council	$ 125,887.00	0.6%	$ 150,000.00	0.6%	$ 24,113.00	19.2%
10	Health Bureau	$ 23,882.00	0.1%	$ 27,000.00	0.1%	$ 3,118.00	13.1%
11	Building Standards	$ 753,267.00	3.4%	$ 840,000.00	3.3%	$ 86,733.00	11.5%
12	Schools	$ 11,010,402.00	49.2%	$ 11,800,000.00	47.0%	$ 789,598.00	7.2%
13	EMS	$ 164,099.00	0.7%	$ 168,000.00	0.7%	$ 3,901.00	2.4%
14	City Attorney	$ 943,815.00	4.2%	$ 950,000.00	3.8%	$ 6,185.00	0.7%
15	Parks and Recreation	$ 84,902.00	0.4%	$ 85,000.00	0.3%	$ 98.00	0.1%
16	Public Works	$ 5,217,449.00	23.3%	$ 3,800,000.00	15.1%	$ (1,417,449.00)	-27.2%
17	Calculated Total	$ 22,371,005.00	100.0%	$ 25,130,000.00	100.0%	$ 2,758,995.00	
18	Total Expenditures	$ 22,371,005.00	100.0%	$ 25,130,000.00	100.0%	$ 2,758,995.00	12.3%

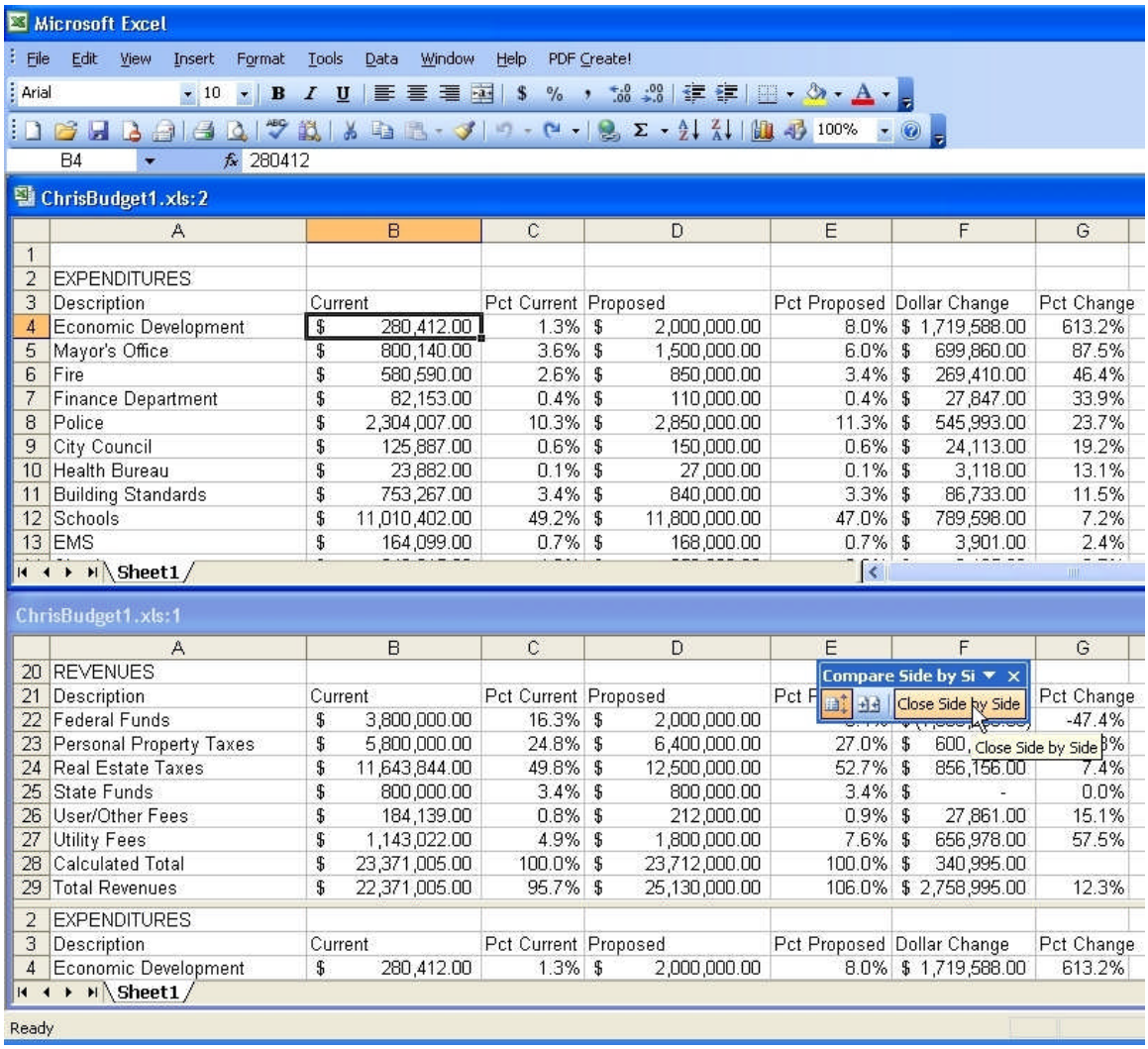
This screenshot shows a worksheet that has been Split so two portions are visible at the same time. You can view up to four sections at once (with one horizontal divider and one vertical divider). You cannot, however Freeze Panes while your panes are Split.

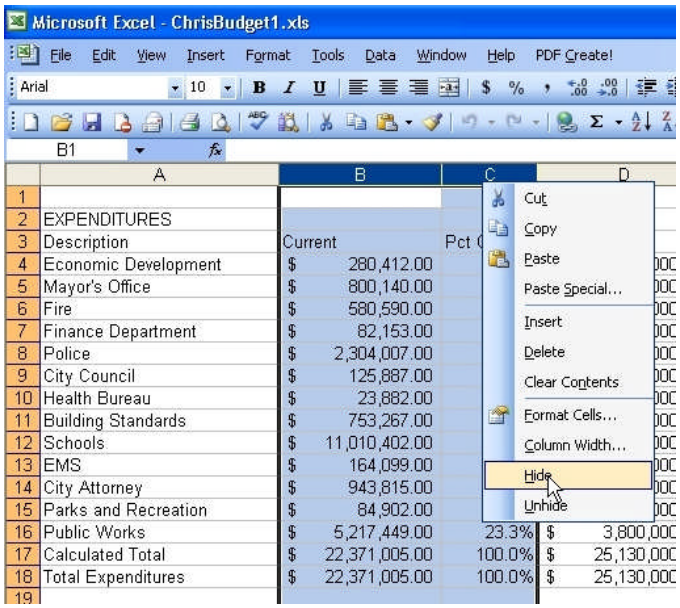
There is one more option that is new in Excel 2003. If you are using this version, go to Window in the Menu Bar and select New Window. Now look at the file name in the dark blue bar at the very top of your screen. It shows :2 after the file name. Your file now is open in two separate windows.

To easily see both at the same time, go back to Window and select "Compare side by side with." A dialog box will open, and you'll see you can select the same file with :1 after the file name. When you click OK, both windows will be displayed. If you make a change in one window, it also will be reflected in the second window.

Note the small floating toolbar in the screenshot on the next page. It includes a button to Close one of the windows and return to just one view of your spreadsheet.

To turn off the Split, go to Window, then Remove Split. Similarly, there is an option in the Window menu to Unfreeze Panes.





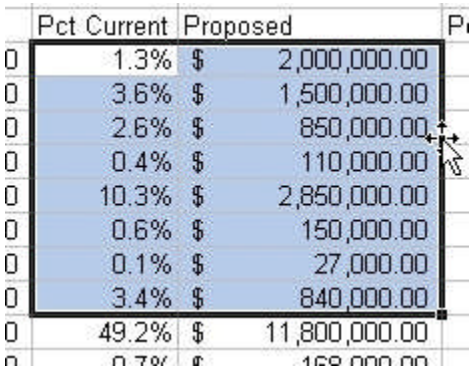
Hide and Seek

Another way to control what areas of your worksheet you can see is to Hide rows or columns.

Let's say you wanted to only see data about the Proposed Budget. Rather than delete data for the Current Budget, you can just Hide that information. To do this, highlight the columns or rows you want to hide – in this case, Columns B and C – right-click the selected area and select Hide.

The columns or rows you hide really don't go anywhere. Excel just sets the width or height for those columns or rows to zero.

To get them back, highlight the rows or columns that are on either side of the rows or columns that are hidden (Columns A and D), right-click the selected area and select Unhide.

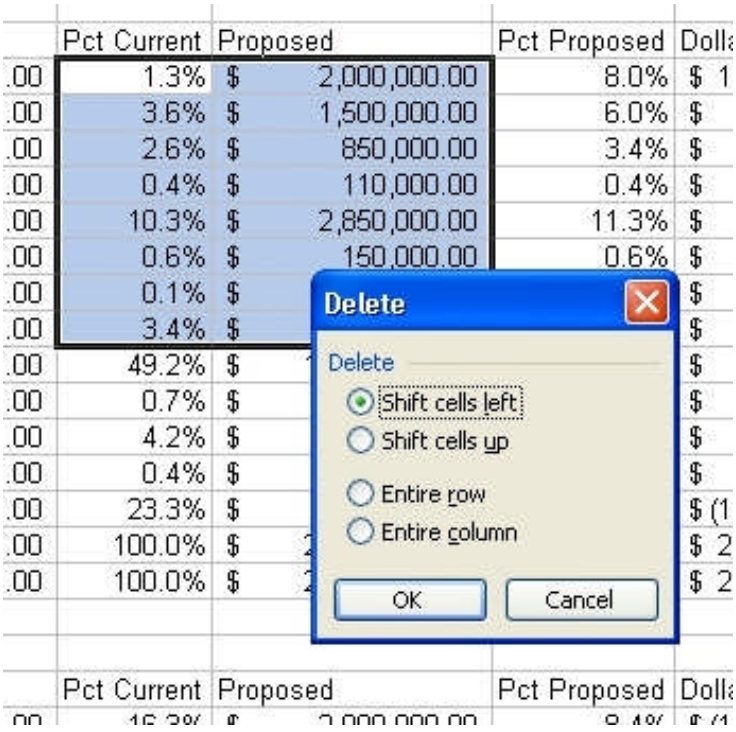


Moving On

You already know you can copy, cut and paste data. You also can drag and drop individual cells or a block of cells. To do this, highlight the data you want to move, and point your cursor to the thick black outline of your selected data, and your pointer will become a four-way arrow. (See screenshot to left.) When this happens, click and hold down the left mouse button and drag the data to the desired location.

Deleting Data

There are two ways to get rid of data, depending on what you want to do. If all you want to do is erase the contents of a cell, block of cells, row or column, just highlight the area you want to clear, right-click that area and select Clear Contents. This leaves the cells intact but clears the data.



The other way to get rid of data is to physically remove both the data and the cells from the table. When you do this, data around the affected area must shift up or to the left to fill in the area you deleted.

To do this, highlight what you want to get rid of, right-click that area and select Delete.

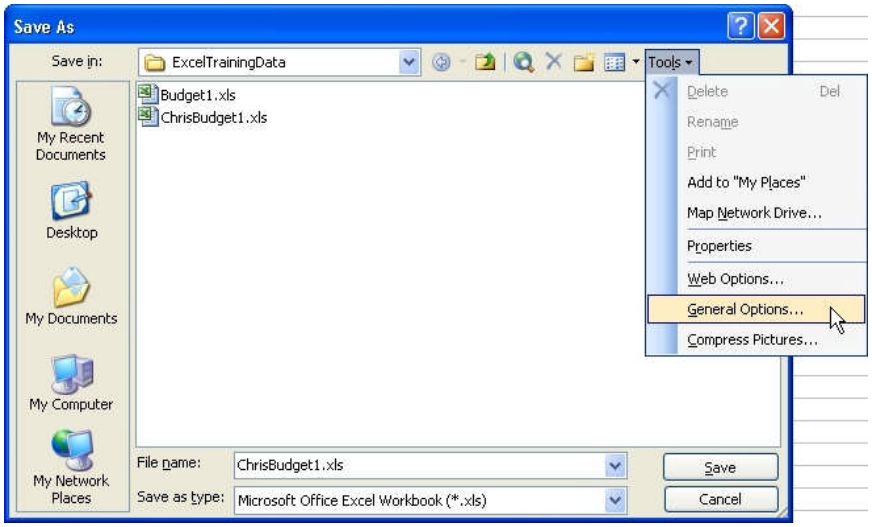
If you are deleting a row or column, that row or column will be deleted without requiring you to do anything else. If you are deleting a cell or a block of cells, a window opens requiring you

to pick one of four options. The first two determine whether data to the right of or underneath the cells you are deleting will be shifted to fill in the deleted cells. The other options are used to delete entire rows and columns rather than just the highlighted cells.

Somebody Save Me

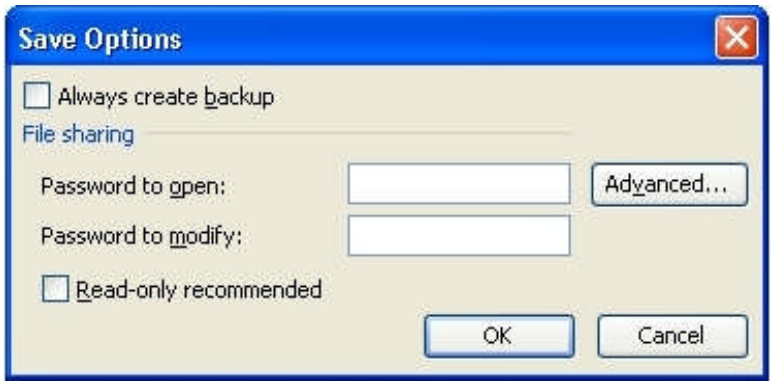
Excel has an option called Autorecover that saves a copy of your file at whatever time interval you specify. Note, however, that it does not save your actual file. It just saves a copy. This means that the only time you can be sure you are saving your work is when you click Save yourself.

The purpose of Autorecover is to limit how much work you'll lose if Excel crashes. When this happens and you re-open Excel, the program will show you the files that were open at the time of the crash and were saved. To set the Autorecover options, go to Tools, then Options, and click the Save tab.



One thing you need to keep in mind about Autorecover is that it is not the same thing as backing up your files. It's only good for recovering data lost because of a crash. When you exit Excel normally, those nice files are deleted, so you can't recover them if you forgot to save your work or if your files become corrupted.

You also can tell Excel to always create a Backup of your work when you save your file, but it's not under Tools/Options where you'd expect to find it. Instead, go to File, then Save As. When the Save As dialog box opens, click Tools near the top-right corner and select General Options. (See the screenshots on this page.) From here, you can check a box to tell Excel to always create a backup. The backup will be saved in the same location as your main file. The filename will be the same, prefixed with: "Copy of"

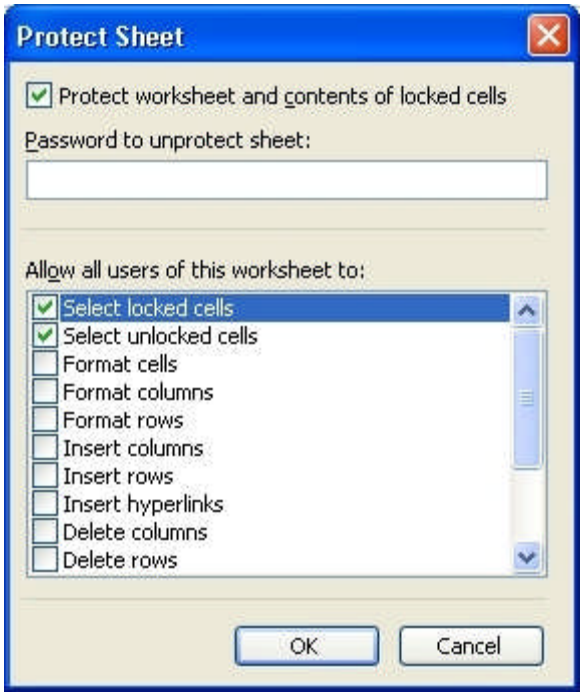


While we're here, let's take a look at a couple of other ways you can protect your files: Passwords and Read Only.

You'll see on the same dialog with a checkbox for Backup files, there also are two textboxes where you can enter passwords. One is a password that must be entered just to open the file. The second is a password that has to be entered only if the person wants to Save the file. If you click the Advanced button, you can go a step further with encryption. Finally, the lightest form of protection is the Read-only recommended textbox. When you check this option, Excel will recommend, when the file is opened, that it be opened in Read Only status to prevent accidental changes to the file. This simply means that it can't be saved over the existing file. The user, however, can ignore the recommendation and open the file normally.

Locking Cells and Validation

Two other ways to protect your data are to lock your worksheet and Data Validation. This is easier to understand by taking a look at your options, so go to Tools, then Protection, then Protect Sheet.



This opens up a small window that lets you check off the things users can do in the sheet while it's protected. The checkbox at the top left of the window prevents users from changing any cells that are locked. To unlock the worksheet, a user only has to go to Tools, then Protection, and select Unprotect Sheet unless you also specify a password here. If you do this, the sheet can be unlocked only with the password.

But which cells are locked? Select the cells you want to lock, right-click the highlighted area and select Format Cells. Click the Protection tab, and you'll see a checkbox marked Locked that you can check to lock these cells. Note, however, that locked and unlocked cells function exactly the same UNLESS you protect the sheet. (Don't worry too much about Format Cells right now. We're going to cover it in much more detail in the Intermediate tutorial.)

Another way to protect your data is Data Validation. This just means that you are setting up parameters for what can be entered in a particular cell. This is particularly useful for data entry.

Let's try an example. If you have the city budget file open, close it. (You don't have to save the changes if you don't want to; we will not be using that file any more in this tutorial.) Then open the Crime2.xls file.

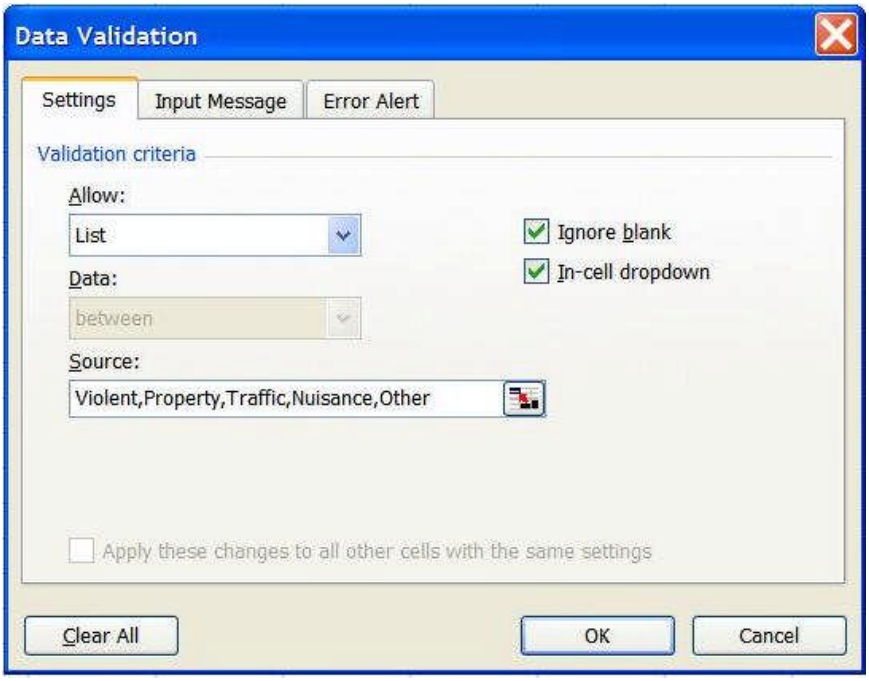
	A	B	C	D
1	UCR	UCR_CLASS	UCR_DESCRIPTION	UCR_COUNT
2	4451	4400	ABANDONED 911 CALLS (HANGUPS)	13436
3	4521	4500	ABANDONED REFRIGERATOR	1
4	2654	2600	ABANDONED VEHICLE (72-HOUR PARKING)	249
5	2010	2000	ABANDONING CHILDREN	15
6	1710	1700	ADULTERY	1
7	4428	4400	ALARM RINGING - FIRE OR BURGLAR	19208
8	4430	4400	ALARM RINGING - VEHICLE	355
9	4210	4200	AMBULANCE SERVICE	17683
10	3800	3800	ANIMAL COMPLAINTS (INCLUDING DOG BITES)	5070
11	2625	2600	ANNOYING PHONE CALLS	1
12	310	300	ARMED ROBBERY - ANY WEAPON	2
13	2636	2600	ARREST ON WARRANT FOR ANOTHER AGENCY - ENROUTE	849
14	917	900	ARSON - ALL OTHER STRUCTURE	3
15	916	900	ARSON - COMMUNITY/PUBLIC STRUCTURE	19
16	956	900	ARSON - COMMUNITY/PUBLIC STRUCTURE (DOMESTIC)	1
17	914	900	ARSON - INDUSTRIAL/MFG STRUCTURE	1
18	920	900	ARSON - MOBILE	1
19	921	900	ARSON - MOTOR VEHICLE	33
20	961	900	ARSON - MOTOR VEHICLE (DOMESTIC)	2
21	930	900	ARSON - OTHER	37
22	970	900	ARSON - OTHER (DOMESTIC)	3
23	915	900	ARSON - OTHER COMMERCIAL STRUCTURE	3
24	922	900	ARSON - OTHER MOBILE PROPERTY	1
25	912	900	ARSON - OTHER RESIDENTIAL	11
26	952	900	ARSON - OTHER RESIDENTIAL (DOMESTIC)	2
27	911	900	ARSON - SINGLE RESIDENTIAL	8
28	951	900	ARSON - SINGLE RESIDENTIAL (DOMESTIC)	3
29	913	900	ARSON - STORAGE STRUCTURE	6
30	953	900	ARSON - STORAGE STRUCTURE (DOMESTIC)	3
31	400	400	ASSAULT (AGGRAVATED)	2
32	411	400	ASSAULT POLICE OFFICER W/ GUN	3
33	413	400	ASSAULT POLICE OFFICER W/ GUN - DOMESTIC RELATED	2

This is a summary of all crimes reported to Allentown police over the course of several years. The first column is the Uniform Crime Reports code for a particular crime. The second column is a UCR-class code (which is used to group different UCR codes into broader categories). The third column is a description of the crime, and the last column is the number of times a particular crime was reported.

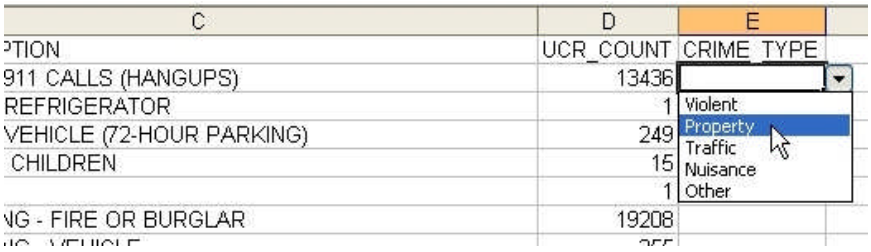
You could add a column where you classify each crime as Violent, Property, Traffic, Nuisance or Other and put those entries in a dropdown menu. To do this, we will use Data Validation.

First highlight the cells you want to protect. We are going to put this data in Column E, so go to E1 and type the heading CRIME_TYPE. Next, select cells E2 through E376, then select Data, then Validation from the Menu Bar.

From the Validation window that opens, you can set requirements such as that the input must be a whole number, a valid date or time or a text string with the maximum length you specify. If a cell or group of cells has a small number of valid entries, you can select List and type all of the valid entries in the Source box, separated by commas. There's also a checkbox you can check to display all of these valid values in a dropdown menu.



Select "List" from the Allow dropdown menu, make sure both the Ignore blank and In-cell dropdown boxes are checked, then click on the text window for Source and type (without spaces after the commas): Violent, Property, Traffic, Nuisance, Other (If you've done everything correctly, the Data Validation window should look like this screenshot.)



Click OK, then click on any of the cells in Column E and you will see that you now get a dropdown menu. You also will see that Excel will not let you input something that isn't in the dropdown menu. If you try, you will get an error message.

If you go back to the Data Validation window, you will see there are options to ignore blank cells and to control messages users see when they are about to enter data into a cell with validation and what they see when an error occurs. If you want to remove validation, select the cells, go to Data, then Validation, and select Any value from the Allow dropdown menu.

Feel free to play around with the dropdowns. We will not be using them again for this exercise. When you are done, click E to select the entire column, right-click and select Delete to get rid of it.

Ranking Things

Let's say we want to add a column we can use to rank each crime by how often it occurs. In other words, the crime that occurs most often will be 1, the crime that occurs the second most often will be 2, and so on. Let's put this in Column E. We'll start by giving this new column a heading, so click on Cell E1 and type the word RANK.

But how are we going to get these numbers in the right order? You learned this in the first part of the tutorial: We're going to Sort the data. Just click somewhere in your data, and select Data from the Menu Bar, then Sort. Excel automatically should highlight all of your data except the first row. If you look at the Sort dialog box that opens, you'll see that Excel has guessed correctly the first row is a Header Row.

We want to sort by the count of each crime, so sort by UCR_COUNT. We want to have the most common crime at the top, so we also have to select Descending Order. We don't want to sort by any other columns, so if any of the other two Sort By dropdown menus have anything in them, select (none) in those menus. When you're done, click Sort. You learn that the most common crime (or call to police, rather), is: Alarm Ringing – Fire or Burglar

The next part is easy: Go to Cell E2 and type a 1, then go to Cell E3 and type a 2. When you're done, highlight these two cells and double-click your Autofill handle in the bottom-right corner of the selected cells. Excel automatically will put the rankings in for the rest of your data. If you scroll all the way to the last row – Did you remember Ctrl+End – you will see the rankings go from 1 to 375.

	A	B	C	D	E
1	UCR	UCR_CLASS	UCR_DESCRIPTION	UCR_COUNT	RANK
2	4428	4400	ALARM RINGING - FIRE OR BURGLAR	19208	1
3	4424	4400	NOISE COMPLAINT - LOUD RADIO, PARTY, ETC	18342	2
4	4210	4200	AMBULANCE SERVICE	17683	
5	2651	2600	TRAFFIC ORDINANCE VIOLATION	17229	
6	4451	4400	ABANDONED 911 CALLS (HANGUPS)	13436	
7	4421	4400	SUSPICIOUS AUTO, NOISES, PERSONS	12272	

Why did you have to type a 1 and a 2 to get Excel to fill in the rest of the rankings? If you just put a 1 in the first cell, Excel would put a 1 in every cell.

When you first opened the Crime2.xls file, did you remember the very first step you always should take with a new data file: Save a copy. If you didn't, save it now. Remember to give it a different file name and to select Save As from the File menu rather than Save.

Subtotals

Excel can calculate subtotals for you. For example, we can add up the number of crimes that occur for each UCR Class.

The first thing we need to do is Sort our data by the column that we want to use for our Subtotals, so we will sort by UCR_CLASS. Technically, this is all we have to do, but to make our data easier to read, we'll also sort by UCR. See if you can figure out what to do. If you get stuck, the screenshot on the next page will show you how to set up your Sort box.

First, you go to Data, then Sort in the Menu Bar. We need to sort by UCR_CLASS in Ascending order, then by UCR, also in Ascending order. The header row button should be selected, and once this is done, Row 1 in our worksheet should not be part of the selected data.

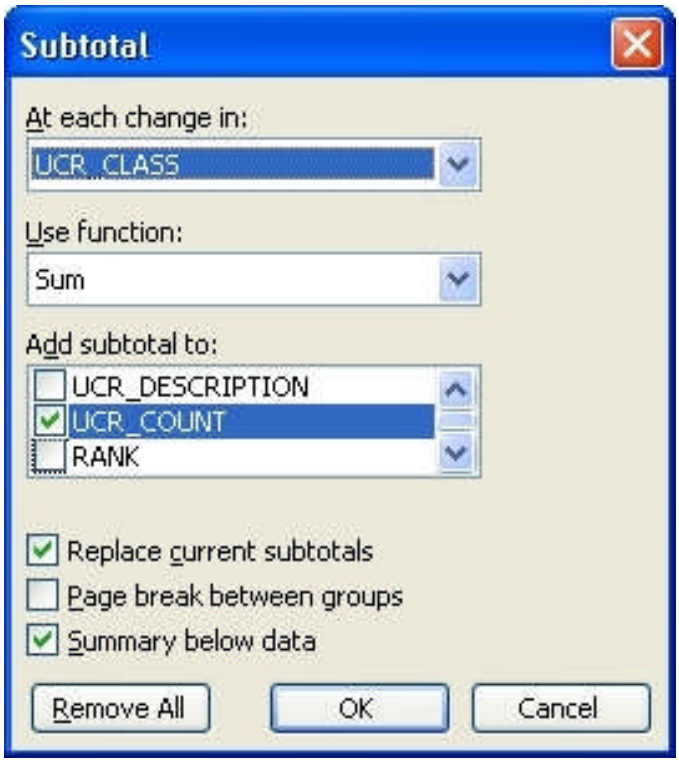
Click OK. If you did everything correctly, MURDER/NON-NEGLIGENT MANSLAUGHTER should be in Row 2.

Now we're ready to tell Excel to calculate Subtotals. Click Data on the Menu Bar, then Subtotals. This will open a dialog box. The first dropdown menu tells Excel when to calculate Subtotals. In this case, we want a subtotal every time UCR_CLASS changes. Next we tell Excel what function to use. The default is Sum, but if you open this dropdown menu, you'll see we have many other choices, including Count (for the number of rows with each UCR_CLASS), the lowest (Min) and highest (Max) values, the Average and even the Standard Deviation. In the next box, we put a checkbox in UCR_COUNT because this is the field we want Excel to add up for each Subtotal.

There are checkboxes that let you replace the current Subtotals, if you already have Subtotals in your worksheet; to put page breaks between each change in the UCR_CLASS to keep all your data together if you print it out; and to put a Grand Total at the end of your data (Summary below data).

Note the Remove All button at the bottom of the window. You can click this if you just want to remove existing Subtotals.

If your Subtotal window looks like the dialog box in the screenshot, to the right, click OK.



	A	B	C	D	E
1	UCR	UCR_CLASS	UCR_DESCRIPTION	UCR_COUNT	RANK
2	110	100	MURDER/NON-NEGLIGENT MANSLAUGHTER	31	190
3	111	100	MURDER/NON-NEGLIGENT MANSLAUGHTER - DOMESTIC	3	289
4		**100 Total**		34	
5	210	200	FORCIBLE RAPE	92	145
6	212	200	FORCIBLE RAPE - DOMESTIC RELATED	11	233
7	220	200	ATTEMPTED FORCIBLE RAPE	14	220
8	222	200	ATTEMPTED FORCIBLE RAPE - DOMESTIC RELATED	1	334
9		**200 Total**		118	
10	310	300	ARMED ROBBERY - ANY WEAPON	2	299
11	311	300	ROBBERY - HIGHWAY	247	96
12	312	300	ROBBERY - COMMERCIAL HOUSE	53	171
13	313	300	ROBBERY - SERVICE/GAS STATION	19	210
14	314	300	ROBBERY - CHAIN/CONVENIENCE STORE	61	163
15	315	300	ROBBERY - RESIDENCE	48	174
16	316	300	ROBBERY - BANK	12	228
17	317	300	ROBBERY - MISCELLANEOUS	15	219
18	318	300	ROBBERY - MOTOR VEHICLE (CARJACKING)	11	235
19	321	300	STRONG-ARMED ROBBERY - HIGHWAY	463	71
20	322	300	STRONG-ARMED ROBBERY - COMMERCIAL HOUSE	12	230
21	323	300	STRONG-ARMED ROBBERY - SERVICE/GAS STATION	7	254
22	324	300	STRONG-ARMED ROBBERY - CHAIN/CONVENIENCE STORE	23	203
23	325	300	STRONG-ARMED ROBBERY - RESIDENCE	28	196
24	326	300	STRONG-ARMED ROBBERY - BANK	1	372
25	327	300	STRONG-ARMED ROBBERY - MISCELLANEOUS	13	223
26	328	300	STRONG-ARMED ROBBERY - MOTOR VEHICLE (CARJACKING)	9	246
27		**300 Total**		1024	
28	400	400	ASSAULT (AGGRAVATED)	2	302
29	410	400	ASSAULT W/ GUN	121	131
30	411	400	ASSAULT POLICE OFFICER W/ GUN	3	281
31	412	400	ASSAULT W/ GUN - DOMESTIC	11	232
32	413	400	ASSAULT POLICE OFFICER W/ GUN - DOMESTIC RELATED	2	303
33	414	400	ASSAULT W/ GUN (GUNSHOT WOUNDS SUSTAINED	45	177

Sheet1

Notice the thick grey bar that appears to the left of your Row numbers. (See the screenshot above.) The numbers 1, 2 and 3 at the top of this bar let you filter your information.

The 1 just shows you the Grand Total, the 2 shows only Subtotals and the Grand Total, and the 3 shows all of your data. If you are viewing just your Subtotals or all your data, you will see boxes with + and – signs in the grey bar area. These can be used to expand and collapse individual groups of data. For example, if you click on 3 to see all your data, then click on the minus sign to the left of Row 4, Rows 2 and 3 will be hidden, you will see only the subtotal for these rows, and the little box will change to a + sign that you can use to expand this group and make the two missing rows visible again.

We will not need Subtotals any more for this exercise. See if you remember how to turn them off before reading on. But first, let's go over a few more tips that show you how to use some more of Excel's features.

Being Selective

You already know you can click and drag your mouse to select a block of cells. Let's look at two other ways to select data.

First, if you want to select a large block of cells without having to highlight them manually, click a cell in one corner of the block, hold down the Shift key, then click the

cell in the opposite corner. So if, for example, you want to select the first 1000 rows, and there is data in Columns A through J, you could click Cell A1, hold down the Shift key, then scroll to and click J1000 (the top-left and bottom-right cells in the block). The whole block will be highlighted.

Here's an even easier way to do the same thing. Re-using the same example, after you click Cell A1, notice that just above your worksheet on the left edge of the screen is a small textbox with A1 in it. Click in this box, type J1000, hold down the Shift key and press Enter. Excel jumps to J1000 and highlights everything in between. This box also is a handy way to jump to a particular cell much more quickly than scrolling. Just type the address of the cell you want to get to and press Enter.

You also can highlight cells that are not contiguous. For example, if you want to highlight cells A1 through A5 and C1 through C5, just highlight the Column A cells normally, hold down the Ctrl key, then highlight the Column C cells.

Escape Plan
If you click on the wrong cell, start typing and erase what was there, you have two ways to get it back. The first is to click the Undo button on the Standard toolbar (or choose Edit, then Undo). If you are still in the cell you accidentally changed and haven't pressed Enter yet, you also can just press the Esc (Escape) key, which is at the top-left of your keyboard. Excel will dump your changes and put back the data you erased.

No Comment
You can write notes to yourself and other users. This can be useful to explain the data contained in a row or column more than with just a heading. You might have details about data manipulation or warnings about how to use the data correctly. To do this, right-click the cell where you want to place the note and select Insert Comment. A small window that looks like a yellow sticky note will appear for you to type the information.

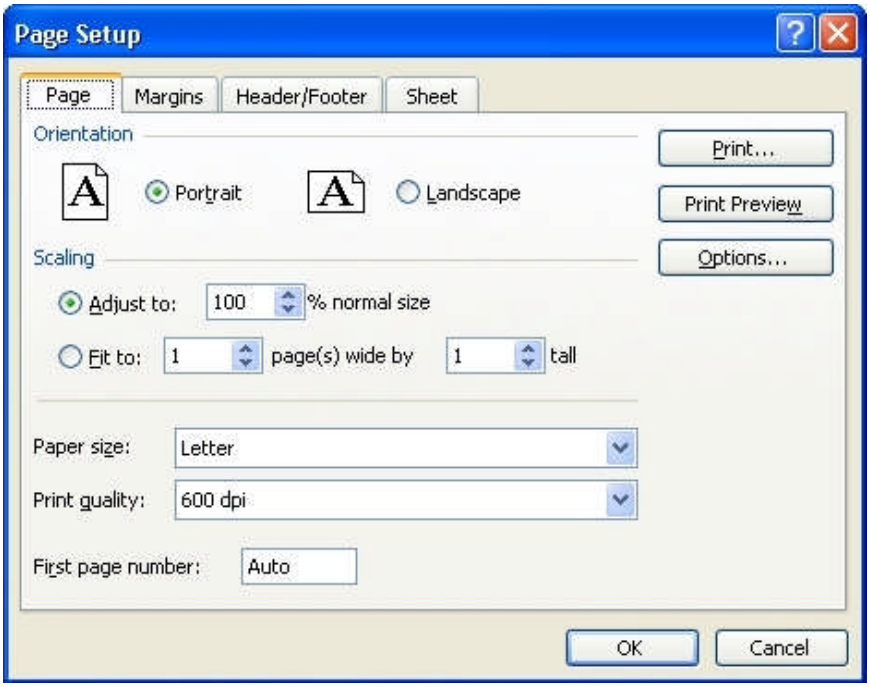
You'll note that a small red triangle appears in the top right of the cell to tell you a comment exists there. If you hover your mouse over that cell, the comment will pop up. If you want to edit the comment, right-clicking the cell gives you an Edit Comment option. From the same menu you also can choose Show/Hide Comments to have comments always display rather than just when you hover your mouse over a cell. To remove a comment, right-click the cell and select Delete Comment.

How Do You Spell Accumulate?
Spell-checking? In a spreadsheet?

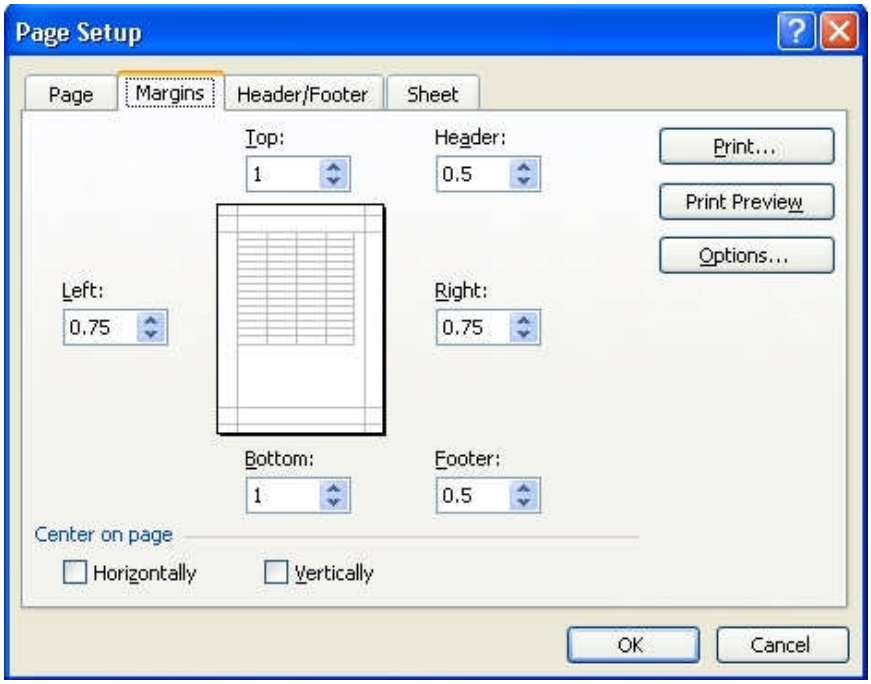
Yep.

Go to Tools in the Menu Bar and select Spelling.

Printing Your Work



OK, now let's move on to something a little more practical: How do you print out your work? Many times, you might not want to, since a large sheet could be split among dozens or hundreds of sheets of paper. But you can specify small areas to print, or maybe you've boiled everything down to a small chart that will fit on a page or two, and you want to print it out to give to the desk, your editor or the graphics folks.



Before you print, you should take a look at the Page Setup dialog, which you can find in the File menu. Let's take a brief look at each tab to see what you can do:

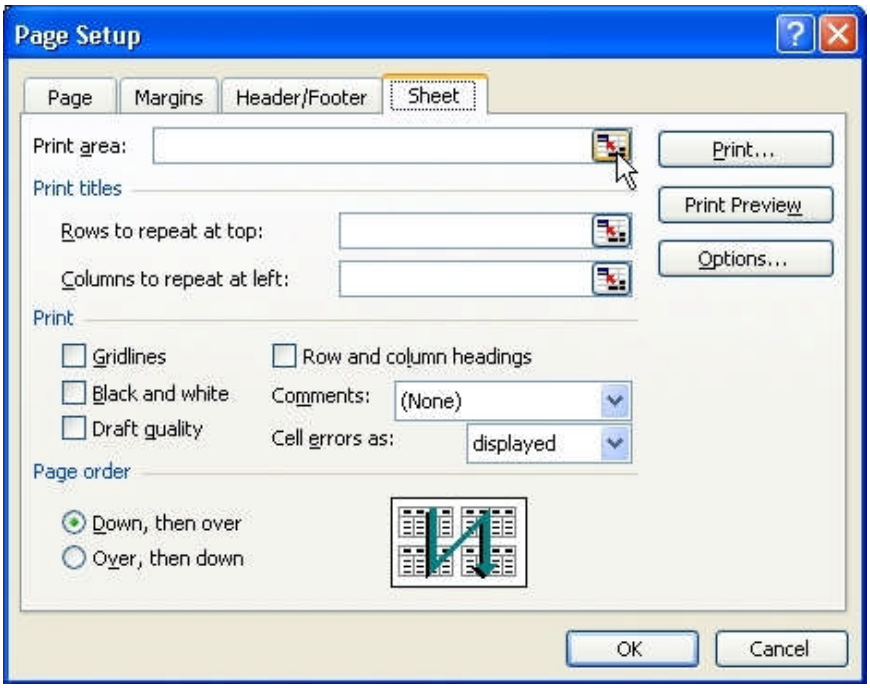
Page: There are buttons here to go straight to the Print dialog box or to see a preview of what your pages would look like if you printed with the current settings. The Options button lets you set printer options, such as what paper tray to use and whether to use color. There also are options to put more than one page on a sheet of paper or to print in reverse order (from the last page to the first).

On the Page tab itself, you can set Portrait or Landscape printing. You also can use the Scaling section to shrink or blow up the data or force Excel to limit the printing to a set number of pages.

Margins: On this tab, you can set all the margins, as well as margins for headers and footers, if you use them. Note the checkboxes at the bottom of the window. Normally Excel will put data in the top left corner of the page. If your data won't fill up the whole page, you can use one or both boxes to center your data horizontally and/or vertically.

Header/Footer: From this page, you can specify the text for headers and footers.

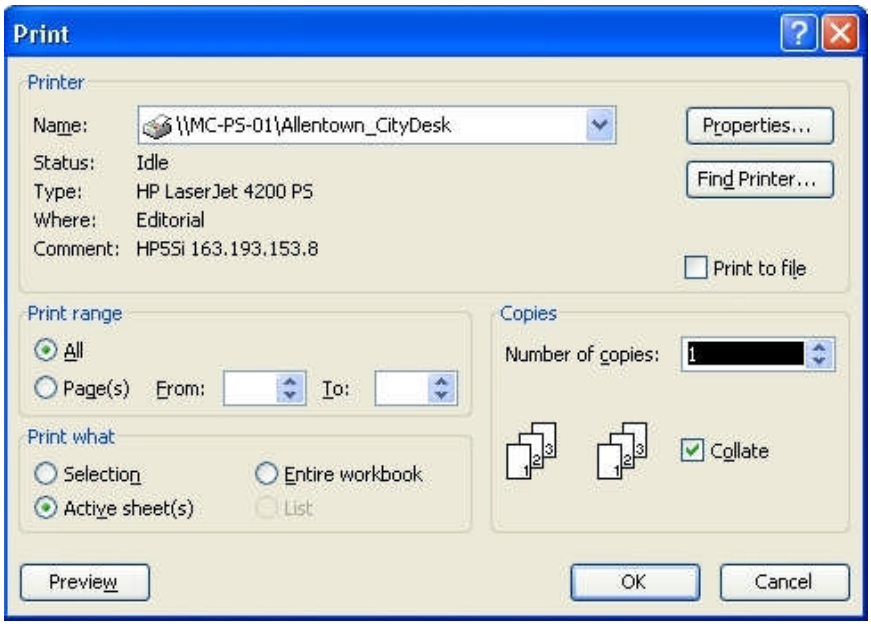
Sheet: The last tab has some of the most powerful options. In the first textbox, you can specify the area you want to print if you don't want to print all your data. To make this easier, you can click the icon to the right of this textbox. (The mouse pointer is pointing to this icon in the screenshot.) This will minimize the Page Setup window while you select your cells. This window will minimize automatically, though, if you start to highlight cells in your worksheet. As soon as you finish selecting the area you want to print, you can click this icon to see the Page Setup dialog box again.



The Sheet tab also has options to select rows or columns to print on every page. (This is how you can print column and row headings on every page.) There also is a checkbox to make sure you can see the gridlines on the printout. If you don't check this box, Excel will not print the gray lines you see on your screen around each cell. You also have options to control whether and how Comments and Errors will be printed, and you can specify the order in which Excel will print the pages. An illustration in this section shows you what each Page Order option means.

One other tool that might be useful for printing is Print Area, which can be found under the File menu. This is useful if you know you want to print a particular area of your chart every time. For example, if you have a table of statewide school data but you only care about schools in a particular county, you could sort your data by county, highlight the

data you care about, then go to File, Print Area, Set Print Area. Excel will draw a dotted line around that data, and the next time you select print, Excel will default to that area. If you want to change that later, just select File, then Print Area, then Clear Print Area.



Finally, there is the Print menu itself. From here, you can select which printer you want to use, what pages you want to print and whether you want to print just data you've selected (To use this option, select the data you want to print before you open the Print window.), the worksheet or all worksheets in the workbook. You also can specify the number of copies you want, whether to print to a file rather than paper and whether to Collate the printouts.

The Laws of Averages

If you don't have a copy of Sarah Cohen's Numbers in the Newsroom on your desk (or at least available in your newsroom), you should. It has all those handy formulas you hate but need to know.

Let's talk briefly about a few of them now, namely averages. First of all, this is a deceptive term because there is more than one way to calculate an average. Let's look at three of those ways and how to calculate them in Excel.

Before we continue, though, were you able to figure out how to turn off Subtotals? If not, here's what you need to do: Select Data on your menu bar, then Subtotals. On the dialog box that opens you don't have to do anything other then click Remove All.

Now let's look at three kinds of averages:

- **Mean:** This is what people generally mean when they say "average." You just add up all the numbers and divide by the number of numbers. Excel has a function to calculate this: AVERAGE()
- **Median:** Another way to calculate averages is to list all your numbers from lowest to highest and pick the middle number. If you have an even number of numbers, you pick the middle two numbers, add them together and divide by two. This method helps prevent extremely high and extremely low numbers from skewing the average. The Excel function to calculate this: MEDIAN()

- **Mode:** This is simply the number that occurs most often in your data. The Excel function is: MODE()

Let's try these out: Go to the bottom of your data. Skip the first blank row, which should be Row 377, and click on the second black cell in Column C, which should be C378. Type Mean. In the two cells underneath, type Median and Mode.

372	4561	4500	DAMAGE TO VEHICLE	217	104
373	4562	4500	DAMAGE TO OTHER PROPERTY	137	128
374	4565	4500	DAMAGE TO CITY VEHICLE	415	74
375	4566	4500	DAMAGE TO OTHER CITY PROPERTY	80	153
376	9998	9900	VOID - SUPPLEMENTAL INFO	4629	17
377					
378			Mean	720.936	
379			Median	33	
380			Mode	1	
381					

Now go to Column D, and using the information above try to figure out on your own what you have to type for each function. If you do it right, your answers will be 720.936, 33 and 1.

Did you get stuck? If so, here are two hints: What is the first key you always have to type when entering a formula or function? Second, each function takes only one argument, which is the range of cells you want Excel to use for its calculations. In this case, your numbers are in Cells D2 through D376.

OK, here are the formulas you needed to enter to calculate each kind of average:

- **Mean:** =AVERAGE(D2:D376)
- **Median:** =MEDIAN(D2:D376)
- **Mode:** =MODE(D2:D376)

You can see that each of these "averages" is vastly different from the others. Which one you use depends on your data and what kind of average you're looking for. See Sarah Cohen's book for a much more thorough discussion of averages.

Rates

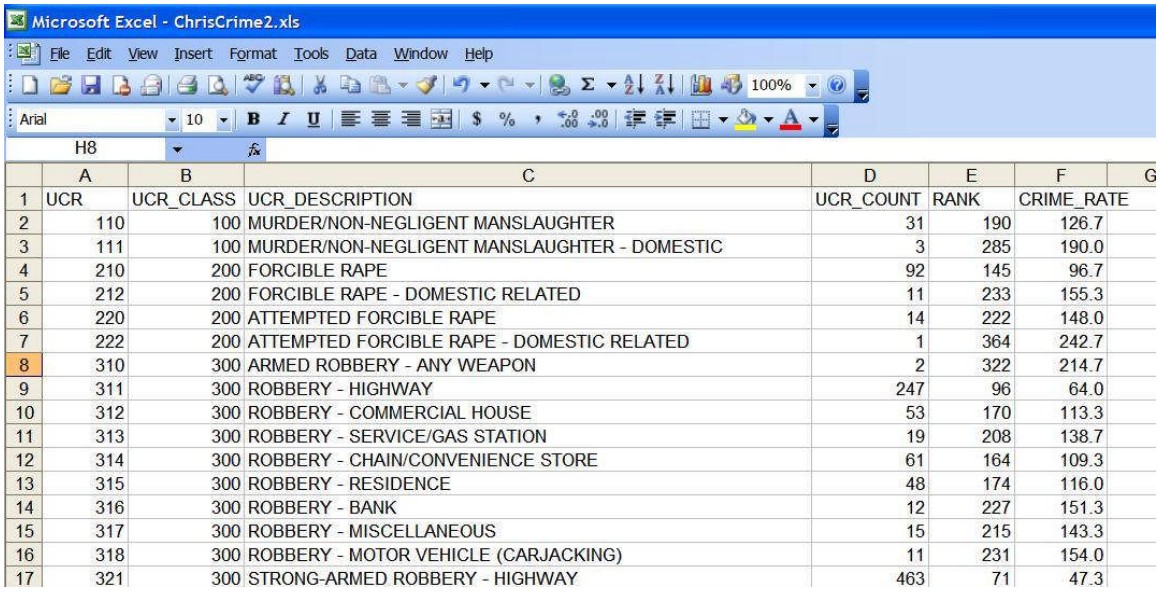
Rates are something you can use to help you compare two things. For example, if we want to compare the crime in two cities, looking at just the number of times a particular crime occurs in each city might not be a valid comparison if the cities' populations are vastly different. Adjusting for population – by calculating crime rates for each city – will get us closer to comparing apples to apples.

The nice thing about being able to use Excel is we can write a formula to calculate the rate for one crime, then copy that formula to the rest of our data.

Let's say we want to calculate the number of crimes per 100,000 people. The formula for this is:

(Actual # of crimes * 100,000) / Population

Let's calculate Allentown's crime rate per 100,000 people for each type of crime, and let's assume Allentown's population is 150,000. We're going to put this information in Column F. Let's give this column the heading CRIME_RATE. Next, go to F2 and see if you can figure out how to write the above formula in Excel. Round to one decimal place. When you're done, copy your formula down through the rest of your data. Don't continue reading until you've tried to write the formula.



	A	B	C	D	E	F	G
1	UCR	UCR_CLASS	UCR_DESCRIPTION	UCR_COUNT	RANK	CRIME_RATE	
2	110	100	MURDER/NON-NEGLIGENT MANSLAUGHTER	31	190	126.7	
3	111	100	MURDER/NON-NEGLIGENT MANSLAUGHTER - DOMESTIC	3	285	190.0	
4	210	200	FORCIBLE RAPE	92	145	96.7	
5	212	200	FORCIBLE RAPE - DOMESTIC RELATED	11	233	155.3	
6	220	200	ATTEMPTED FORCIBLE RAPE	14	222	148.0	
7	222	200	ATTEMPTED FORCIBLE RAPE - DOMESTIC RELATED	1	364	242.7	
8	310	300	ARMED ROBBERY - ANY WEAPON	2	322	214.7	
9	311	300	ROBBERY - HIGHWAY	247	96	64.0	
10	312	300	ROBBERY - COMMERCIAL HOUSE	53	170	113.3	
11	313	300	ROBBERY - SERVICE/GAS STATION	19	208	138.7	
12	314	300	ROBBERY - CHAIN/CONVENIENCE STORE	61	164	109.3	
13	315	300	ROBBERY - RESIDENCE	48	174	116.0	
14	316	300	ROBBERY - BANK	12	227	151.3	
15	317	300	ROBBERY - MISCELLANEOUS	15	215	143.3	
16	318	300	ROBBERY - MOTOR VEHICLE (CARJACKING)	11	231	154.0	
17	321	300	STRONG-ARMED ROBBERY - HIGHWAY	463	71	47.3	

Did you get it? If you did everything correctly, the Murder/Non-Negligent Manslaughter rate is 126.7.

If you had trouble, remember that you always have to type an = first. You also need to remember your parentheses, and you need to use * for multiplication and / for division.

OK, let's take a look at the formula to use:

=(D2*100000)/150000

Tip: There is a best practice that I am ignoring here, namely that you should never hard-code any numbers. By that, I am referring to the 100,000 and the 150,000 in the formula. A better way is to put these numbers in a cell somewhere, such as at the top of your data or even on a separate worksheet. That way, if I ever need to change either number (such as to calculate the rate for every 10,000 people or to adjust the city's population), I only have to change those numbers in one place. If I had these two numbers in cells A1 and A2, for example, my formula would be:

=(E2*A1)/A2

Note the use of the dollar signs. Do you remember what they are for? They will keep Excel from changing these cell references when you copy the formula. Without them, if I copied the formula down to the next row, that new formula would refer to cells A2 and

A3. The $ signs ensure Excel always will look at these two cells, even if I copy or move the formula.

Teaching Someone to Fish

Relax. You're almost done with the Basic tutorial, and by now you should know enough to comfortably use Excel and navigate around on your own to discover features you haven't learned about yet.

One way to get help is the Office Assistant. You can turn it on and off by going to the Help menu. When the assistant is active, it will proactively try to help you with tasks it thinks you are trying to accomplish and make suggestions. If you find the assistant to be more annoying than helpful, you can turn it off in the Help menu.

A more useful tool is Microsoft Excel Help, which also is under the Help menu. Here you can get help not only from the software's help file, but also online from the Microsoft Web site. If you encounter an error you don't understand or a function you don't know how to use, or if you are not sure how to do something, Help is a good route to go. There is a search box at the top of the Help window. Just underneath this is a link you can use to browse the Excel help file's table of contents. Farther down in the window are links to sites where you can download template files or search for training.

That's It!

You've finished Basic Training. But don't stop here. Details on Excel's most powerful features – pivot tables, filtering, the IF function, importing data from the Web and functions to clean up text – are in the Intermediate tutorial. So take a break, but then come back because all the coolest stuff lies just ahead.