ASA Research

EXCEL FOR CPAs

ASA RESEARCH

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Table of Contents

Excel for CPAs
Course Information

Learning Objectives	To increase the productivity of accountants and CPAs using Excel by introducing them to numerous, hints, tips and advanced capabilities within Excel
Course Level	Intermediate to Advanced
Pre-Requisites	Familiarity with Microsoft Excel
Advanced Preparation	None
Presentation Method	Live lecture using full color projection systems and live Internet access with follow up course materials
Recommended CPE Credit	8 hours
Handouts	Templates, checklists, web examples, manual
Instructors	J. Carlton Collins, CPA

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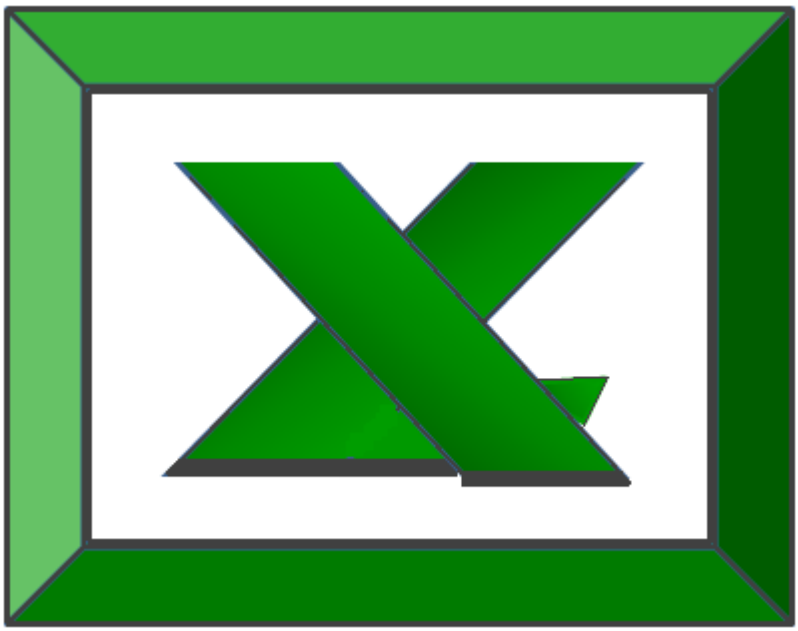


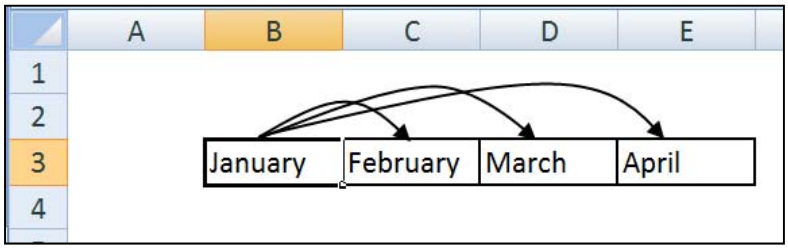
Chapter 1

Excel Essentials

The Fill Handle

Learning Points

The Fill Handle is that tiny little black box located at the bottom right hand corner of a selected cell, or selected range of cells.

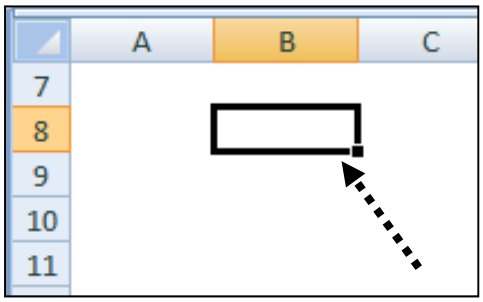


This course covers the following concepts:

1. **AutoFill –** By clicking and dragging the "Fill Handle", you can generate a series of text or data.
2. **Custom Fill -** You can also use the Fill Handle to generate your own personal list such as a list of names or chart of accounts.
3. **Use Scroll Tips to Figure out Where to Stop –** Please notice in the screen below that "Scroll Tips" or "pop up indicators" display the value that AutoFill will insert in each cell.
4. **AutoFill Trends** – A more advanced application of the Fill Handle's AutoFill is achieved when you ask Excel to fill a range based on the trend represented by two cells.
5. **Regression Analysis Using the Fill Handle** – When using the Fill Handle with more than two cells of data (ie: three or more cells of data), AutoFill will automatically use Linear Regression Analysis (The Least Squares Method) to generate the additional data.
6. **Temporarily Disable AutoFill** – Press the "Control Key" while dragging the File Handle to temporarily disable the "AutoFill" effect.
7. **Using AutoFill To Erase Cells with Formatting** – I like to erase data by using the Fill Handle to drag a blank cell, or range of blank cells over existing data. This not only does this erase the data, but gets rid of the formatted fonts, number formats, colors, and borders as well.
8. **Double Click the Fill Handle to Fill an Entire Column** – Another way to use the Fill handle is to double click it to copy a cell or range of cells down the page.
9. **Fill Handle Options -** You can select "Auto Fill Options" from the Fill Handle's Options Box by right clicking on the Fill Handle. This will allow you to choose for how to fill the selection. For example, you can choose to fill formatting only or fill without formatting.
10. **Insert Rows using the Fill Handle** - You can insert or delete rows or columns by holding down the SHIFT key while dragging the fill handle.

The Fill Handle

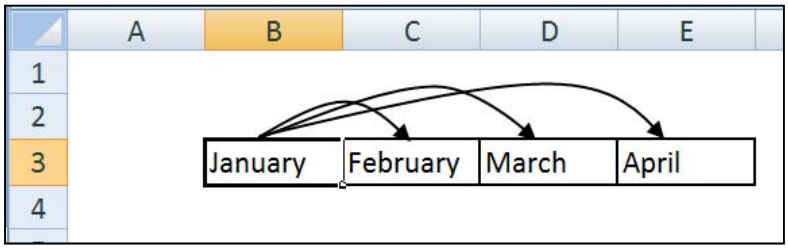
The Fill Handle is that tiny little black box located at the bottom right hand corner of a selected cell, or selected range of cells.



The Fill Handle

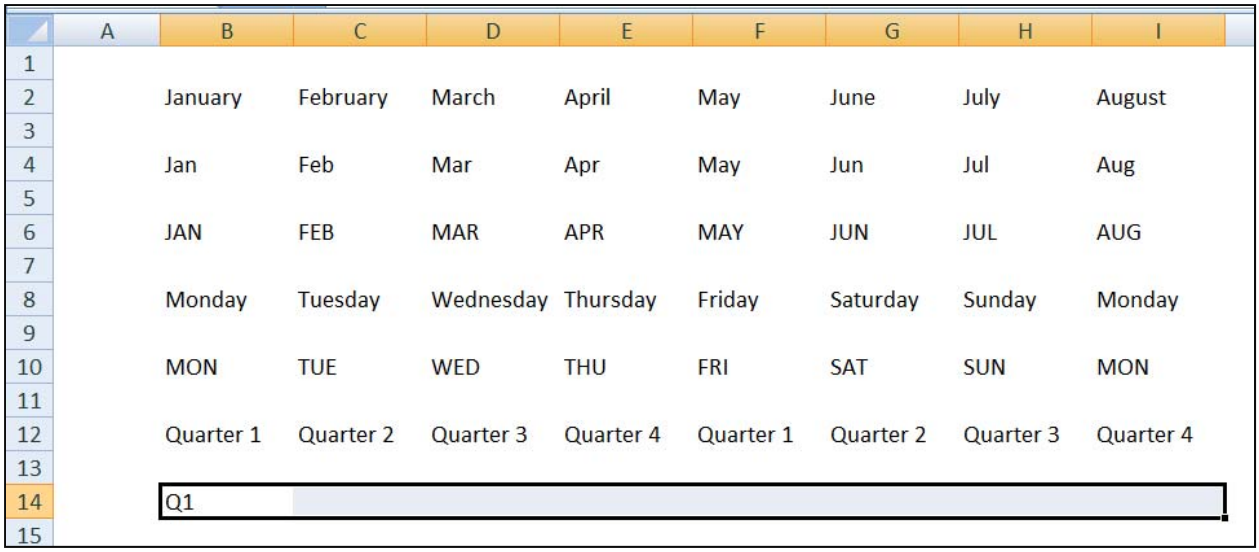
This "Fill Handle" has many applications and can be used to accomplish many things in Excel such as copying data, inserting lists, and inserting calculations. The text below will walk you through the power of the Fill handle, starting with basic applications and continuing to more complex applications.

1. **AutoFill –** By clicking and dragging the "Fill Handle", you can generate a series of text or data. For example, type the word "January" in a cell, then click and drag that cell's Fill Handle. Excel will automatically fill in the range you highlight with "February", "March", "April," and so on. This works in any direction – right, left, up, or down. Excel is smart enough to guess that you would like to insert a list of months and it will fill in the range for you.



Dragging the Fill handle Auto Completes the Selected Range

Now repeat this process using other phrases such as "Jan", "JAN", "Monday", "Mon", "MON", "Quarter 1", "Q1". The results of clicking and dragging the Fill Handle are shown below.



	A	B	C	D	E	F	G	H	I
1									
2		January	February	March	April	May	June	July	August
3									
4		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
5									
6		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG
7									
8		Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Monday
9									
10		MON	TUE	WED	THU	FRI	SAT	SUN	MON
11									
12		Quarter 1	Quarter 2	Quarter 3	Quarter 4	Quarter 1	Quarter 2	Quarter 3	Quarter 4
13									
14		Q1							
15									

Example Results using the Fill Handle

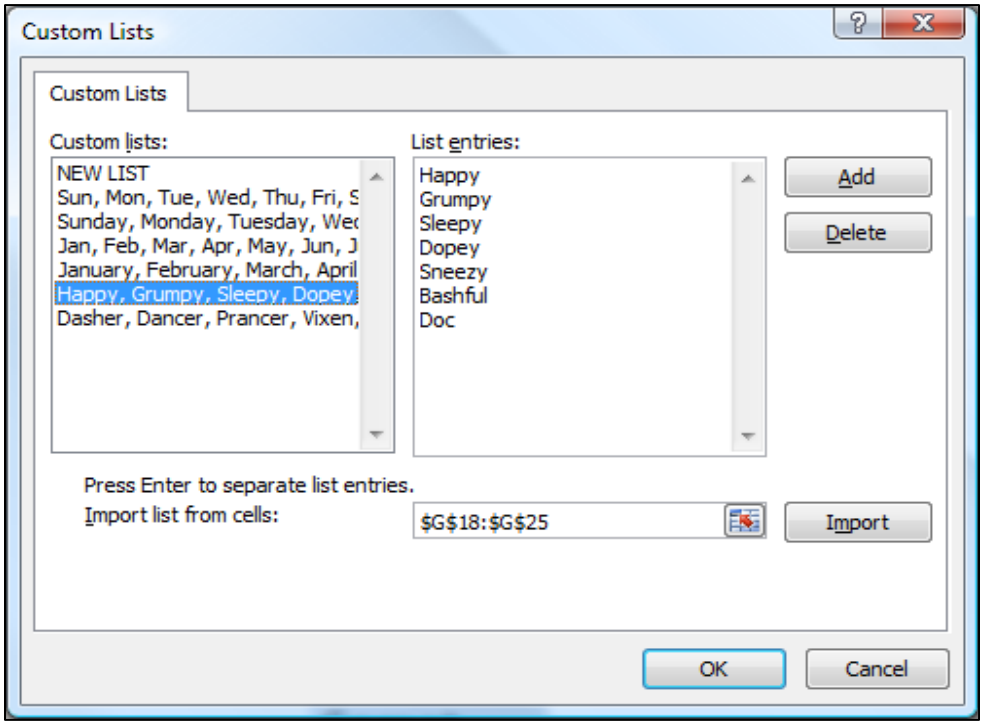
Notice that Excel is smart enough to figure out that you are trying to fill a range with a list, and it uses the data in the cell to identify that list. The result is that in many cases you can fill a range of cells much faster by just typing in the first cell, and dragging the results out the proper number of cells.

2. **Custom Fill -** You can also use the Fill Handle to generate your own personal list such as a list of names or chart of accounts. To accomplish this, you must first set up a customer list as follows:

   In Excel 2007 and Later - Choose the "Office Start Button", "Excel Options Button", and the "Edit Custom Lists…" Button.

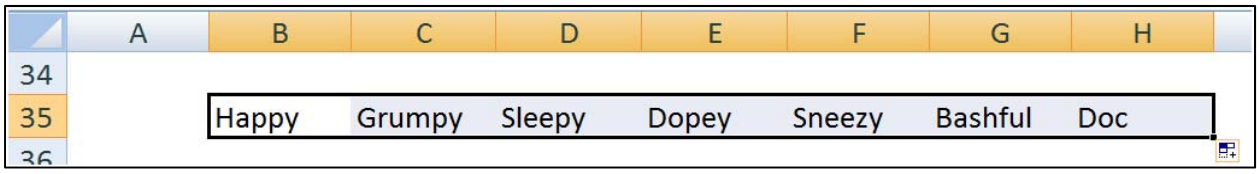
   In Excel 2003 and Earlier - select "Tools", "Options", and the "Custom Lists" Tab.

The following dialog box will be displayed. Type in the list you would like to create in the "List Entries" box as shown below, and click the "Add" button.



The Custom Lists Dialog Box

Thereafter, you can use the Fill Handle to recreate this list any time you want just by typing in one of the entries, and then clicking and dragging that cell's Fill Handle out the desired number of cells. For example, as shown below the word Happy is typed into cell B35, and the Fill Handle is used to fill in the remaining names of Snow White's seven dwarfs.



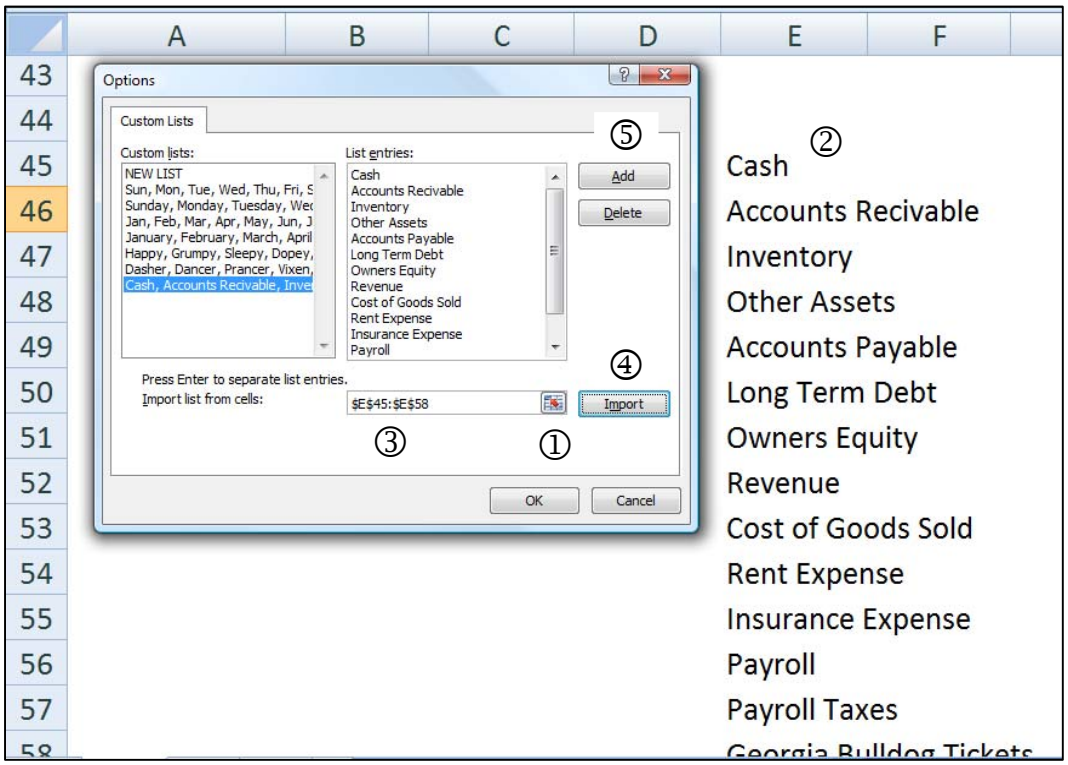
The Custom Lists dialog box can save time and effort when entering labels or lists that you frequently use such as employee names, locations, department titles, or even account numbers and account descriptions. If you find yourself inputting the same list over and over again, you should consider setting up your list as a pre-defined custom list in Excel as described above.

Tip 1 – Excel 2007 and later provide up to 512 items in a list while Excel 2003 and earlier are limited to just 99 items in a list.

Tip 2 – The "Custom List" dialog box offers a great "Import Tool" that allows you to create a new custom list from any list you have previously entered into Excel. *(This means you do not have to re-type the complete list in order to create a new "Custom List".)* Notice that the Import button is located in the bottom right hand corner of the "Custom List" dialog box. In my hands on Excel classes I have found that even some of my advanced students often have trouble using

this feature for the first time because they leave out some of the necessary steps. To help you, here is a list of all of the steps you will need to follow to successfully use this feature:

1. Click the “Cell Chooser Button”
2. Highlight the desired list in your Excel worksheet
3. Click Enter to display the selected range in the “Import List from Cells” Box
4. Then Click the “Import” Button
5. Then Click the “Add” Button.



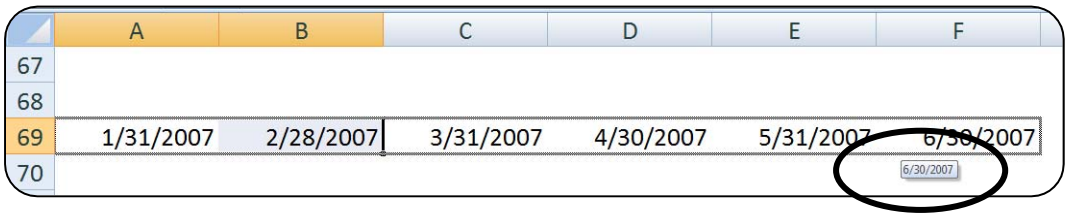
The Custom Lists Dialog Box

In the example above, the chart of accounts has been set up as a Custom List. In the future the user can fill in the complete chart of accounts simply by typing the word “Cash” and dragging that cell’s Fill Handle the required number of spaces. It’s not hard at all, but for some reason many students are tripped up on this feature. Once you’ve used this “Import Custom List” feature once, it is easy to use again in the future.

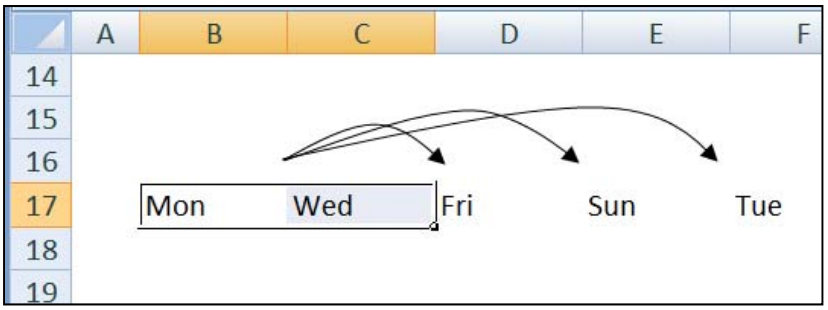
Of course your “Custom Lists” can be deleted when no longer needed. Further if you purchase a new computer your “Custom Lists” can be migrated to your new computer.

Once you create a custom list you can use AutoFill to quickly and easily enter the labels in the list into any row or column. Simply type any of the labels in the list and drag it down or across with the Fill Handle.

3. **Use Scroll Tips to Figure out Where to Stop –** Please notice in the screen below that "Scroll Tips" or "pop up indicators" display the value that AutoFill will insert in each cell. This makes it easier to select a fill range of appropriate size. This "Scroll Tips" feature also works when filling Custom Lists.



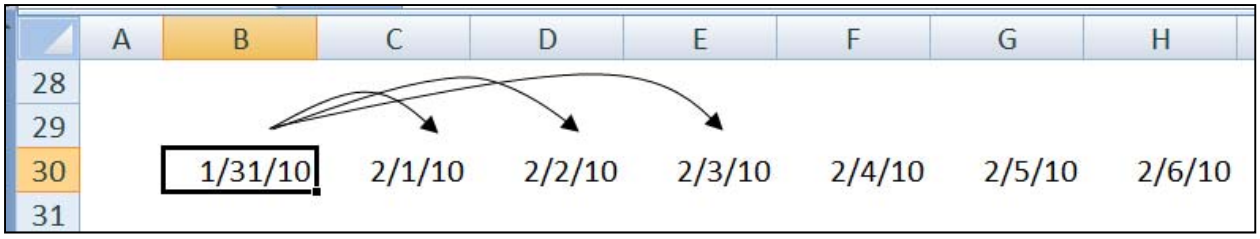
4. **AutoFill Trends** – A more advanced application of the Fill Handle's AutoFill is achieved when you ask Excel to fill a range based on the trend represented by two cells. For example, type in the words "Mon" and "Wed" in two adjacent cells as shown below. Next highlight both cells and drag the Fill Handle to the right. The results are that Excel displays every other day.



Using the Fill Handle with Two Selected Cells

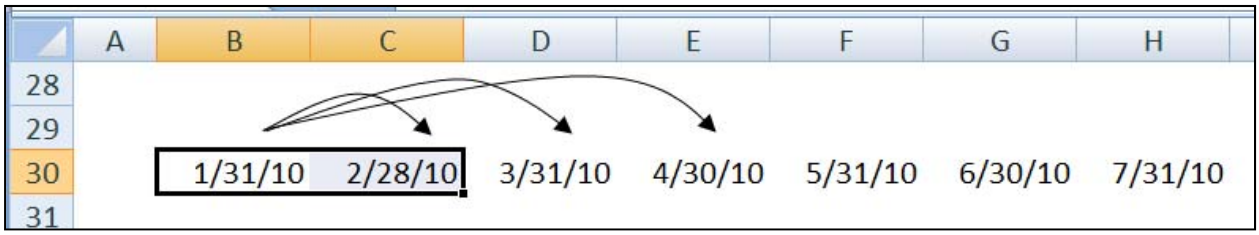
In this case, Excel evaluates the data in both cells and determines that you wish to display every other day, and obeying your wishes, Excel fills in the remaining range using the day of the week list based on every other day.

A more useful example of this feature can be seen when working with dates. Suppose a user wants to display the end of the month as a date at the top of twelve columns. The user starts by typing 1/31/2010 in cell B30 as shown below, and drags the cell's Fill handle to the right. Unfortunately in this case Excel generates a list displaying every day – not the end of month as desired.



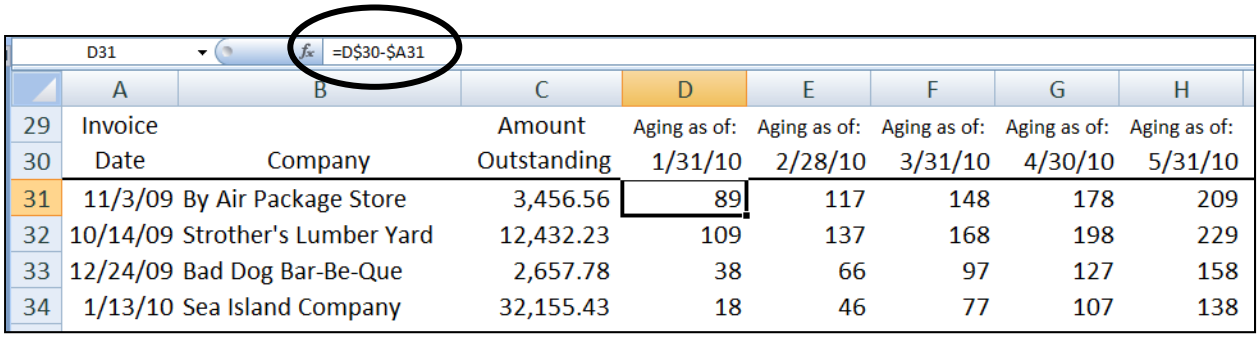
Dragging the Fill Handle of a Single Date Cell Does not Produce the Desired Results

To achieve the desired results, the users types in the date 2/28/2010 in cell C30, selects the two cells and then drags the Fill Handle to the right. In this case Excel is able to evaluate the data and determine that the user wants to display the end of each month – and Excel complies as shown below.



Dragging the Fill Handle of Two Dates Cell Does Produce the Desired Results

In some cases users prefer to have date headings displayed as true dates such as 1/31/10 or "2/28/10" rather than text phrases such as "January" or "February". This is because it is far easier to produce calculations that refer to these column headings. Consider the example below in which the user refers to column headings in order to age a list of invoices.



	A	B	C	D	E	F	G	H
29	Invoice		Amount	Aging as of:	Aging as of:	Aging as of:	Aging as of:	Aging as of:
30	Date	Company	Outstanding	1/31/10	2/28/10	3/31/10	4/30/10	5/31/10
31	11/3/09	By Air Package Store	3,456.56	89	117	148	178	209
32	10/14/09	Strother's Lumber Yard	12,432.23	109	137	168	198	229
33	12/24/09	Bad Dog Bar-Be-Que	2,657.78	38	66	97	127	158
34	1/13/10	Sea Island Company	32,155.43	18	46	77	107	138

Example in Which Column Heading is Referred to in Invoice Aging Calculation

5. **Regression Analysis Using the Fill Handle** – When using the Fill Handle with more than two cells of data (ie: three or more cells of data), AutoFill will automatically use Linear Regression Analysis (The Least Squares Method) to generate the additional data. As you will see, this capability has a profound impact when preparing a budget, projection or forecast. Presented below is a simple example, followed by a more detailed example.

Simple Regression Example: In the first screen below we start with three columns of data for the months of January, February and March.

	A	B	C	D	E	F	G
1	Sales Forecast for the Second Quarter						
2							
3		Jan	Feb	Mar			
4	Dept 1	343	476	588			
5	Dept 2	455	459	755			
6	Dept 3	327	633	589			
7	Dept 4	432	455	512			
8		1,557	2,023	2,444			
9							

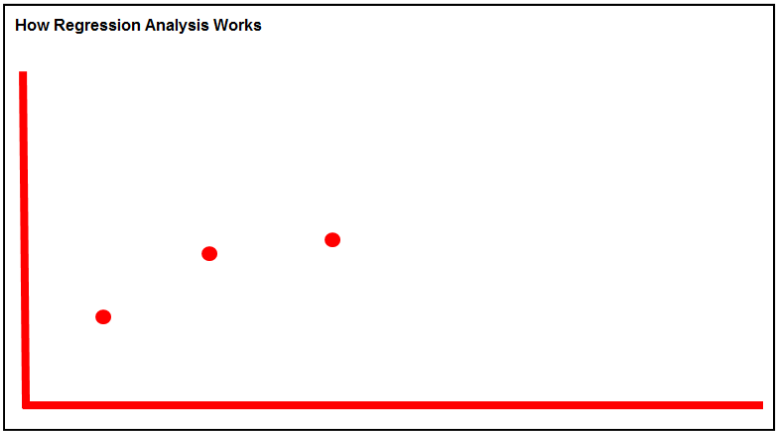
Start with Three Simple Columns of Data

These three columns are highlighted and the Fill Handle is dragged out three additional columns. The results are that Excel fills in columns for April, May and June – column including headings, totals and data. But where does this new data come from? The answer is that Excel uses Linear Regression Analysis to produce this data.

	A	B	C	D	E	F	G
1	Sales Forecast for the Second Quarter						
2							
3		Jan	Feb	Mar	Apr	May	Jun
4	Dept 1	343	476	588	714	837	959
5	Dept 2	455	459	755	856	1,006	1,156
6	Dept 3	327	633	589	778	909	1,040
7	Dept 4	432	455	512	546	586	626
8		1,557	2,023	2,444	2,895	3,339	3,782

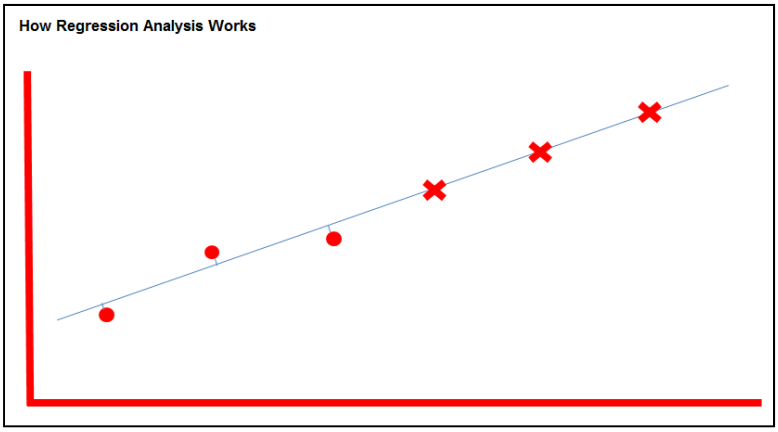
The Fill Handle Uses Regression to Project April, May and June

Excel evaluates the data for January, February, and March on a row by row basis, and uses this information to project the following variables. To help you better understand this concept, here is how regression works from a visual perspective:



Excel Plots the Beginning Data in a Chart As Shown Above

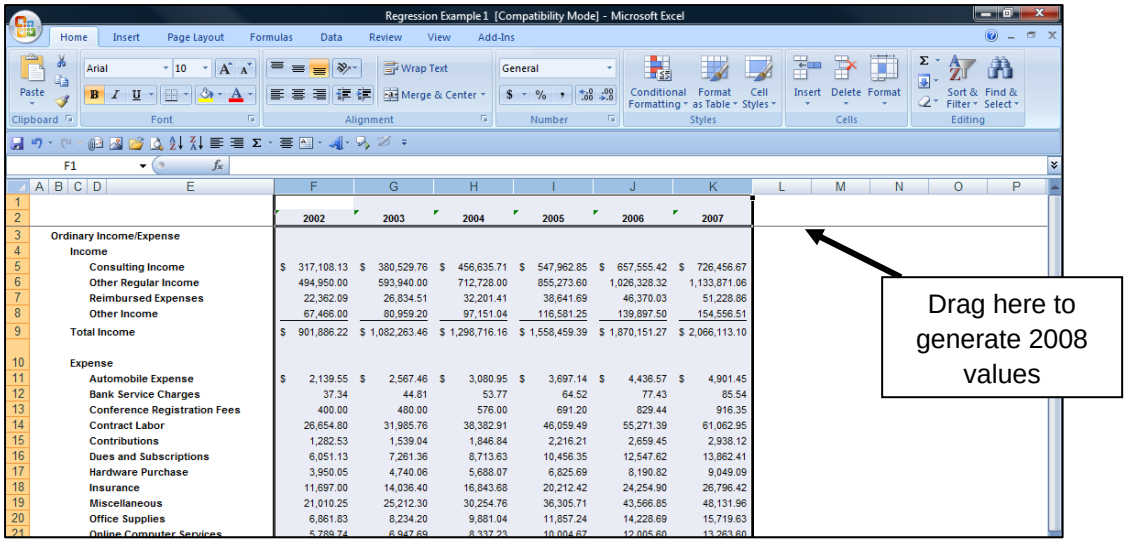
Excel then draws a straight line through these three data points. There is only one true line in which the distance between the data points and the line is the least amount. Excel then uses this line and the intervals between the original points to project the next values which are shown in X's below.



Excel Draws a Straight Line Thru the Data Points Which is Used to Project the New Data

Of course Excel does not really plot the data or draw a line on a chart, but this is in essence what happens. Excel calculates the results using algebra's linear equation formulas based on vectors. For more information, linear algebra is described here in the Wikipedia: http://en.wikipedia.org/wiki/Linear_algebra.

More Detailed Example: In the example shown below I have exported the income statements for the past six years from my accounting system. The next step is to highlight these six columns from 2002 through 2007 as shown below, and drag the Fill Handle to project 2008 values. (Please note that in this example I have selected the entire columns and the Fill Handle is shown in the upper right hand corner of the selected range.)



	2002	2003	2004	2005	2006	2007
Ordinary Income/Expense						
Income						
Consulting Income	$ 317,108.13	$ 380,529.76	$ 456,635.71	$ 547,962.85	$ 657,555.42	$ 726,456.67
Other Regular Income	494,950.00	593,940.00	712,728.00	855,273.60	1,026,328.32	1,133,871.06
Reimbursed Expenses	22,362.09	26,834.51	32,201.41	38,641.69	46,370.03	51,228.86
Other Income	67,466.00	80,959.20	97,151.04	116,581.25	139,897.50	154,556.51
Total Income	$ 901,886.22	$ 1,082,263.46	$ 1,298,716.16	$ 1,558,459.39	$ 1,870,151.27	$ 2,066,113.10
Expense						
Automobile Expense	$ 2,139.55	$ 2,567.46	$ 3,080.95	$ 3,697.14	$ 4,436.57	$ 4,901.45
Bank Service Charges	37.34	44.81	53.77	64.52	77.43	85.54
Conference Registration Fees	400.00	480.00	576.00	691.20	829.44	916.35
Contract Labor	26,654.80	31,985.76	38,382.91	46,059.49	55,271.39	61,062.95
Contributions	1,282.53	1,539.04	1,846.84	2,216.21	2,659.45	2,938.12
Dues and Subscriptions	6,051.13	7,261.36	8,713.63	10,456.35	12,547.62	13,862.41
Hardware Purchase	3,950.05	4,740.06	5,688.07	6,825.69	8,190.82	9,049.09
Insurance	11,697.00	14,036.40	16,843.68	20,212.42	24,254.90	26,796.42
Miscellaneous	21,010.25	25,212.30	30,254.76	36,305.71	43,566.85	48,131.96
Office Supplies	6,861.83	8,234.20	9,881.04	11,857.24	14,228.69	15,719.63
Online Computer Services	5,789.74	6,947.69	8,337.23	10,004.67	12,005.60	13,263.60

Using the Fill Handle to Create a Budget for 2008 based on Six Years of Actual Data

In this example, Excel projects the 2008 beginning budget values based on the actual data for the past six years. Do you have a better way to prepare a budget for the coming year? I doubt it. Do you have a faster way? I doubt it. Give it a try.

Warning - Regression only works when the underlying data follows a consistent trend. If revenue has grown steadily for the past six years, then regression will likely project a reasonable value for year seven. However if revenue has jumped all over the board for the past six years, then regression will likely give you a worthless projection for year seven.

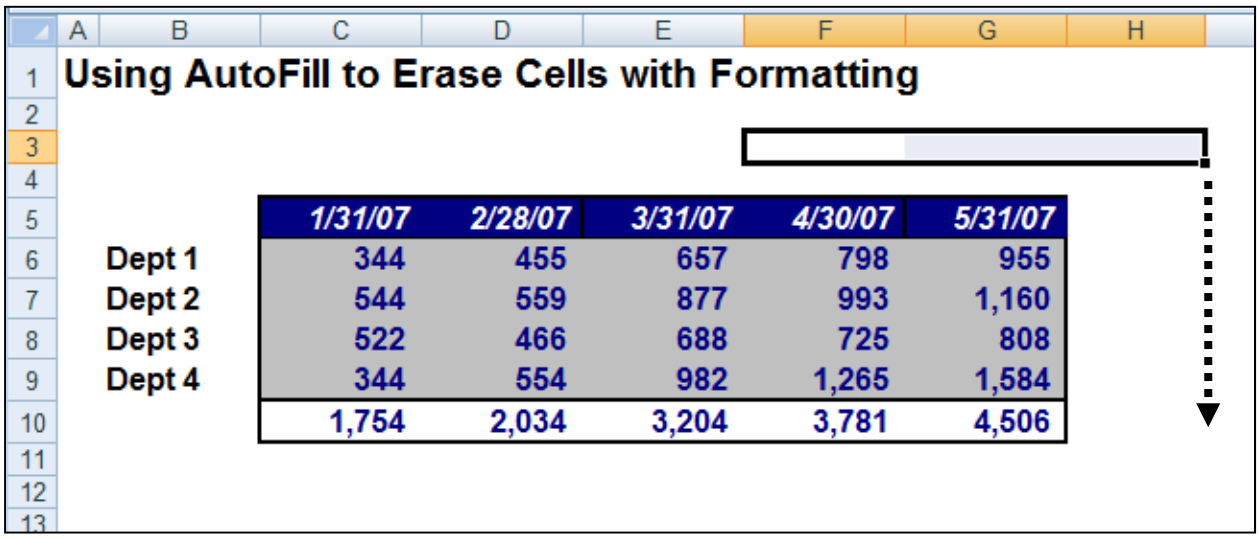
Consider that in 2008 gasoline prices jumped from $1.60 per gallon to more than $4.00 per gallon. If you use regression to predict gasoline prices for 2009 based on this 2008 increase, regression will likely predict gasoline prices in the $10.00+ per gallon range for 2009, when in fact gasoline prices have dropped back down. Therefore after applying regression techniques, you should always visit each line item in the projection and consider whether the projected values make sense, or whether some other basis offers a better alternative.

For example, a new lease agreement or revised depreciation schedule would provide a better basis for a 2008 budget than would any regression projection – therefore you would use these more accurate numbers instead of regression's projected numbers.

6. **Temporarily Disable AutoFill** – Sometimes you would like to use the Fill Handle without the "AutoFill" affect. For example you might really want to copy the word "January" or the year "2009" from one cell to another. In this situation, press the "Control Key" while dragging the File Handle to temporarily disable the "AutoFill" affect.

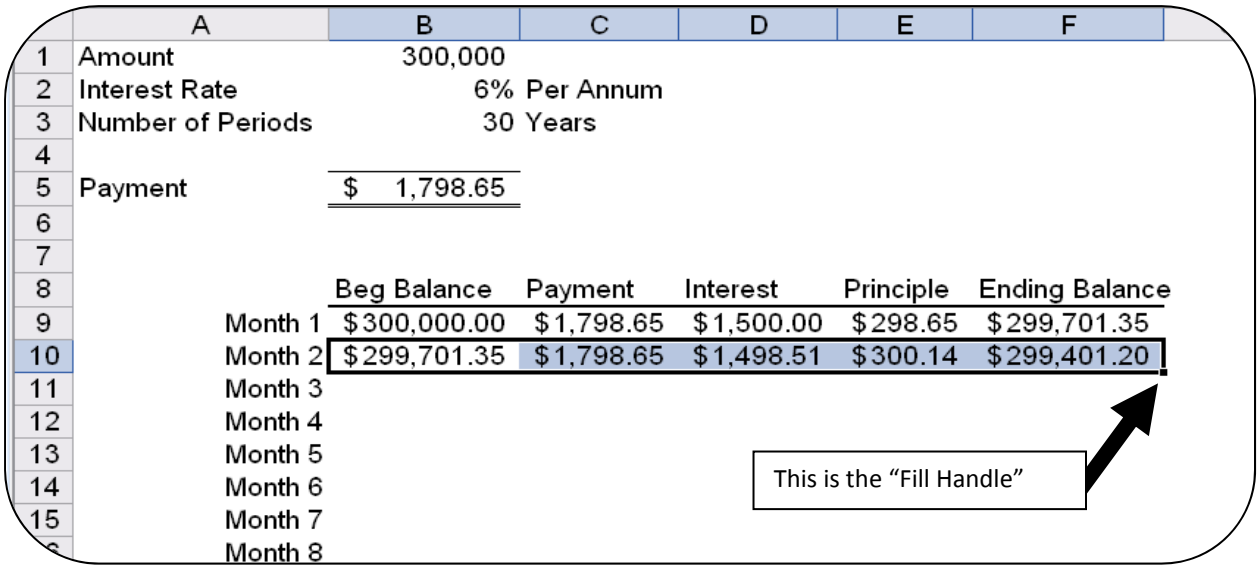
7. **Using AutoFill To Erase Cells with Formatting** – I like to erase data by using the Fill Handle to drag a blank cell, or range of blank cells over existing data. This not only erases the data, but gets rid of the formatted fonts, number formats, colors, and borders as well.

It helps to understand that cells in a worksheet are set to a general format as a default, but once data is entered in that cell, the format changes immediately. If you enter a percentage amount, then that cell now holds onto a percentage format – even if you erase the contents. If you enter a date, that cell now holds onto a date format even if you erase the contents. By using the Fill Handle to erase cells, you not only erase the content and formatting of that cell, you also reset the cell's formatting back to general so that it is ready to use again without the clutter of left over formatting. In the screen shown below, the user is preparing to drag the Fill Handle downward over the columns for April and May – thereby erasing all contents and formatting from these cells.



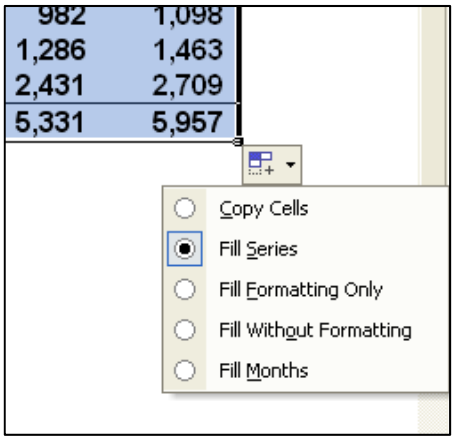
The Fill Handle Can Be Used to Drag Blank Cells over Data Cells, Effectively Erasing Them

8. **Double Click the Fill Handle to Fill an Entire Column** – Another way to use the Fill handle is to double click it to copy a cell or range of cells down the page. For example, in financial worksheets such as loan amortization schedules you are often faced with the task of building a formula and copying it down dozens or even hundreds of cells. In these situations there is frequently an adjacent column that goes down as far as you would like to copy the new formula - simply double click on the fill handle as shown below to fill columns B thru F with the formulas from row 10. The copy will continue down the page as long as the adjacent column A contains data.

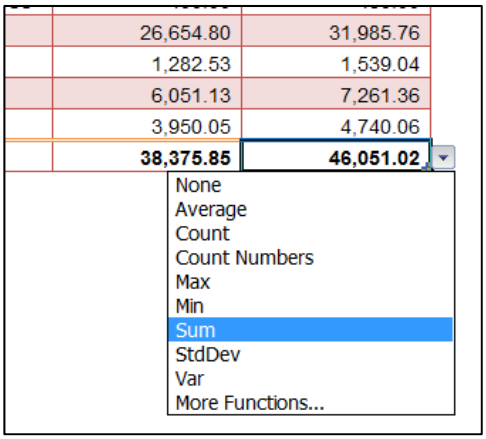


Double Clicking the Fill Handle Copies the Selected Range Downward Adjacent to Data in Column A

9. **Fill Handle's Options** - You can select "Auto Fill Options" from the Fill Handle's Options Box by right clicking on the Fill Handle. This will allow you to choose for how to fill the selection. For example, you can choose to fill formatting only or fill without formatting.



Excel 2003 Screen



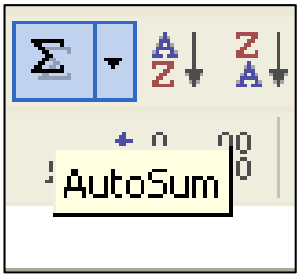
Excel 2007 Screen

The Fill day, Fill months, etc. will only be available if the selected cell or range contains a date.

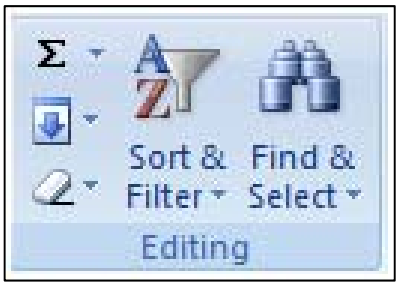
10. **Insert Rows using the Fill Handle** - You can also insert or delete rows or columns by holding down the SHIFT key while dragging the Fill Handle. To do this, click a row or range of rows, hold down the Shift key, and drag downward.

The AutoSum Tool

The AutoSum tool makes it easy to inserting totals, averages, and other functions into your worksheet. The AutoSum icon is located on the Standard tool bar in Excel 2003 and earlier, and on the Home Ribbon in Excel 2007 and later – as shown below.



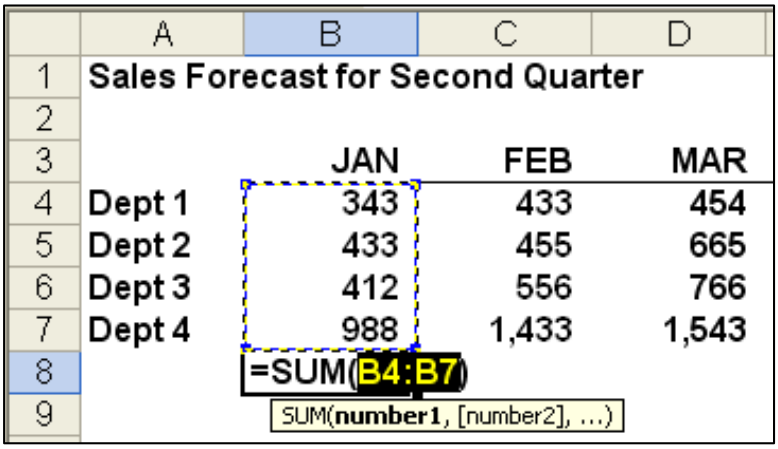
Excel 2003 Screen



Excel 2007 Screen

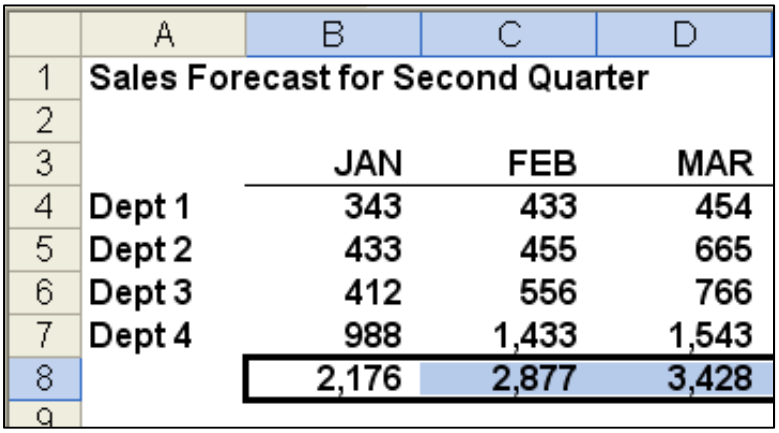
The AutoSum features works the same way in all versions of Excel. However, the way in which this tool behaves depends upon how you select the data to be totaled. So that you can better understand this concept, presented below are five different approaches to using the AutoSum tool.

A. **One Cell At A Time -** The first approach is to select a blank cell under a column of numbers and click the AutoSum tool to create a formula. In this case, Excel will insert a box of marching ants (animated dashes) around the numbers it believes you want to total. (At this point you can change the selection using the arrow keys or the mouse pointer.) You must then confirm that the selection is correct by pressing the enter key. Once you have created the first formula, you can then move to the next column and repeat the process, or simply copy the resulting formula to other cells as desired.



Inserting a Total Formula with AutoSum Tool – One Cell At a Time

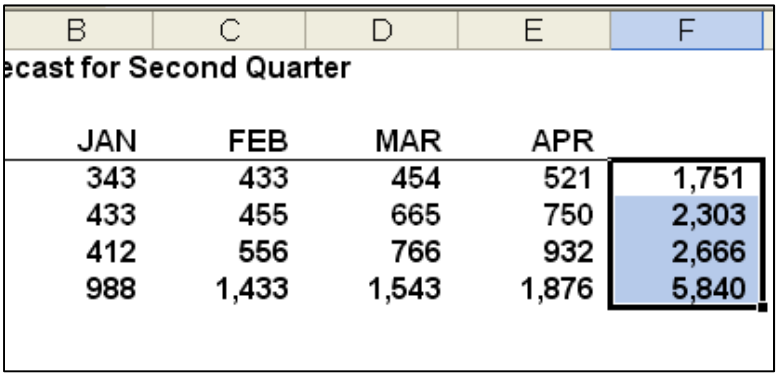
B. **One Row At A Time -** The second method for using the AutoSum tool is to select the entire row underneath a matrix of numbers as shown below (cells B8 thru D8 have been selected). Next click the AutoSum tool and Excel will insert totaling formulas underneath each of the columns of numbers automatically – there will not be a pause in the action allowing you to select a different range or asking you to confirm the selected range.



	A	B	C	D
1	Sales Forecast for Second Quarter			
2				
3		JAN	FEB	MAR
4	Dept 1	343	433	454
5	Dept 2	433	455	665
6	Dept 3	412	556	766
7	Dept 4	988	1,433	1,543
8		2,176	2,877	3,428
9				

Inserting a Total Formula with AutoSum Tool – One Row at a Time

C. **One Column at a Time** – Similar to method B described above, you can also select an entire column next to a matrix of numbers as shown below (cells in column F have been selected). Next click the AutoSum tool and Excel will insert totaling formulas next to each of the rows of numbers automatically – once again there will not be a pause in the action allowing you to select a different range or asking you to confirm the selected range.



B	C	D	E	F
ecast for Second Quarter				
JAN	FEB	MAR	APR	
343	433	454	521	1,751
433	455	665	750	2,303
412	556	766	932	2,666
988	1,433	1,543	1,876	5,840

Inserting a Total Formula with AutoSum Tool – One Column at a Time

D. **Use AutoSum by Highlighting the Data Matrix** – Perhaps the best way to use the AutoSum tool is to highlight all of the data, and then drop down one blank row and over one blank column as shown below.

	B	C	D	E	F
orecast for Second Quarter					
	JAN	FEB	MAR	APR	
	343	433	454	521	1,751
	433	455	665	750	2,303
	412	556	766	932	2,666
	988	1,433	1,543	1,876	5,840
	2,176	2,877	3,428	4,079	12,560

Inserting Total Formulas with AutoSum Tool by Highlight the Data Matrix

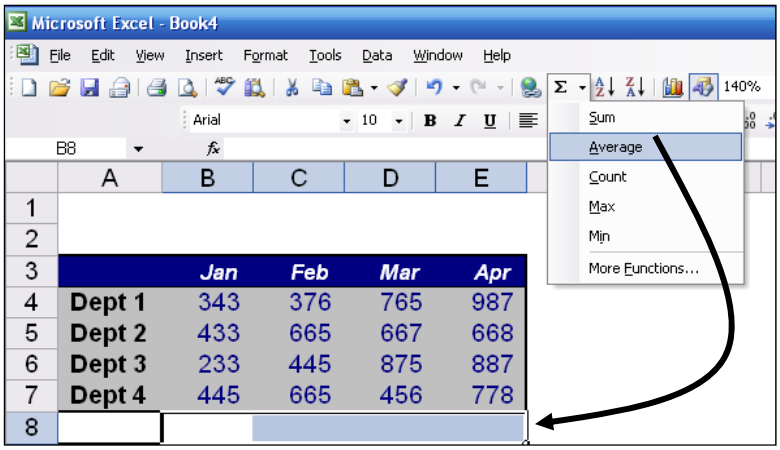
This approach to using the AutoSum tool inserts row totals, column totals and even the cross footing total. It is more accurate than the other three methods described above because the totals include all data in your painted range – you do not have to rely on excel to make the correct selection for you.

E. Using AutoSum when the Data Matrix Contains Blanks – The real power of using the approach of highlighting the entire data matrix becomes clear when the data contains blank cells, blank rows, or blank columns. Using the first three AutoSum methods described above in this situation could cause the totaling formulas to be incorrect because Excel picks the data to be summed by looking for blanks. With this solution, you are able to accurately control exactly which data is included in the total formulas.

	A	B	C	D	E	F
1	Sales Forecast for Second Quarter					
2						
3		JAN	FEB	MAR	APR	
4	Dept 1	343	433	454	521	1,751
5	Dept 2	433	455	665	750	2,303
6						
7	Dept 3	412	556	766	932	2,666
8	Dept 4	988	1,433	1,543	1,876	5,840
9		2,176	2,877	3,428	4,079	12,560

Overcoming Blank Rows When Using AutoSum

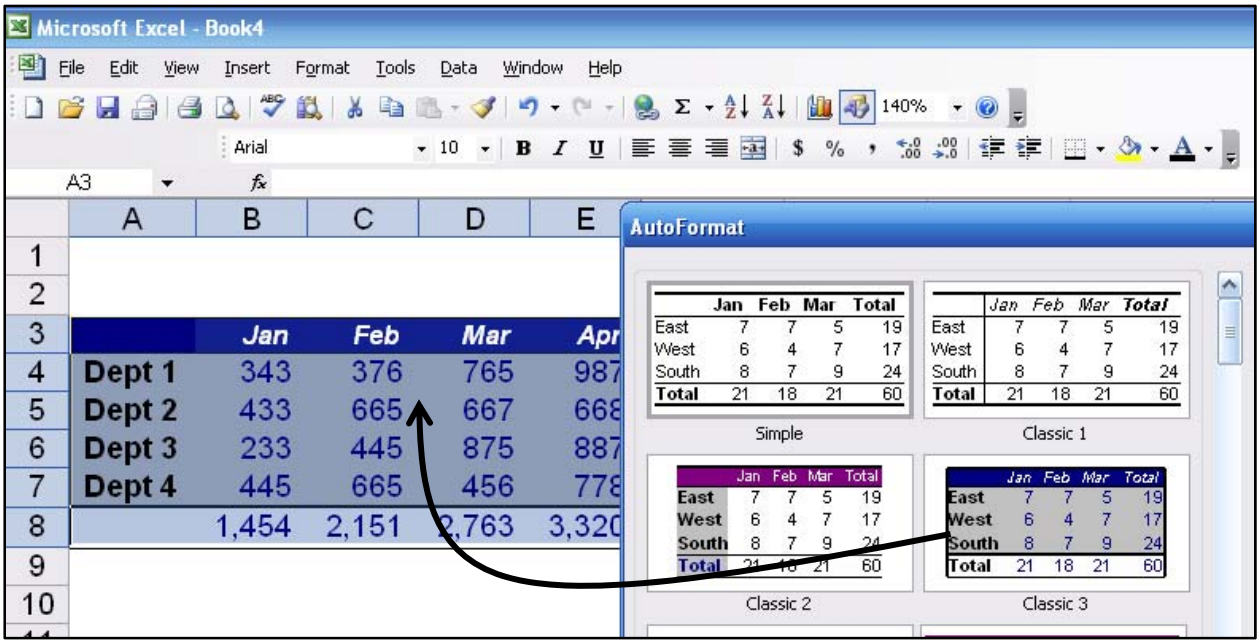
11. The AutoSum Drop-Down - Beginning in Excel 2003 and later, the AutoSum tool includes a drop-down box that allows the user to apply other formulas such as “Averaging”, “Counting”, “Minimum”, “Maximum”, Etc. The AutoSum tool stills works the same way as described in the five steps above, but with more power in that the user can control the type of formula applied to the data. This drop down functionality is shown in the screen below.



The AutoSum Drop-Down Functionality

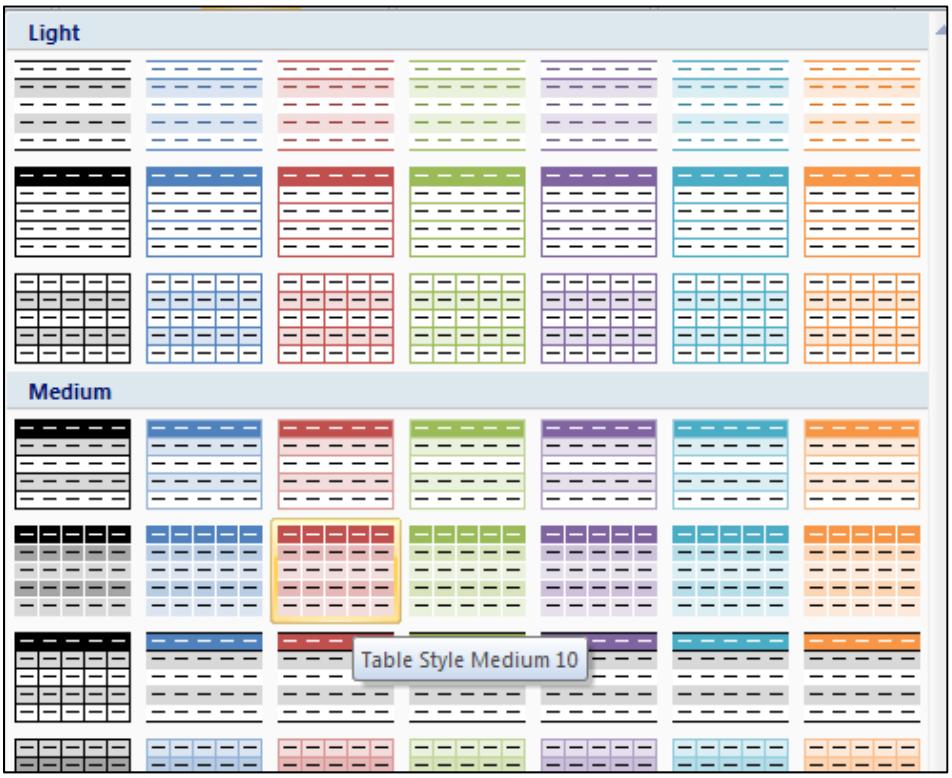
Tip - AutoSum applies the same number format as the first cell in the range to be summed (unless you applied a different number format to the cell that will hold the SUM formula)

12. **The AutoFormat Tool in Excel 2003 -** In Excel 2003 and earlier versions, Excel offers an AutoFormat feature that applies a format automatically to a range of data. To use this feature, start by placing the cursor in any single cell within the contiguous data range to be formatted, or highlight the entire range to be formatted. Next select AutoFormat from the Tools menu and excel will display a selection of 16 predefined formats that you can use to automatically format your data.



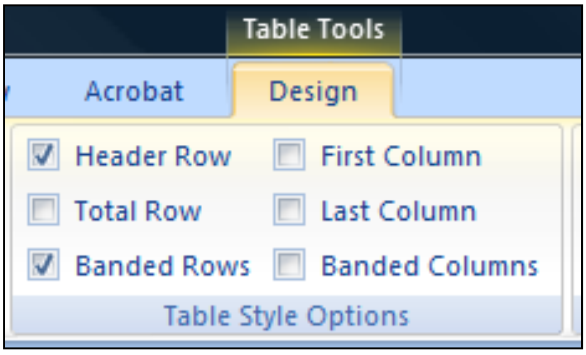
The AutoFormat Tool in Excel 2003 and Earlier Versions

13. **The AutoFormat Tool in Excel 2007** - In Excel 2007 and later versions, this AutoFormat functionality has been improved and expanded to include a larger gallery of formats including better styles, table formats, conditional formats, cell formats and more. Examples of the 60 predefined default AutoFormats are shown in the screen below. The built-in tools allow the user to create additional custom defined formats.

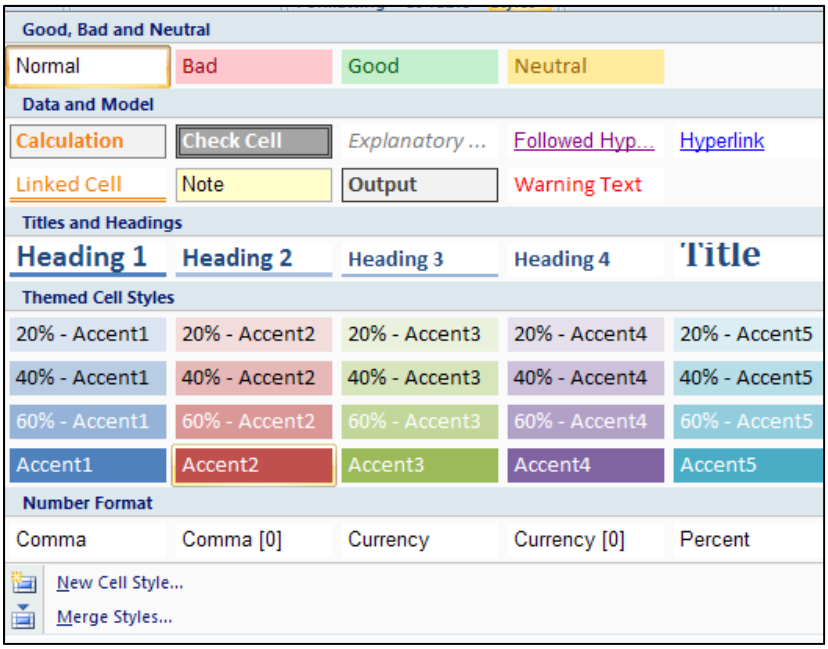


The Table Styles in Excel 2007 Replace the AutoFormat Capabilities in Excel 2003

In addition, the new Table Tools Ribbon shown below provides the user with the ability to control formatting by rows, columns, headers, and totals.



In addition, Excel 2007 has stronger style supports for individual cells. As shown in the screen below there are 59 pre-defined cell formats and you can also create your own cell styles for easy application in the future.

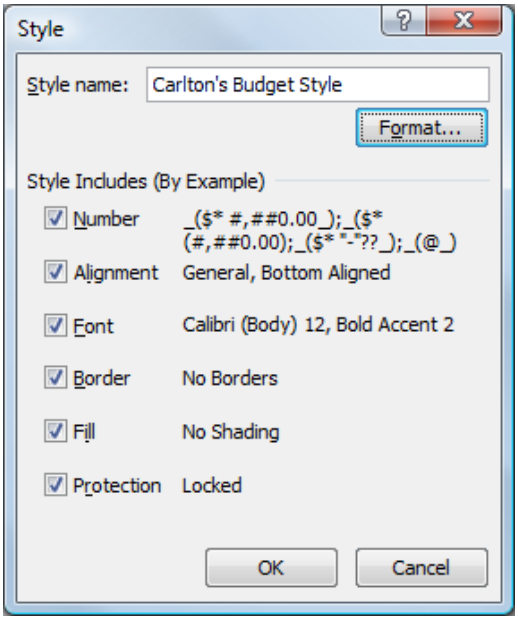


Cell Styles in Excel 2007

Styles enable users to create and apply a specific style, including font, font size, fill color, font color, underlines, borders, bolding, and italics to a cell, or multiple cells. Later, if you change the format style, your changes will automatically update all the cells that have been formatted with that style. Even if you never change your mind, often the use of styles can make formatting a large workbook quicker and easier.

The custom cell format design dialog box is shown to the right.

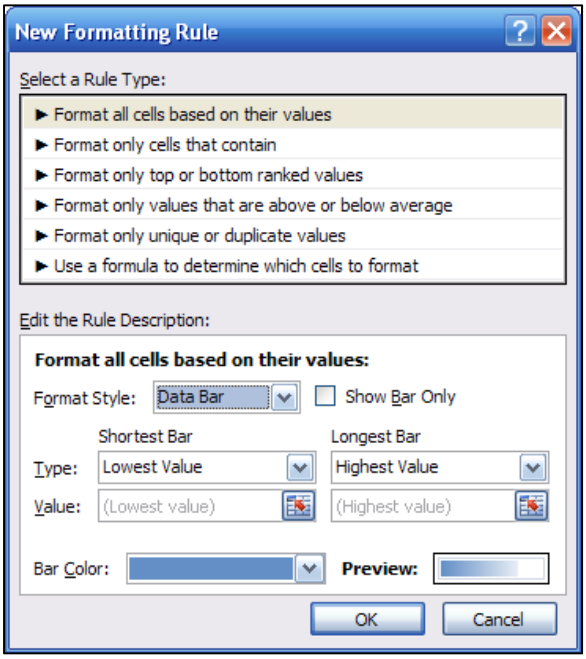
Tip - To prevent anyone from making changes to specific cells, you can also use a cell style that locks cells.



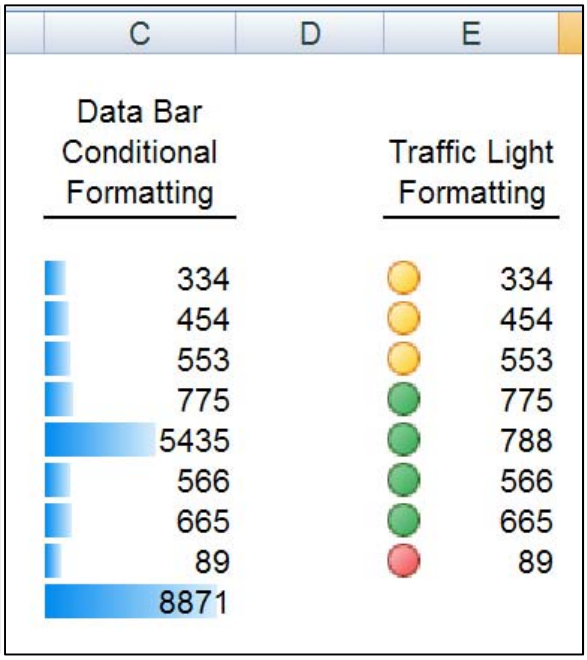
The Custom Cell Style Format Dialog Box

14. **The Conditional Format Tool in Excel 2007 -** Excel 2003 provides the ability to format cells based on conditions. For example a number might be displayed in red if it is a negative number. However, Excel 2007 and later has expanded this conditional formatting capability with "Data

Bar" and "Traffic Light" reporting, as well as an improved menu for applying conditional formats. Presented below is the "Data "Bar" dialog box and an example of "Data Bar" and "Traffic Light" formatting.



The Conditional Formatting Dialog Box

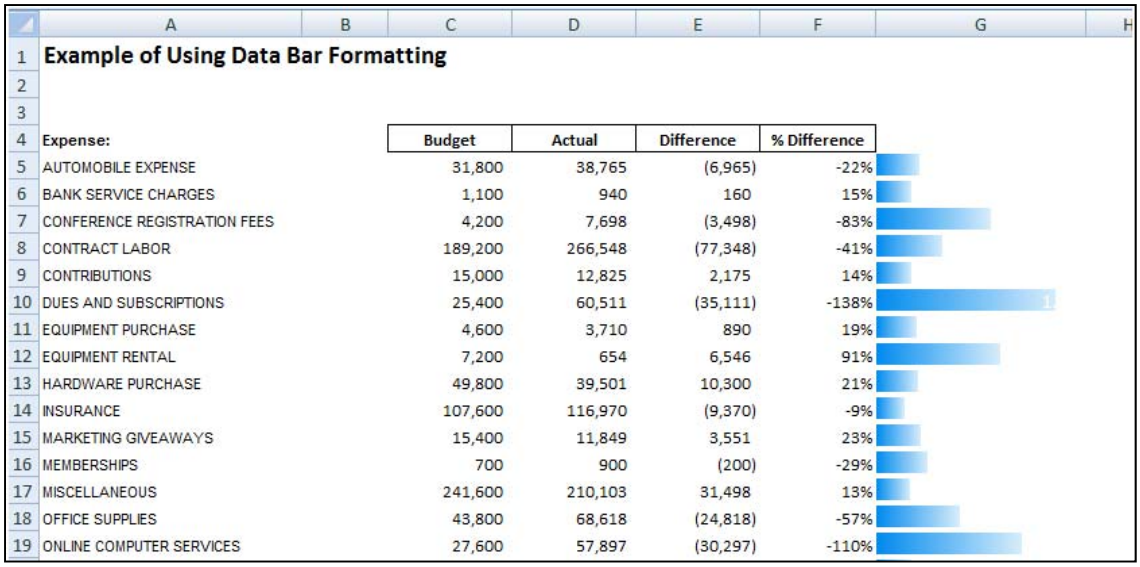


Examples of Conditional Formatting

The "Data Bar" formatting tool enables you to easily identify those numbers that are significantly larger or smaller than the rest of the numbers in a column or range.

Data Bar Example - In the example below, actual data is compared to budget and the difference is shown in column E. Column F calculates the percentage difference from budget. Not visible to you are the Absolute (ie: "=ABS(F5)") formulas in column F which then convert the percentage differences in Column E to positive numbers. When analyzing data at this point, we are not concerned about whether the number is over or under budget, rather we are concerned about those items that are close to budget rather than way under or over budgeted amounts.

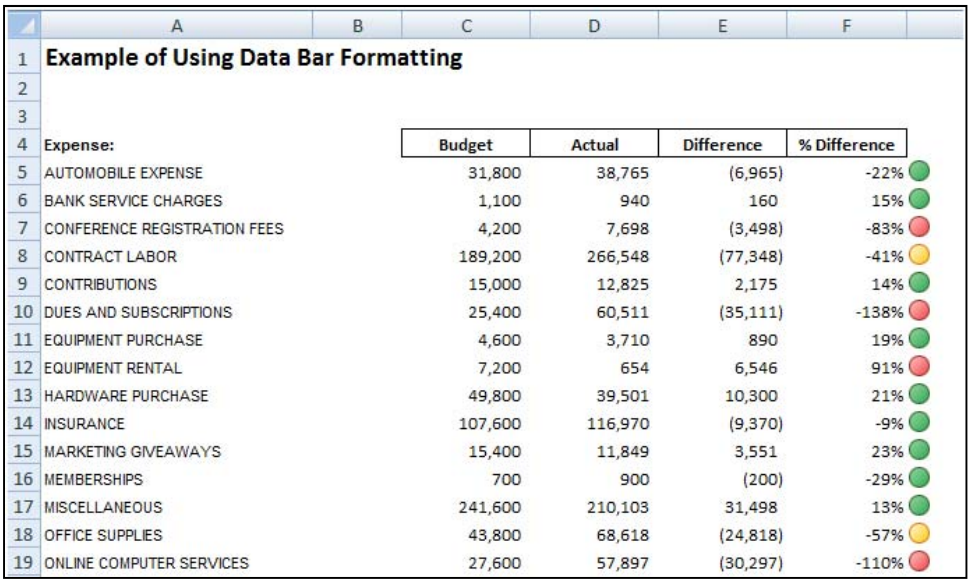
The "Data Bar" Format is then applied to the absolute differences ion Column F. As shown below, the larger bars indicate those lines items that are significantly over or under budget – these items need the most attention. Notice that this approach enables the user to concentrate on percentage out of budget rather than dollar amount out of budget. For example, *Conference Registration Fees* (row 7) are only $3,498 out of budget while *Miscellaneous* (row 17) is $31,498 out of budget. Obviously *Miscellaneous* is a larger amount, but based on percentages the *Conference Registration Fees* are 84% out of budget compared to only a 13% variance for *Miscellaneous*. The "Data Bar" formatting helps the reader identify those items significantly out of budget, even if the amount is a smaller amount.



	A	B	C	D	E	F	G	H
1	**Example of Using Data Bar Formatting**							
2								
3								
4	**Expense:**		**Budget**	**Actual**	**Difference**	**% Difference**		
5	AUTOMOBILE EXPENSE		31,800	38,765	(6,965)	-22%		
6	BANK SERVICE CHARGES		1,100	940	160	15%		
7	CONFERENCE REGISTRATION FEES		4,200	7,698	(3,498)	-83%		
8	CONTRACT LABOR		189,200	266,548	(77,348)	-41%		
9	CONTRIBUTIONS		15,000	12,825	2,175	14%		
10	DUES AND SUBSCRIPTIONS		25,400	60,511	(35,111)	-138%		
11	EQUIPMENT PURCHASE		4,600	3,710	890	19%		
12	EQUIPMENT RENTAL		7,200	654	6,546	91%		
13	HARDWARE PURCHASE		49,800	39,501	10,300	21%		
14	INSURANCE		107,600	116,970	(9,370)	-9%		
15	MARKETING GIVEAWAYS		15,400	11,849	3,551	23%		
16	MEMBERSHIPS		700	900	(200)	-29%		
17	MISCELLANEOUS		241,600	210,103	31,498	13%		
18	OFFICE SUPPLIES		43,800	68,618	(24,818)	-57%		
19	ONLINE COMPUTER SERVICES		27,600	57,897	(30,297)	-110%		

Example of Data Bar Formatting When Comparing Actual to Budgets

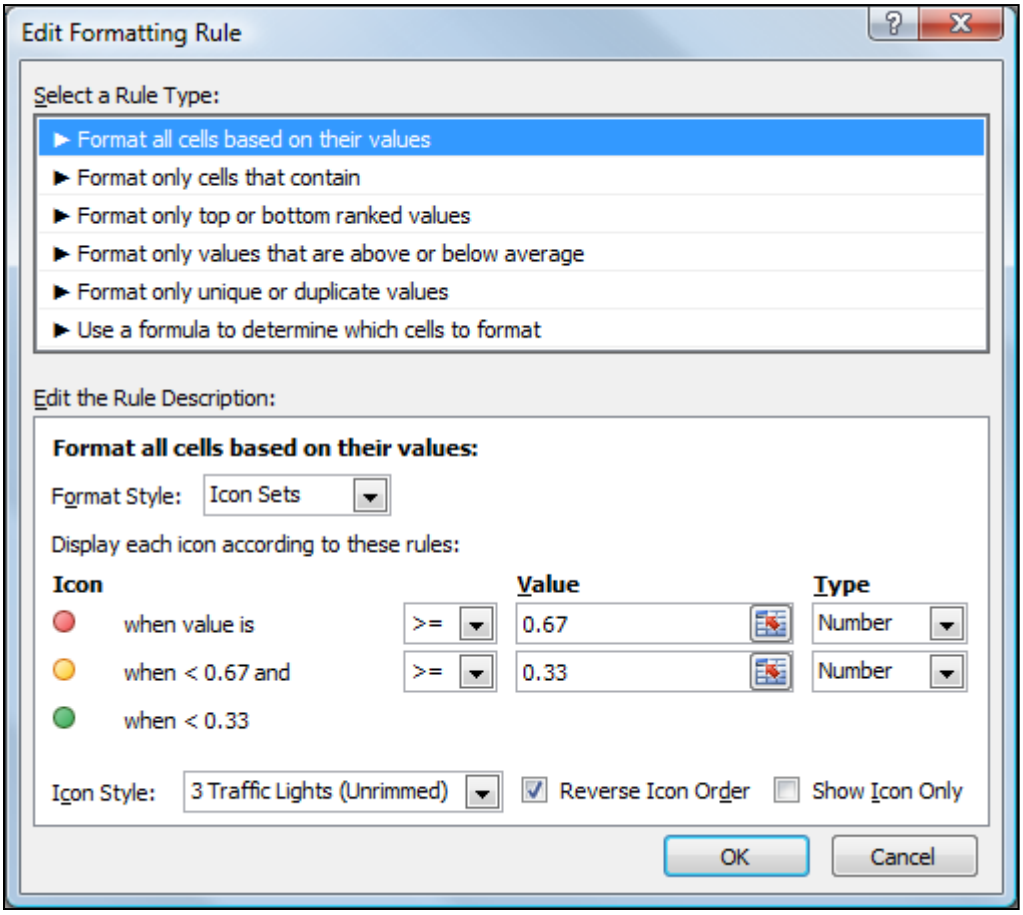
Similarly "Traffic Light" reporting allows you to create formats based on formulas to help identify items requiring attention. In the example below we have created a rule to display a green light if actual is with 33% of budget; a yellow light if actual is from 33% to 67% within budget, and a red light if actual exceeds the budget amount by more than 67%.



	A	B	C	D	E	F
1	**Example of Using Data Bar Formatting**					
2						
3						
4	**Expense:**		**Budget**	**Actual**	**Difference**	**% Difference**
5	AUTOMOBILE EXPENSE		31,800	38,765	(6,965)	-22%
6	BANK SERVICE CHARGES		1,100	940	160	15%
7	CONFERENCE REGISTRATION FEES		4,200	7,698	(3,498)	-83%
8	CONTRACT LABOR		189,200	266,548	(77,348)	-41%
9	CONTRIBUTIONS		15,000	12,825	2,175	14%
10	DUES AND SUBSCRIPTIONS		25,400	60,511	(35,111)	-138%
11	EQUIPMENT PURCHASE		4,600	3,710	890	19%
12	EQUIPMENT RENTAL		7,200	654	6,546	91%
13	HARDWARE PURCHASE		49,800	39,501	10,300	21%
14	INSURANCE		107,600	116,970	(9,370)	-9%
15	MARKETING GIVEAWAYS		15,400	11,849	3,551	23%
16	MEMBERSHIPS		700	900	(200)	-29%
17	MISCELLANEOUS		241,600	210,103	31,498	13%
18	OFFICE SUPPLIES		43,800	68,618	(24,818)	-57%
19	ONLINE COMPUTER SERVICES		27,600	57,897	(30,297)	-110%

Example of Traffic Light Formatting When Comparing Actual to Budgets

There are thousands of different ways in which these conditional formats can be applied – limited only by the user's imagination. To help you understand this power, presented below are the rule settings used to create the "Traffic Light" report shown above.



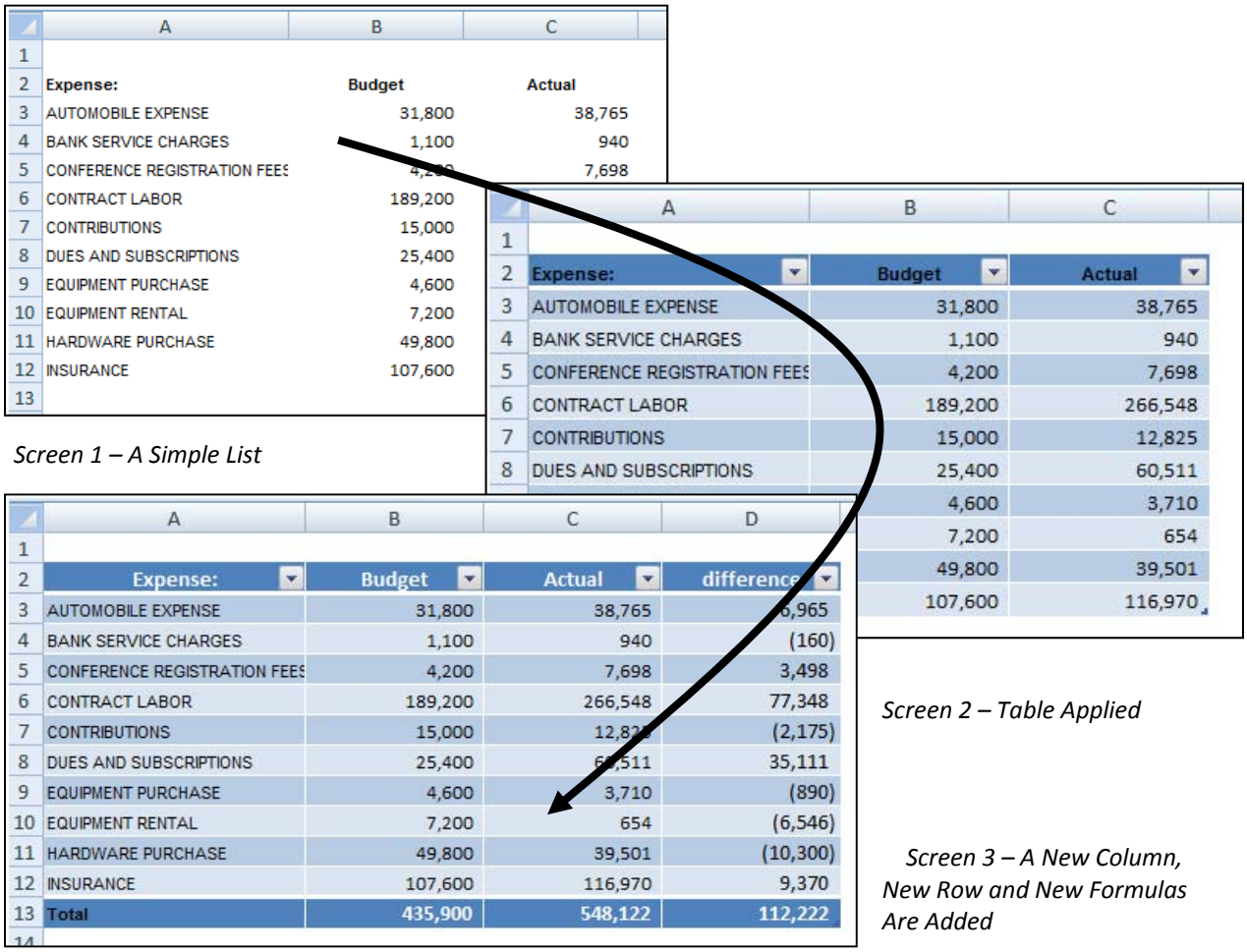
The Conditional Formatting Dialog Box for Managing Traffic Light Rules

Other enhancements to Excel 2007 include new "Top/Bottom" tools for displaying the top or bottom values in a range; "Highlight" tools for displaying duplicates, equivalents, conditional dates, and other types of data; and "Color Scale" tools for identifying specific data by color.

15. Managing Tables in Excel 2007 - Excel 2007 and later editions introduce the concept of a "Table" (Not be confused with data tables, pivot tables or what-if analysis tables). Tables are similar to the "Lists" found in Excel 2003, but offer new functionality. To create a "Table" simply highlight a range and "insert a table" – the resulting range then takes on new features such as:

1. Apply formats from a gallery of format styles.
2. Headers automatically have drop down filter buttons.
3. Apply banded row formatting.
4. Expand the table's columns merely by typing in a new column heading.
5. Expand the table's rows merely by typing the Tab Key on the last row.
6. Insert new columns and headers are
7. Drop down functions appear at the bottom of each column.
8. Insert Sum Functions and other functions at the bottom of the tables
9. Publish the table to a server running Microsoft Windows SharePoint Services 3.0

The three screens below show the progression of creating a table, starting with a simple list of data in screen 1, followed by the application of formatting, headers, and drop down filter buttons in screen 2, and the insertion of a new column and total row in screen 3. What is difficult to see in these pictures is that Excel automatically expanded the table when the Difference column was added including the automatic application of new formatting in column D. Additionally, when the new formula was typed in cell D3, Excel automatically copied that formula to the cells below. This functionality makes working with tables faster and easier in many cases.



	A	B	C
1			
2	**Expense:**	**Budget**	**Actual**
3	AUTOMOBILE EXPENSE	31,800	38,765
4	BANK SERVICE CHARGES	1,100	940
5	CONFERENCE REGISTRATION FEES	4,200	7,698
6	CONTRACT LABOR	189,200	
7	CONTRIBUTIONS	15,000	
8	DUES AND SUBSCRIPTIONS	25,400	
9	EQUIPMENT PURCHASE	4,600	
10	EQUIPMENT RENTAL	7,200	
11	HARDWARE PURCHASE	49,800	
12	INSURANCE	107,600	
13			

Screen 1 – A Simple List

	A	B	C
1			
2	Expense:	Budget	Actual
3	AUTOMOBILE EXPENSE	31,800	38,765
4	BANK SERVICE CHARGES	1,100	940
5	CONFERENCE REGISTRATION FEES	4,200	7,698
6	CONTRACT LABOR	189,200	266,548
7	CONTRIBUTIONS	15,000	12,825
8	DUES AND SUBSCRIPTIONS	25,400	60,511
		4,600	3,710
		7,200	654
		49,800	39,501
		107,600	116,970

Screen 2 – Table Applied

	A	B	C	D
1				
2	Expense:	Budget	Actual	difference
3	AUTOMOBILE EXPENSE	31,800	38,765	6,965
4	BANK SERVICE CHARGES	1,100	940	(160)
5	CONFERENCE REGISTRATION FEES	4,200	7,698	3,498
6	CONTRACT LABOR	189,200	266,548	77,348
7	CONTRIBUTIONS	15,000	12,825	(2,175)
8	DUES AND SUBSCRIPTIONS	25,400	60,511	35,111
9	EQUIPMENT PURCHASE	4,600	3,710	(890)
10	EQUIPMENT RENTAL	7,200	654	(6,546)
11	HARDWARE PURCHASE	49,800	39,501	(10,300)
12	INSURANCE	107,600	116,970	9,370
13	Total	435,900	548,122	112,222

Screen 3 – A New Column, New Row and New Formulas Are Added

Data Queries

It is a fact of life that CPAs work with data...but CPAs don't make the data up. The data actually comes from somewhere and in this day and age, the data is usually already in a electronic format. Therefore, there is very little reason to retype data. Excel's data query commands are useful for grabbing data, whether that data exists in another application, a database, or even a web page.

Do not confuse excel's "Import" commands with Excel's "Data Query" commands. They differ in that data queries result in establishing a permanent link to the original source data. The user need only press the Refresh button to retrieve new data from the exact same source. Using the import command works, but it condemns the user to repeat the same import, parse, and format commands over and over, each time you wish to update your data. On the other hand, the data query command makes future updates as quick as a click of a button.

16. Existing Connections - Web Queries - Excel includes pre-designed "queries" that can import commonly used data in 10 seconds. For example, you could use a web query to create a stock portfolio. All you need is a connection to the Internet and of course, some stock ticker symbols. In Excel 2003 select "Data, Import External Data, Import Data" and walk through the web query wizard for importing stock quotes. In Excel 2007 and later use the Data Ribbon, Existing Connections, Stock Quotes option. In seconds, Excel will retrieve 20 minute delayed stock prices from the web (during the hours when the stock market is open) and display a grid of complete up-to-date stick price information that is synchronized to the stock market's changing stock prices. With each click of the "Refresh" button, the stock price information in Excel is updated - this sure beats picking numbers out of the newspaper.

Friday, April 24, 2009

11:34:42 AM

Stock Quotes Provided by MSN Money

Click here to visit MSN Money

			Last	Previous Close	High	Low	Volume	Change	% Change	52 Wk High	52 Wk Low
Microsoft Corp	Chart	News	20.29	18.92	20.45	19.5	66,077,415	1.37	7.24%	32.1	14.87
Apple Inc	Chart	News	124.32	125.4	125.14	123.73	6,275,076	-1.08	-0.86%	192.24	78.2
Coca-Cola Co	Chart	News	42.87	42.92	43.09	42.71	3,205,193	-0.05	-0.12%	61	37.44
United Parcel Service Inc	Chart	News	53.48	53.33	54.04	52.53	2,533,150	0.15	0.28%	74.14	37.99
International Business Machines Corp	Chart	News	100.33	101.42	101.97	100.09	2,665,080	-1.09	-1.07%	130.93	69.5
Wal-Mart Stores Inc	Chart	News	48.73	48.86	49.56	48.51	8,042,577	-0.13	-0.27%	63.85	46.25

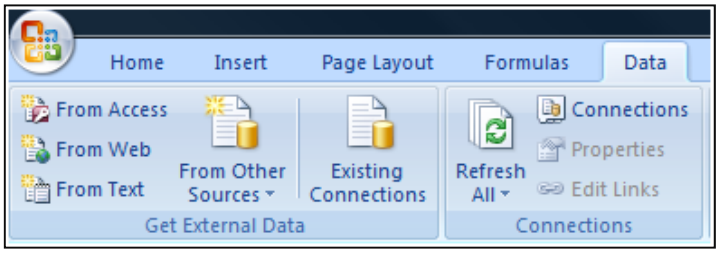
Completing the Stock Portfolio – Next link the grid data to another worksheet, and insert new columns containing the number of shares owned, as wells as an additional column to computer the total value based on shares owned, as shown below.

Friday, April 24, 2009
11:40:17 AM

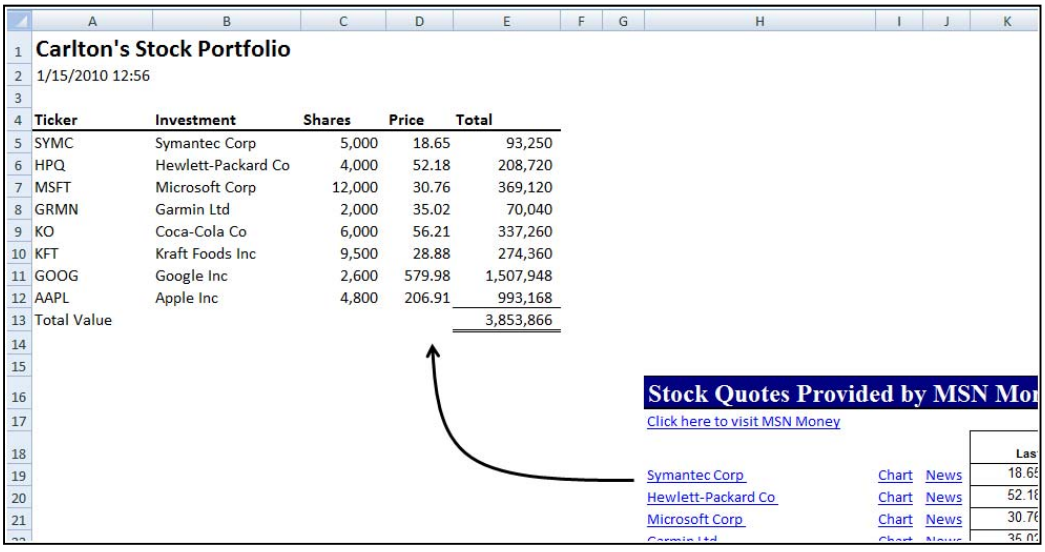
Stock Quotes Provided by MSN Money

	Last	Shares Owned	Current Value	Previous Close	High	Low	Volume	Change	% Change
Microsoft Corp	20.29	13,500	273,915	18.92	20.45	19.5	66077415	1.37	0.0724
Apple Inc	124.32	2,400	298,368	125.4	125.14	123.73	6275076	-1.08	-0.0086
Coca-Cola Co	42.87	12,000	514,440	42.92	43.09	42.71	3205193	-0.05	-0.0012
United Parcel Service Inc	53.48	1,780	95,194	53.33	54.04	52.53	2533150	0.15	0.0028
International Business Machines	100.33	2,800	280,924	101.42	101.97	100.09	2665080	-1.09	-0.0107
Wal-Mart Stores Inc	48.73	8,300	404,459	48.86	49.56	48.51	8042577	-0.13	-0.0027
			1,867,300						

Refreshing the Stock Prices - Once you have created your portfolio, simply click the Refresh Data button on the "External Data" Toolbar in Excel 2003 or on the "Data Ribbon" in Excel 2007 shown below to update the current value of your Portfolio.



Query Parameters - There are several options to help you extract exactly the data you want they way you want it. The "Web Query Parameters Box", "Web Query Options box" and "External Data Properties Box" provide options for controlling your web query. The final stock report might appear as follows:

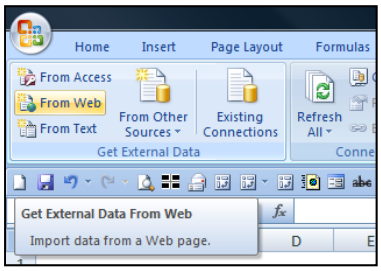


Carlton's Stock Portfolio
1/15/2010 12:56

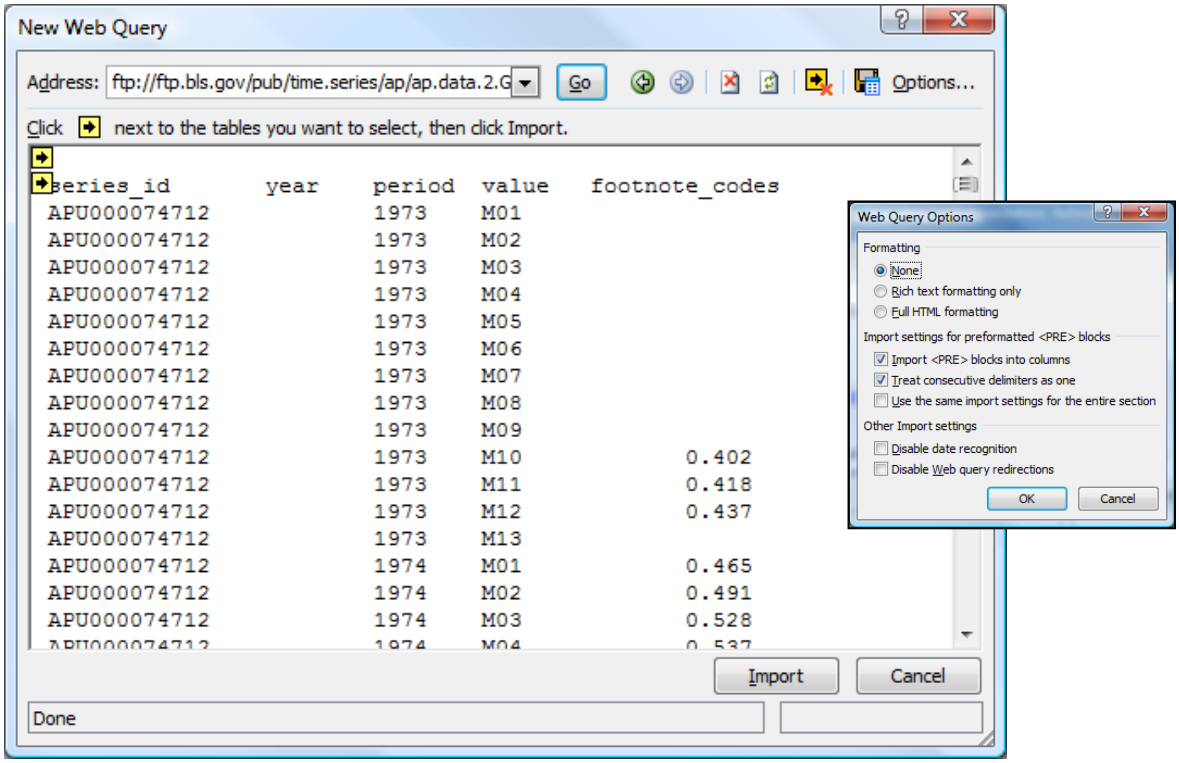
Ticker	Investment	Shares	Price	Total
SYMC	Symantec Corp	5,000	18.65	93,250
HPQ	Hewlett-Packard Co	4,000	52.18	208,720
MSFT	Microsoft Corp	12,000	30.76	369,120
GRMN	Garmin Ltd	2,000	35.02	70,040
KO	Coca-Cola Co	6,000	56.21	337,260
KFT	Kraft Foods Inc	9,500	28.88	274,360
GOOG	Google Inc	2,600	579.98	1,507,948
AAPL	Apple Inc	4,800	206.91	993,168
Total Value				3,853,866

17. Web Page Queries - How many web pages are there in the world? According to Wikipedia, there were 25.21 billion web pages as of march 2009 – and Excel provides the

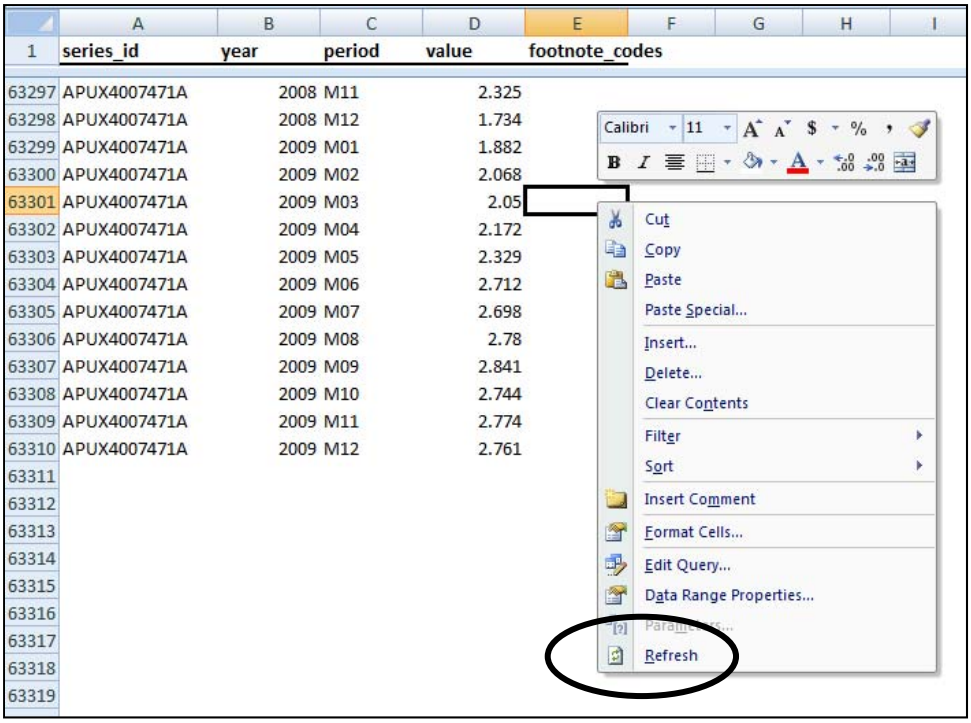
capability to query everyone of them. Here's how it works: Select the "Get External Data", "From Web" option from the data Ribbon as shown below.



The new Web Query dialog box will be displayed. Type in any web page address (such as ftp://ftp.bls.gov/pub/time.series/ap/ap.data.2.Gasoline), choose the desired options from the options box, and select import.



Excel will then embed the web page in question directly in Excel. Thereafter, each time you click the REFRESH button in Excel, the current web site information will be displayed in Excel. You can link to the information using formulas an functions.



18. Database Queries (Querying Accounting Systems) - Microsoft Excel can also query and retrieve data you want from an external data source. For example, you can retrieve Microsoft Excel data about a specific product by region. You can create a simple query by using the Query Wizard, or you can create a more complex query by using the advanced features of Microsoft Query.

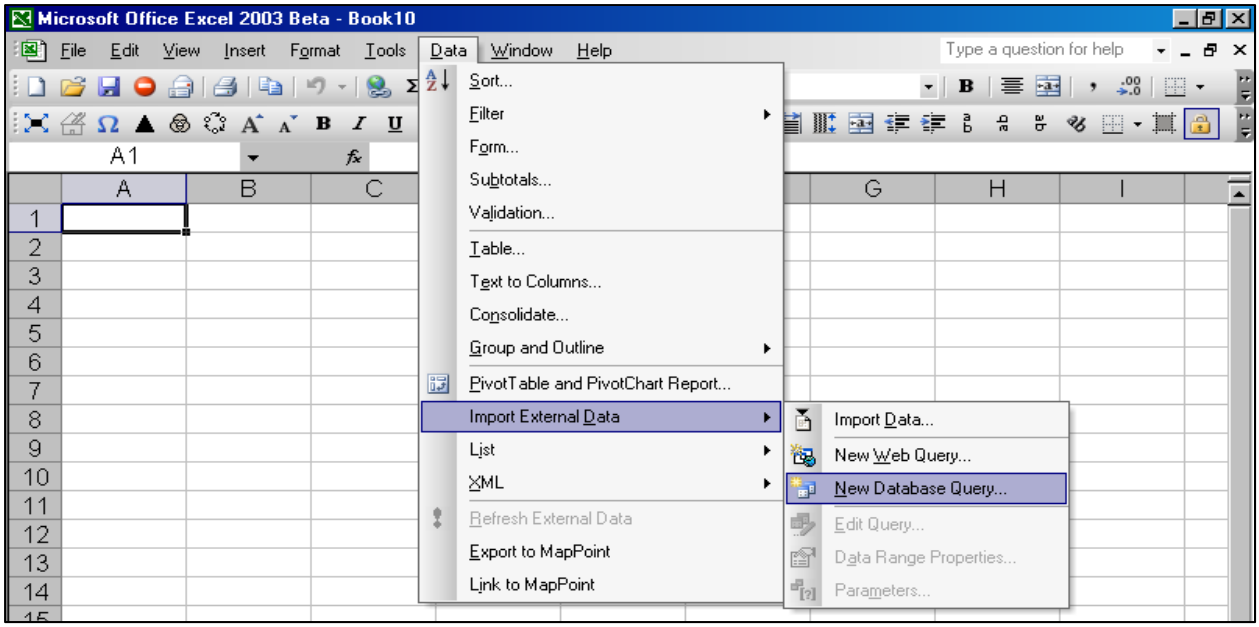
To use Microsoft Query to retrieve external data, you must:

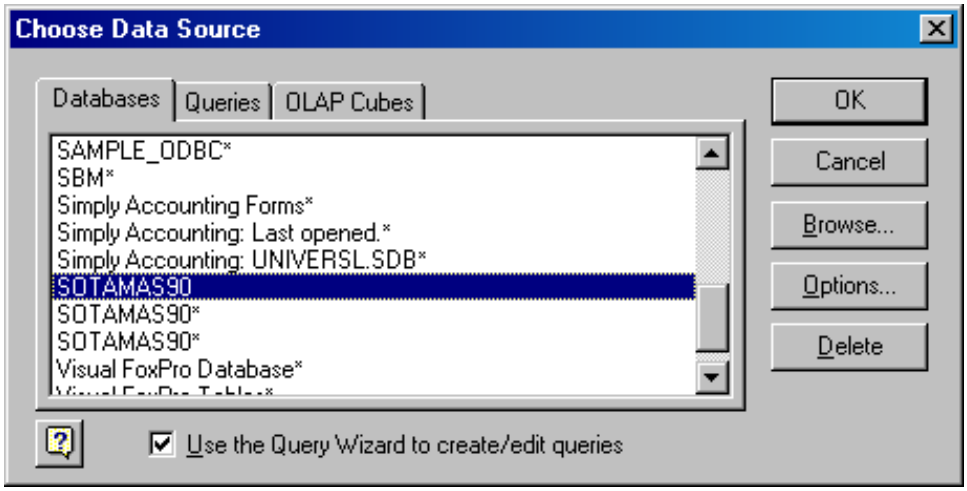
1. **Have Access To An External Data Source -** If the data is not on your local computer, you may need to see the administrator of the external database for a password, user permission, or other information about how to connect to the database.

2. **Install Microsoft Query -** If Microsoft Query is not available, you might need to install it.

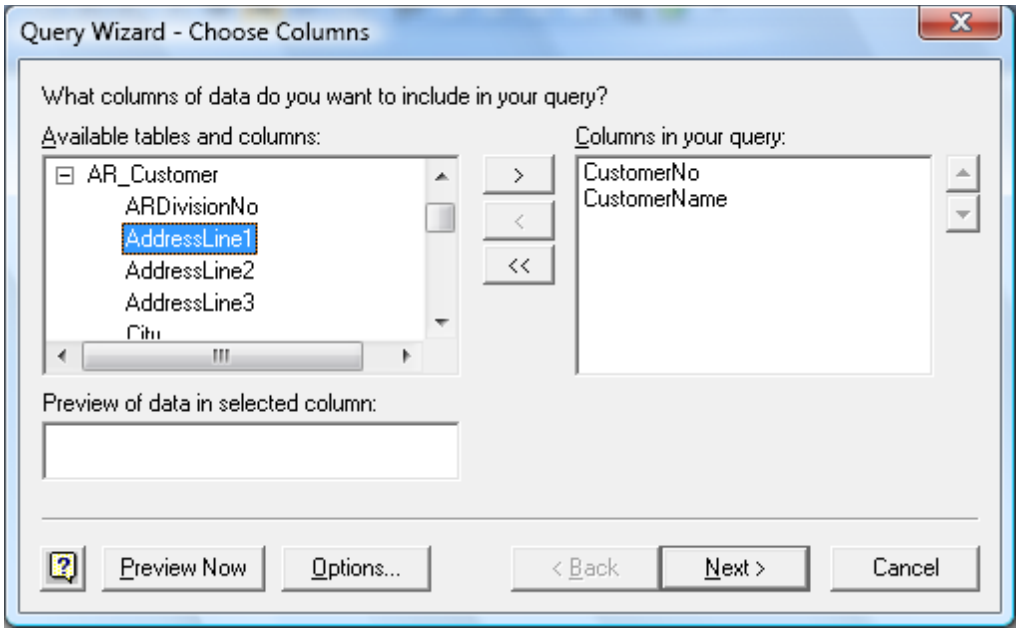
3. **Specify a Source To Retrieve Data From, and Then Start Using Microsoft Query** - For example, if you want to insert database information, display the Database toolbar, click Insert Database, click Get Data, and then click MS Query.

For example, suppose we have some data in our accounting system – Sage MAS 200 ERP that we would like to analyze in Excel. We can use the Database Query Wizard to build a query that will extract the data we need and place it in an Excel spreadsheet.



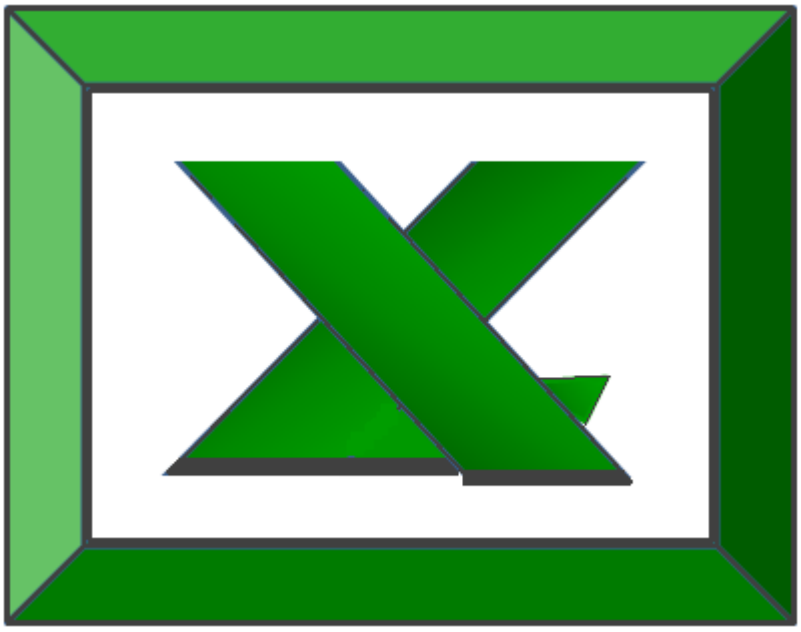


The first step is to select the type of database you want to query and to select the specific database.



Upon the selection of the desired database a list of tables will be presented. Choose the desired tables, and select the desired data fields to be imported. You will then have the option to filter and sort the data before it is imported. Finally you will be given the option to save the query so that you can run it at a later date without having to start from scratch. Excel will then return a table full of the data you requested as shown in the screen below.

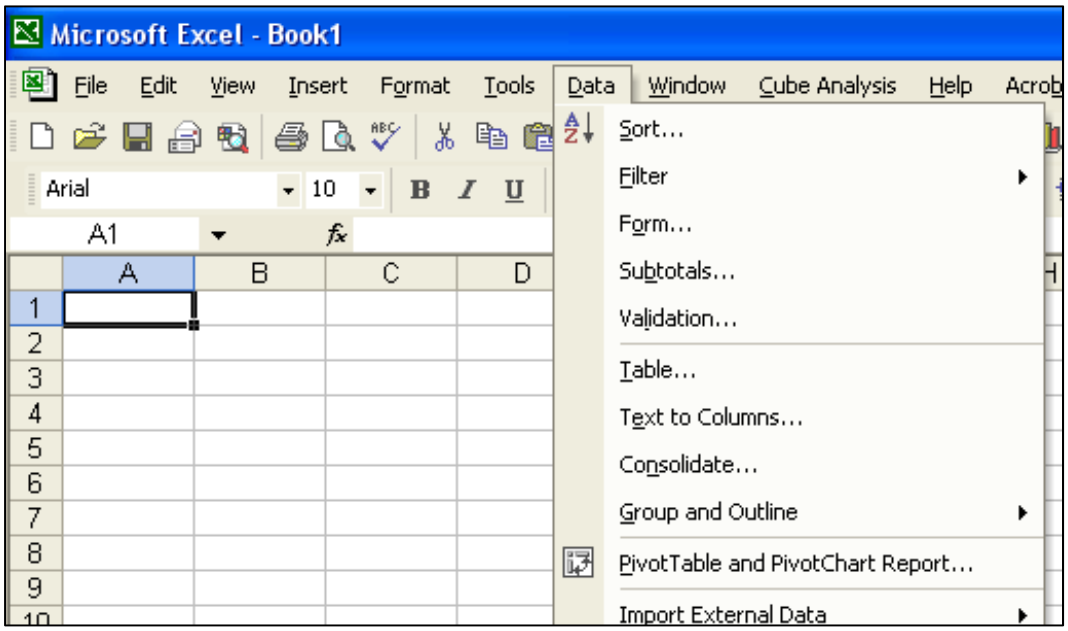
	A	B	C	D	E	F	G
1	**CustomerNo**	**CustomerName**	**State**	**CurrentBalance**	**AvgDaysOverDue**		
2	ABF	American Business Futures	WI	5732.36	0		
3	AVNET	Avnet Processing Corp	WI	7377.37	52		
4	BRESLIN	Breslin Parts Supply	WI	11828.26	0		
5	HILLSB	Hillsboro Service Center	WI	2902.86	0		
6	RSSUPPL	R & S Supply Corp.	WI	7086.74	0		
7	SHEPARD	Shepard Motorworks	WI	513339.95	0		
8	ALLENAP	Allen's Appliance Repair	CA	645.51	0		
9	AMERCON	American Concrete Service	CA	13743.8	57		
10	ATOZ	A To Z Carpet Supply	CA	8732.4	37		
11	AUTOCR	Autocraft Accessories	CA	23954.02	0		
12	BAYPYRO	Bay Pyrotronics Corp.	CA	16644.94	106		
13	CAPRI	Capri Sailing Ships	CA	56169.33	31		
14	CUSTOM	Custom Craft Products	CA	19446.43	0		
15	GREALAR	Greater Alarm Company	CA	825.5	0		
16	JELLCO	Jellco Packing	CA	5055.91	0		
17	ORANGE	Orange Door & Window Co.	CA	263.37	0		
18							
19							
20							

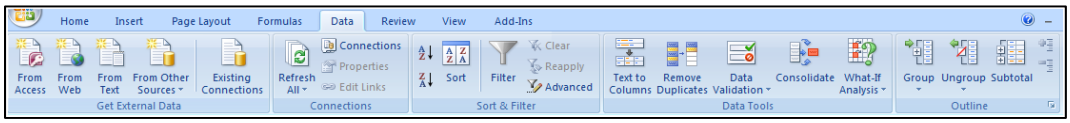


Chapter 2

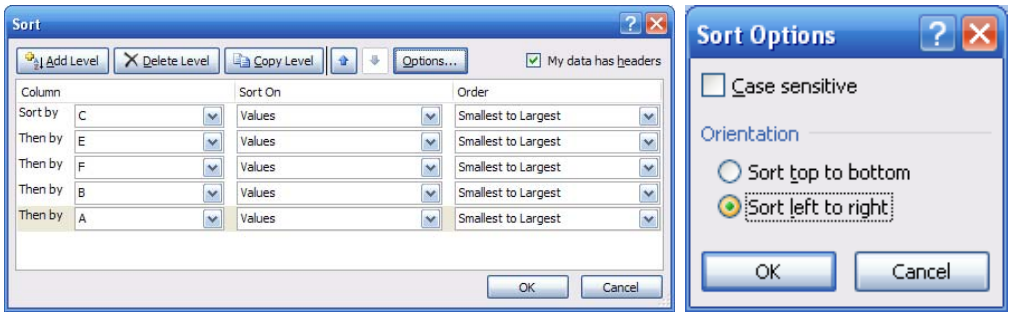
Data Commands

The Data Menu - Perhaps the parts of Excel that are of most value to CPAs, but least used by CPAs are the Data commands found under the Data menu in Excel 2003 and earlier, and on the data Ribbon in Excel 2007. These commands are shown below, and we will concentrate the next hour to studying these commands.





Data Sort - The Sort & Filter tools do exactly what they imply – they sort and filter data. The "A to Z" sorting tool can sort large matrix of data automatically as long as the data is contiguous. Simply place the cursor in the desired column for sorted, and press the A to Z or Z to A button as the case may be. Excel will automatically sort all continuous columns that have headings and all contiguous rows from the top row under the heading labels down to the last row in the selected column that contains data. The "Sort" tool is dramatically enhanced in Excel 2007 as it now provides the ability to sort by up to 64 columns, instead of just 3 columns. Also included in this tool is the ability to sort left to right and to sort by font color and cell color.



Data Filter - Have you ever had a list of information you needed to sift through? If so, you probably wanted to filter the data and review or print only specific subsets of the data. With the AutoFilter command, you can! To use this tool, start with any list of data (for example from a database, accounting program, ASCII text, or a large worksheet). Position your cursor in the column you want to filter.

	A	B	C	D	E	F	G	H
2	Month	Campaign	City	Cost	Quantity Redeemed	Resulting Sales	Profit	
3	April	Coupon	Atlanta	12,000	299	35,581	23,581	
4	January	Direct Mail	Atlanta	22,000	78	9,282	(12,718)	
5	July	Coupon	Atlanta	3,300	276	32,844	29,544	
6	October	Direct Mail	Atlanta	12,500	61	7,259	(5,241)	
7	April	Radio Spot	Atlanta	12,000	299	35,581	23,581	
8	January	Direct Mail	Atlanta	22,000	78	9,282	(12,718)	
9	July	Local Ads	Atlanta	3,300	276	32,844	29,544	
10	April	Direct Mail	Atlanta	9,500	17	2,023	(7,477)	
11	October	Direct Mail	Atlanta	8,800	455	54,145	45,345	

Next select **Data, Filter, AutoFilter** from the menu. Notice that a small down-arrow appears in each header row cell. Clicking on these arrows will allow you to select the filter category you desire. Note one, more, or all cells may be filtered. Select your criteria carefully, however, make sure to test the accuracy of your results to insure that the table is meaningful!

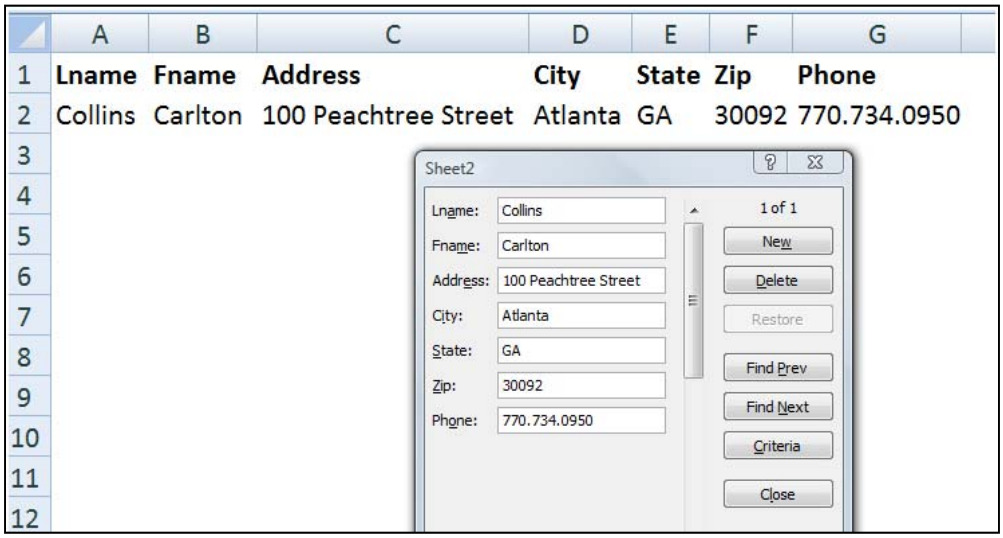
	A	B	C	D	E	F	G	H
2	Month	Campaign	City	Cost	Quantity Redeeme	Resulting Sale	Profit	
3	April	(All)	Atlanta	12,000	299	35,581	23,581	
4	January	(Top 10...)	Atlanta	22,000	78	9,282	(12,718)	
5	July	(Custom...)	Atlanta	3,300	276	32,844	29,544	
6	October	Coupon	Atlanta	12,500	61	7,259	(5,241)	
7	April	Direct Mail	Atlanta	12,000	299	35,581	23,581	
8	January	Local Ads	Atlanta	22,000	78	9,282	(12,718)	
9	July	Radio Spot	Atlanta	3,300	276	32,844	29,544	
10	April	Direct Mail	Atlanta	9,500	17	2,023	(7,477)	
11	October	Direct Mail	Atlanta	8,800	455	54,145	45,345	
12	April	Direct Mail	Columbus	9,500	17	2,023	(7,477)	
13	January	Coupon	Columbus	12,500	80	9,520	(2,980)	
14	January	Radio Spot	Columbus	17,500	56	6,664	(10,836)	
15	January	Coupon	Columbus	8,800	25	2,975	(5,825)	
16	July	Local Ads	Columbus	7,000	100	11,900	4,900	
17	July	Coupon	Columbus	9,500	93	11,067	1,567	
18	October	Coupon	Columbus	9,500	29	3,451	(6,049)	
19	April	Local Ads	Columbus	9,500	17	2,023	(7,477)	

Sheet6 Sheet7 Sheet1 Sheet2 Sheet3 Sheet4 Sheet5

In Excel 2007, the AutoFilter tool is accessed differently. In order to use this tool, you convert you list to a table using the Insert ribbon's Table tool. As a result, AutoFilter drop down boxes are inserted automatically.

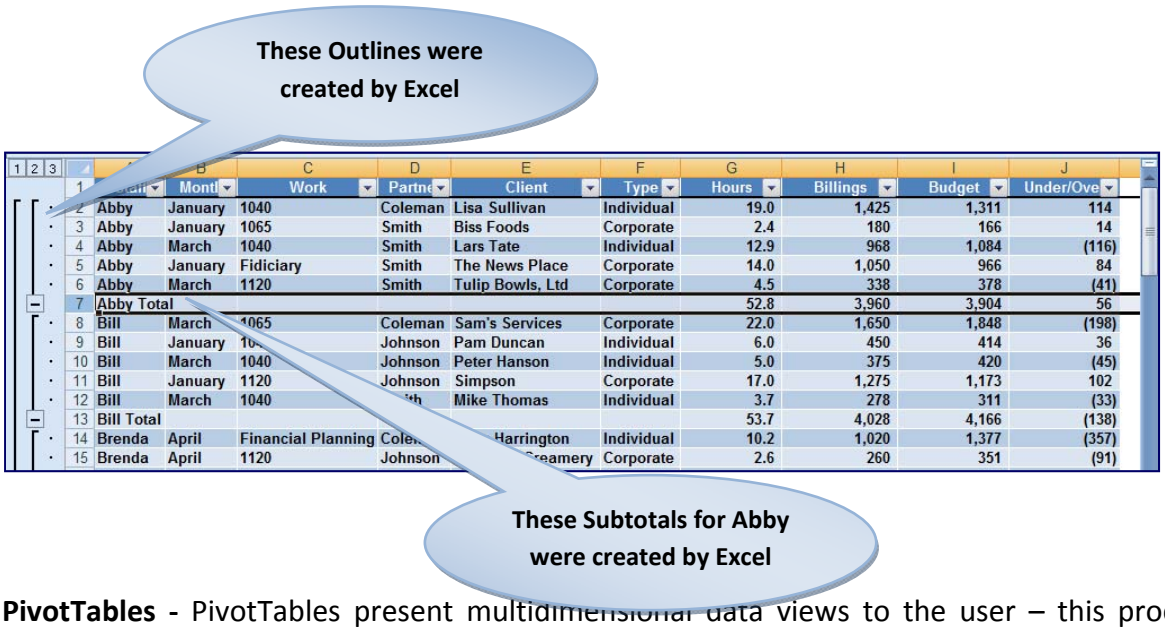
Column1	Column2	Column3
Automobile Expense	$2,139.55	$2,567.46
Bank Service Charges	37.34	44.81
Conference Registration Fees	400.00	480.00
Contract Labor	26,654.80	31,985.76
Contributions	1,282.53	1,539.04
Dues and Subscriptions	6,051.13	7,261.36
Hardware Purchase	3,950.05	4,740.06
Total	38,375.85	46,051.02

Data Form - The Data Form makes Excel look more and behave more like a database, such as Microsoft Access. (The Form button has not been included on the Office Fluent user interface Ribbon, but you can still use it in Office Excel 2007 by adding the Form button to the Quick Access Toolbar.)



A data form provides a convenient means to enter or display one complete row of information in a range or table without scrolling horizontally. You may find that using a data form can make data entry easier than moving from column to column when you have more columns of data than can be viewed on the screen. Use a data form when a simple form of text boxes that list the column headings as labels is sufficient and you don't need sophisticated or custom form features, such as a list box or spin button.

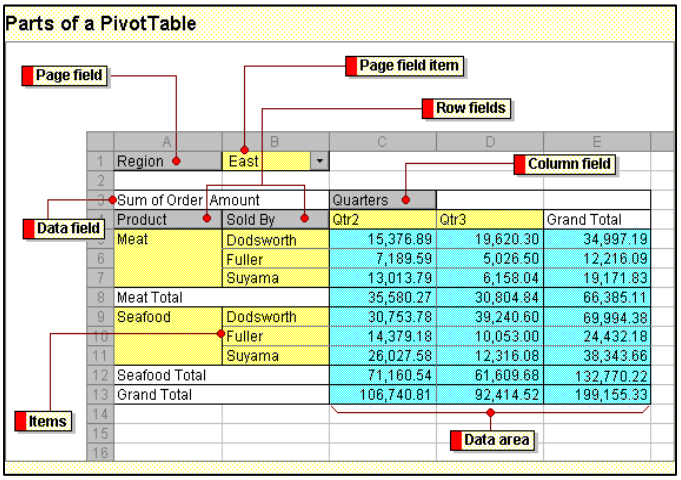
Data Subtotals – Excel will automatically calculate subtotals and grand totals in a list when you use the Subtotal command. Once inserted, Excel recalculates subtotal and grand total values automatically as you enter and edit the detail data. The Subtotal command also outlines the list so that you can display and hide the detail rows for each subtotal.



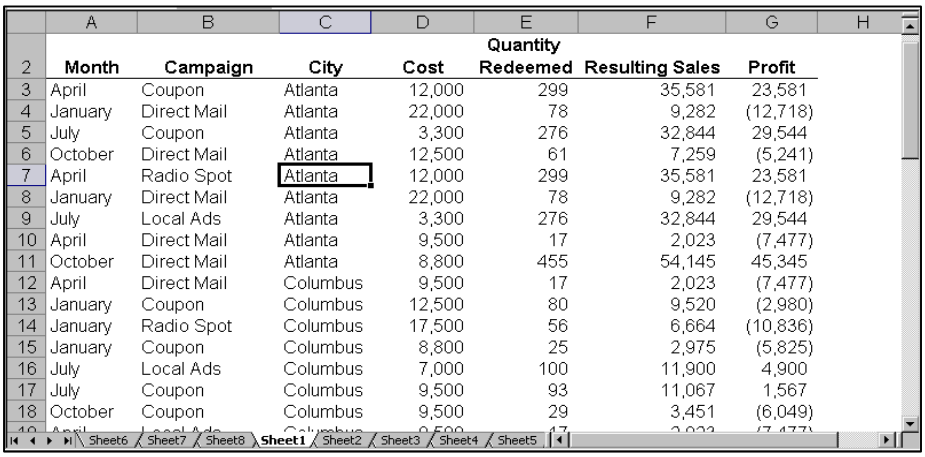
	Month	Work	Partner	Client	Type	Hours	Billings	Budget	Under/Over
Abby	January	1040	Coleman	Lisa Sullivan	Individual	19.0	1,425	1,311	114
Abby	January	1065	Smith	Biss Foods	Corporate	2.4	180	166	14
Abby	March	1040	Smith	Lars Tate	Individual	12.9	968	1,084	(116)
Abby	January	Fidiciary	Smith	The News Place	Corporate	14.0	1,050	966	84
Abby	March	1120	Smith	Tulip Bowls, Ltd	Corporate	4.5	338	378	(41)
Abby Total						52.8	3,960	3,904	56
Bill	March	1065	Coleman	Sam's Services	Corporate	22.0	1,650	1,848	(198)
Bill	January	10	Johnson	Pam Duncan	Individual	6.0	450	414	36
Bill	March	1040	Johnson	Peter Hanson	Individual	5.0	375	420	(45)
Bill	January	1120	Johnson	Simpson	Corporate	17.0	1,275	1,173	102
Bill	March	1040		Mike Thomas	Individual	3.7	278	311	(33)
Bill Total						53.7	4,028	4,166	(138)
Brenda	April	Financial Planning	Cole	Harrington	Individual	10.2	1,020	1,377	(357)
Brenda	April	1120	Johnson	Creamery	Corporate	2.6	260	351	(91)

PivotTables - PivotTables present multidimensional data views to the user – this process is often referred to as "modeling", "data-cube analysis", or "OLAP data cubes". To re-arrange the PivotTable data, just drag and drop column and row headings to move data around. PivotTables are a great data analysis tool for management.

The enhanced PivotTable now provides multidimensional data analysis. If you have never used a PivotTable before, initially the concept can be difficult to grasp. The best way to understand a PivotTable is to create a blank pivot Table and then drag and drop field names onto that blank table. This way you will see the resulting pivot table magically appear and it will help you better understand the important relationship between the pivot pallet and the field name list.



To create a PivotTable, start with an Excel worksheet data that contains several columns of data – the data must include column and row headings. Select PivotTable from the Data menu in Excel 2003 and click Finish, or from the insert Ribbon in Excel 2007. This process is shown below: Let's start with a page of data summarizing the results of 4 separate marketing campaigns conducted in three different cities as shown below:



	A	B	C	D	E	F	G	H
2	Month	Campaign	City	Cost	Quantity Redeemed	Resulting Sales	Profit	
3	April	Coupon	Atlanta	12,000	299	35,581	23,581	
4	January	Direct Mail	Atlanta	22,000	78	9,282	(12,718)	
5	July	Coupon	Atlanta	3,300	276	32,844	29,544	
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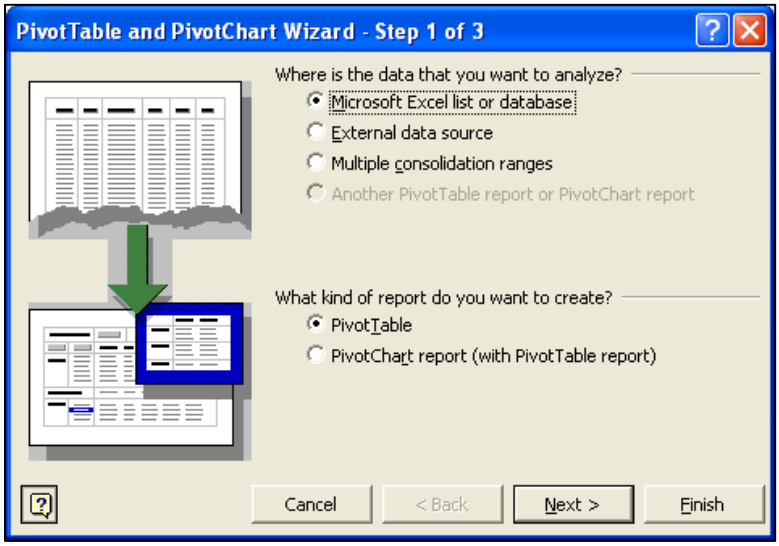
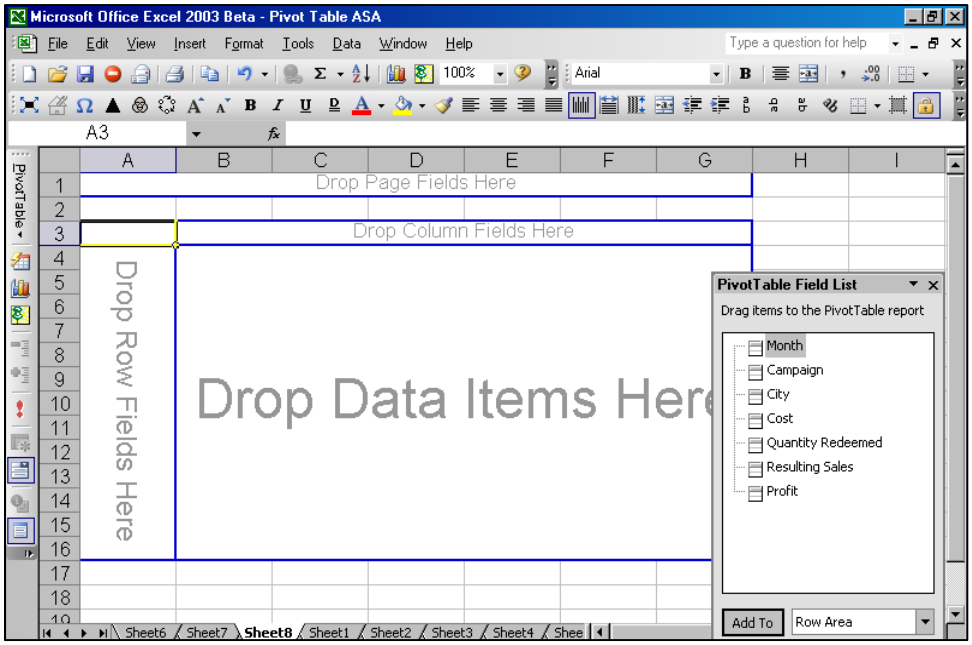
11	October	Direct Mail	Atlanta	8,800	455	54,145	45,345	
12	April	Direct Mail	Columbus	9,500	17	2,023	(7,477)	
13	January	Coupon	Columbus	12,500	80	9,520	(2,980)	
14	January	Radio Spot	Columbus	17,500	56	6,664	(10,836)	
15	January	Coupon	Columbus	8,800	25	2,975	(5,825)	
16	July	Local Ads	Columbus	7,000	100	11,900	4,900	
17	July	Coupon	Columbus	9,500	93	11,067	1,567	
18	October	Coupon	Columbus	9,500	29	3,451	(6,049)	

Sheet6 Sheet7 Sheet8 Sheet1 Sheet2 Sheet3 Sheet4 Sheet5

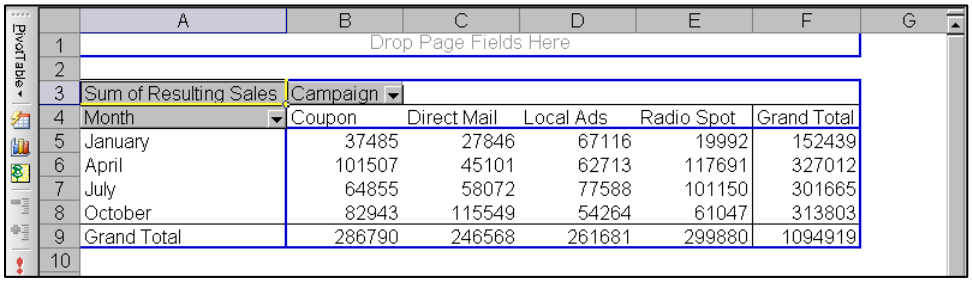
Start the PivotTable process by placing your cursor anywhere in the data, and then select PivotTable and the Finish button (in Excel 2003 only) as shown below:



The results are that Excel creates a blank PivotTable as shown below, and the user must drag and drop the various fields from the PivotTable Field List onto the appropriate column, row, or data section. As you drag and drop these items, the resulting report is displayed on the fly.



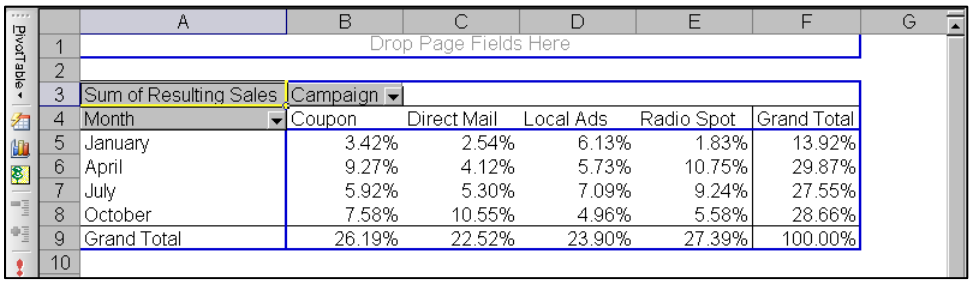
Now drag and drop field names from the Pivot Table field list onto the Pivot pallet. This action will automatically create Pivot Table reports – and they will change each time you drop additional field names, or move field names around. Presented below are but a few examples of hundreds of possible reports that could be viewed with this data through the PivotTable format.



Drop Page Fields Here

Sum of Resulting Sales	Campaign				
Month	Coupon	Direct Mail	Local Ads	Radio Spot	Grand Total
January	37485	27846	67116	19992	152439
April	101507	45101	62713	117691	327012
July	64855	58072	77588	101150	301665
October	82943	115549	54264	61047	313803
Grand Total	286790	246568	261681	299880	1094919

This report shown above shows the total resulting sales for each marketing campaign for each of the 4 months marketing campaigns were conducted.



Drop Page Fields Here

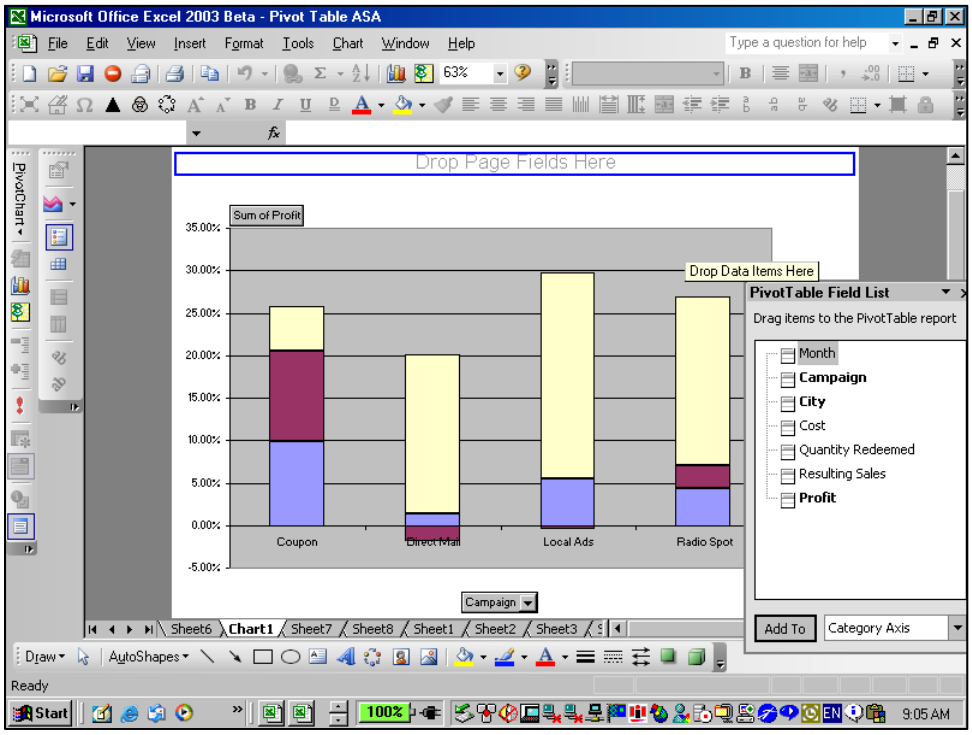
Sum of Resulting Sales	Campaign				
Month	Coupon	Direct Mail	Local Ads	Radio Spot	Grand Total
January	3.42%	2.54%	6.13%	1.83%	13.92%
April	9.27%	4.12%	5.73%	10.75%	29.87%
July	5.92%	5.30%	7.09%	9.24%	27.55%
October	7.58%	10.55%	4.96%	5.58%	28.66%
Grand Total	26.19%	22.52%	23.90%	27.39%	100.00%

In this screen we see the same information is shown as a percentage of the total. A few observations include the fact that overall Radio Spots are the most profitable type of campaign,

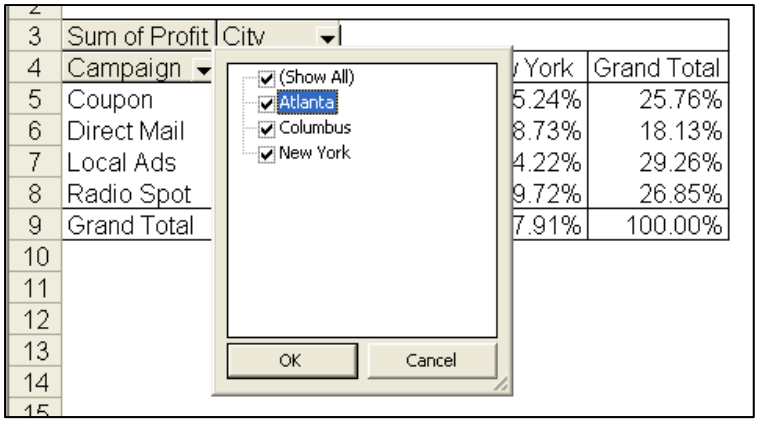
but only in April and July. In January and October, local ads and direct mail, respectively, produce better results. Further, April campaigns had the best response overall.

	A	B	C	D	E	F	G
1	Drop Page Fields Here						
2							
3	Sum of Resulting Sales	City					
4	Campaign	Atlanta	Columbus	New York	Grand Total		
5	Coupon	6.25%	16.22%	3.73%	26.19%		
6	Direct Mail	7.49%	3.21%	11.82%	22.52%		
7	Local Ads	3.00%	1.27%	19.63%	23.90%		
8	Radio Spot	3.25%	6.99%	17.15%	27.39%		
9	Grand Total	19.99%	27.68%	52.33%	100.00%		
10							

Further analysis in the screen above tells us that our results vary widely from one city to the next. In New York, coupons were least effective, but coupons were most effective in Columbus. Pivot charts based on PivotTable data can be modified by pivoting and/or narrowing the data. They can also be published on the Internet (or on an Intranet) as interactive Web pages. This allows users to "play" with the data. The chart below provides a visual look at the data shown above.

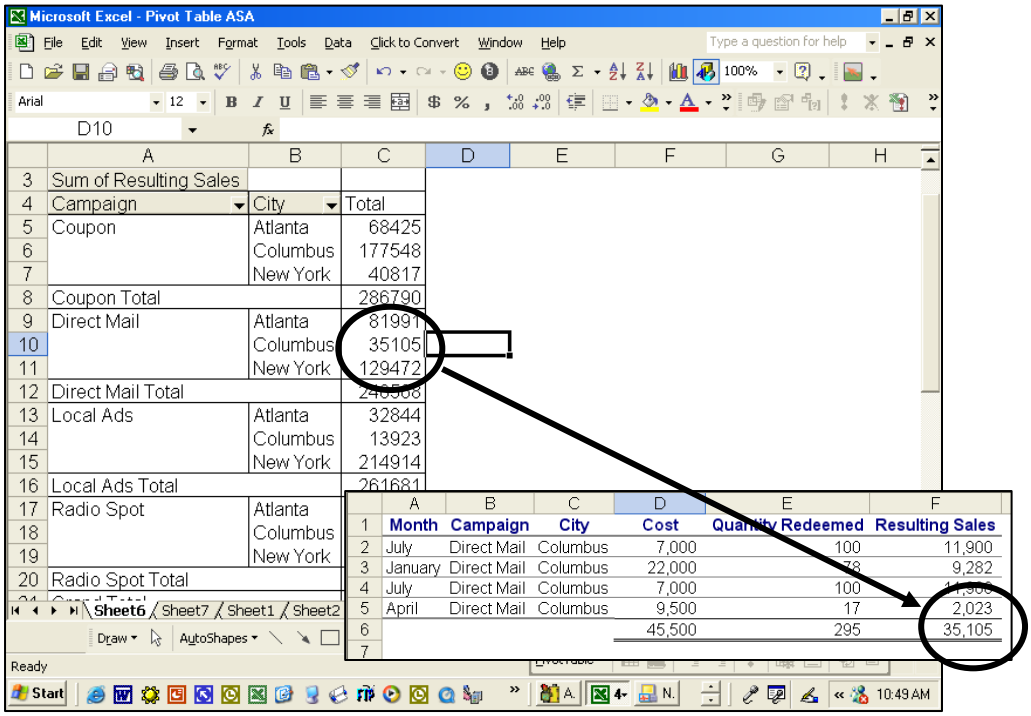


Filtering Pivot Tables - If you take a close look at your resulting pivot tables, you will notice that Excel automatically inserts a filter button on each field list as shown by the drop down arrows in the screen below:

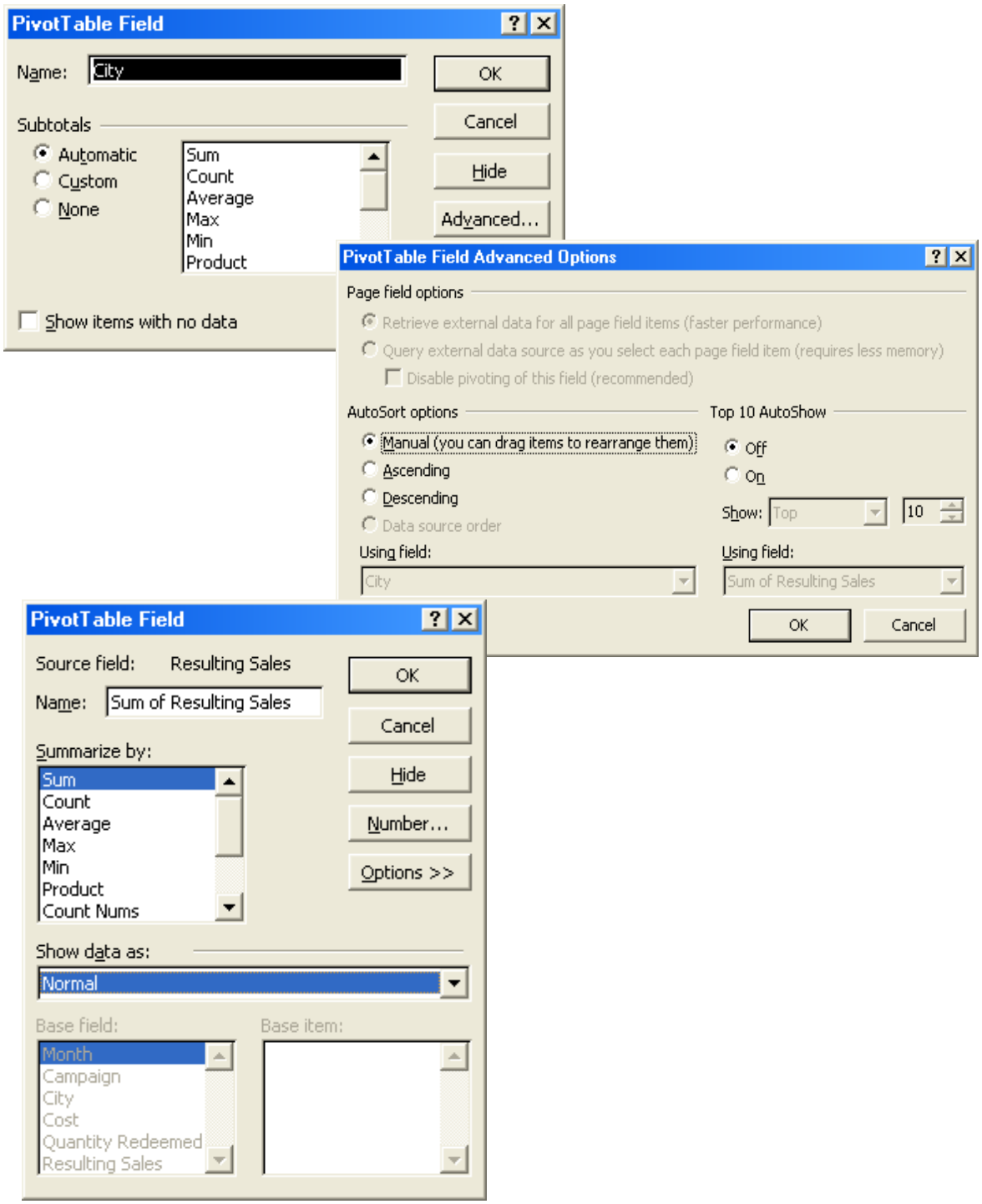


This drop down filter list makes it easy to refine your report to include just the data you want.

Drilling Pivot Tables - Another nice feature in pivot tables is that they are automatically drillable. Simply double click on any number in a pivot report top have Excel automatically insert a new sheet and produce the detailed report underlying the number you clicked on. An example of this is shown below:

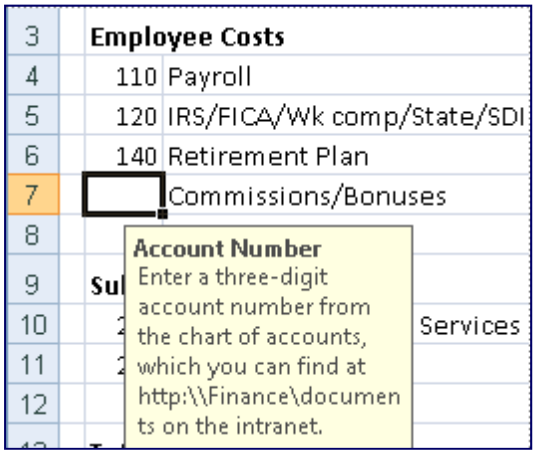


Pivot Table Options - By right mouse clicking on your pivot table you will reveal several option settings boxes as shown below. For example, these options boxes control the types of subtotals produced in your pivot reports. Excel also offers a pivot table options box as well as a layout wizard that makes producing pivot tables a little easier.

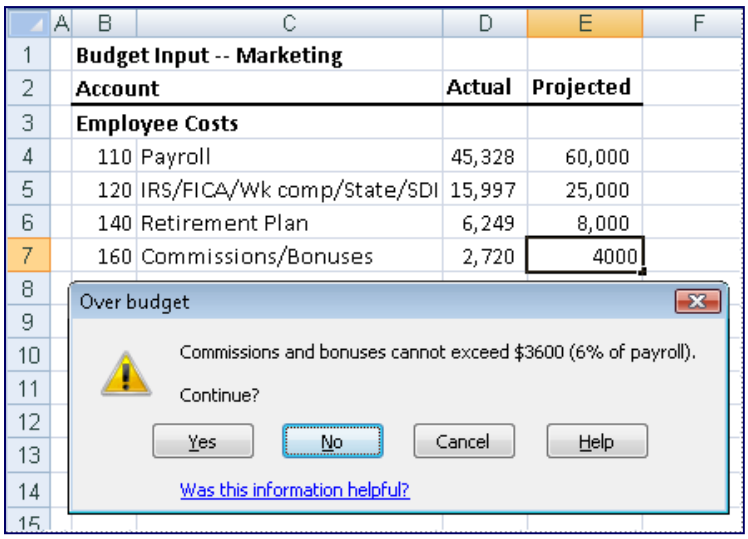


Data Validation - Data validation is an Excel feature that you can use to define restrictions on what data can or should be entered in a cell. This allows you to configure data validation to prevent users from entering data that is not valid. If you prefer, you can allow users to enter invalid data but warn them when they try to type it in the cell. You can also provide messages to define what input you expect for the cell, and instructions to help users correct any errors.

For example, in a marketing workbook, you can set up a cell to allow only account numbers that are exactly three characters long. When users select the cell, you can show them a message such as this one:



If users ignore this message and type invalid data in the cell, such as a two-digit or five-digit number, you can show them an actual error message. In a more advanced scenario, you might use data validation to calculate the maximum allowed value in a cell based on a value elsewhere in the workbook. In the following example, the user has typed $4,000 in cell E7, which exceeds the maximum limit specified for commissions and bonuses.



If the payroll budget were to increase or decrease, the allowed maximum in E7 would automatically increase or decrease with it.

Data Table ("what-if analysis") - Data tables are part of a suite of commands that are called what-if analysis tools. When you use data tables, you are doing "what-if analysis". What-if analysis is the process of changing the values in cells to see how those changes will affect the outcome of formulas on the worksheet. For example, you can use a data table to vary the interest rate and term length that are used in a loan to determine possible monthly payment amounts.

Kinds of what-if analysis - There are three kinds of what-if analysis tools in Excel:

1. Scenarios
2. Data Tables
3. Goal Seek

Scenarios and data tables take sets of input values and determine possible results. Goal Seek works differently from scenarios and data tables in that it takes a result and determines possible input values that produce that result. Like scenarios, data tables help you explore a set of possible outcomes. Unlike scenarios, data tables show you all the outcomes in one table on one worksheet. Using data tables makes it easy to examine a range of possibilities at a glance. Because you focus on only one or two variables, results are easy to read and share in tabular form.

A data table cannot accommodate more than two variables. If you want to analyze more than two variables, you should instead use scenarios. Although it is limited to only one or two variables (one for the row input cell and one for the column input cell), a data table can include as many different variable values as you want. A scenario can have a maximum of 32 different values, but you can create as many scenarios as you want.

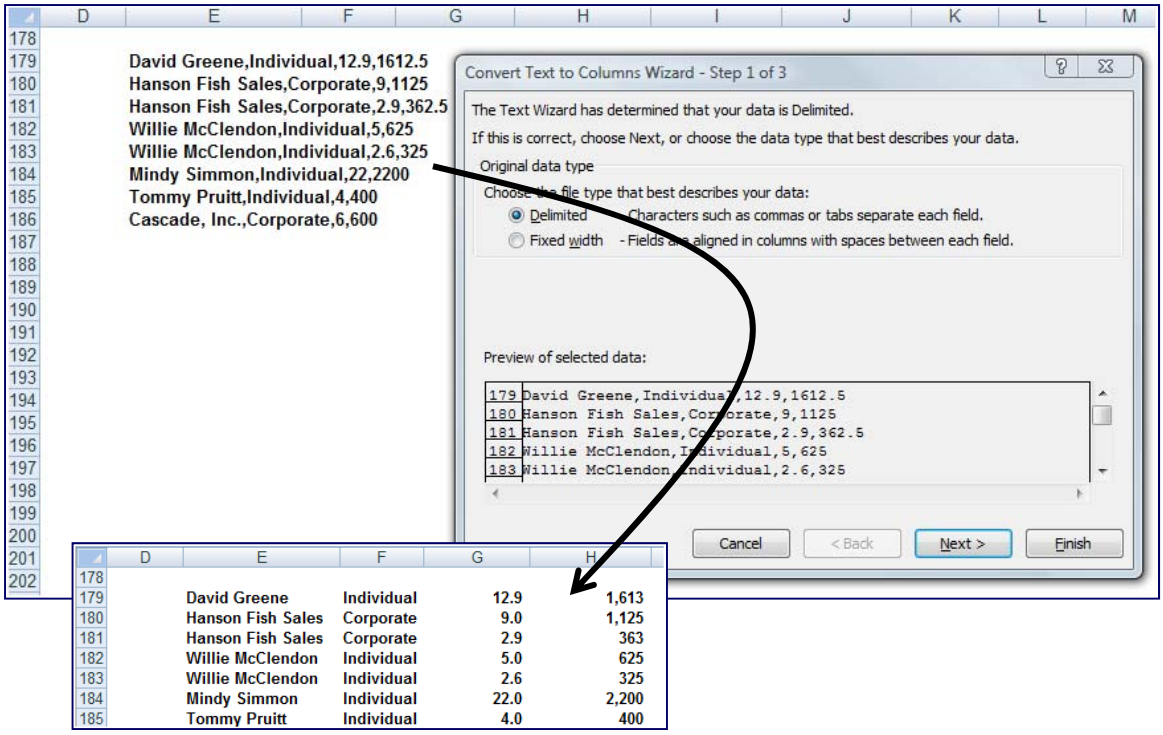
For example, in the screen below, a 5 column data table has been used to extract the Open, High, low, Close and Volume data from a voluminous database of raw stock price data – according to dates.

Date	Open	High	Low	Close/Last	Volume
10:08	24.100	25.570	24.000	25.210	2,348,918*
05/14/2007	19.080	20.080	18.970	20.010	1,336,356
05/11/2007	18.660	19.370	18.400	19.215	847,931
05/10/2007	18.490	18.760	18.120	18.750	343,975
05/09/2007	18.300	18.740	18.250	18.600	435,189
05/08/2007	18.200	18.430	18.100	18.370	181,809
05/07/2007	18.310	18.310	18.120	18.210	127,152
05/04/2007	18.340	18.480	17.950	18.240	116,229
05/03/2007	18.000	18.430	17.840	18.360	176,585
05/02/2007	17.660	18.080	17.450	18.000	234,498
05/01/2007	17.060	17.570	17.050	17.530	372,021
04/30/2007	18.110	18.110	17.070	17.350	785,046
04/27/2007	17.970	18.210	17.750	18.000	374,349
04/26/2007	18.520	18.600	17.960	18.250	310,891
04/25/2007	18.400	18.900	18.400	18.610	296,899
04/24/2007	18.960	18.960	18.250	18.570	106,788
04/23/2007	18.820	19.110	18.720	19.050	496,431
04/20/2007	18.930	19.040	18.620	18.900	108,157
04/19/2007	18.740	19.160	18.600	18.910	235,627

Data - Text to Columns – Often CPAs receive data from their clients or IT departments that is in text form. When this happens, Excel can split the contents of one or more cells in a column and distribute those contents as individual parts across other cells in adjacent columns. For example, the worksheet below contains a column of full names and amounts that you want to split into separate columns. The Text to Columns Wizard parses the data automatically into separate

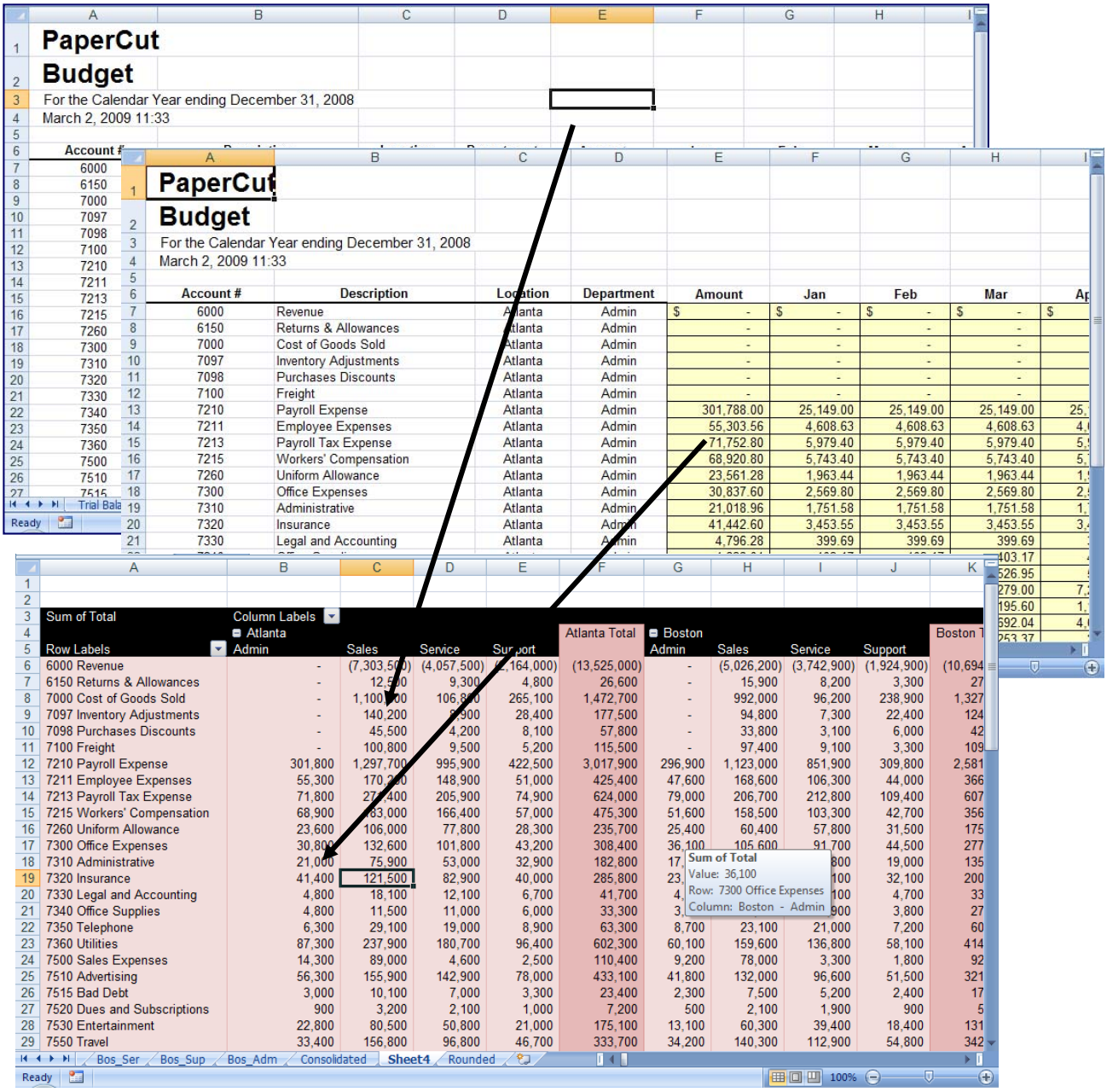
Select the cell, range (range: Two or more cells on a sheet. The cells in a range can be adjacent or nonadjacent.), or entire column that contains the text values that you want to split.

Note A range that you want to split can include any number of rows, but it can include no more than one column. You also should keep enough blank columns to the right of the selected column to prevent existing data in adjacent

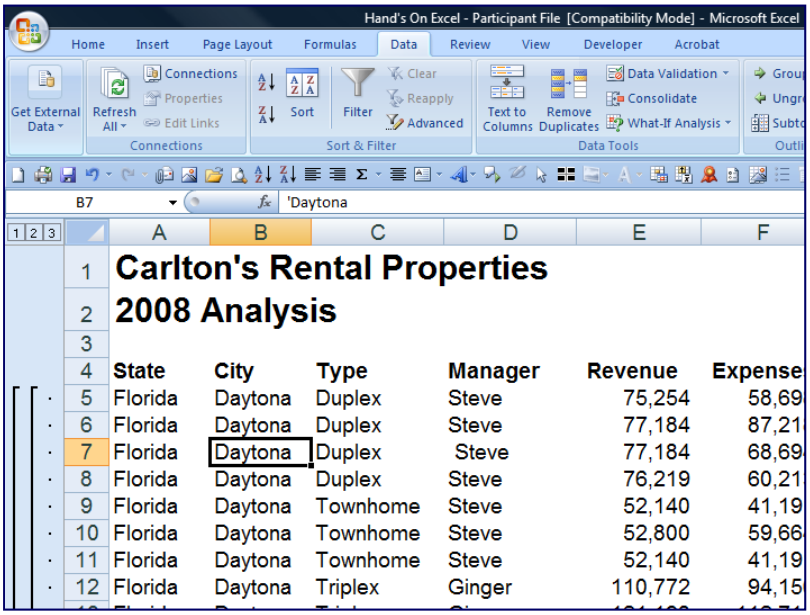


Data Consolidate – Excel can combine, summarize and report results from separate worksheets, you can consolidate data from each separate worksheet into a master worksheet. The worksheets can be in the same workbook as the master worksheet or in other workbooks. When you consolidate data, you are assembling data so that you can more easily update and aggregate it on a regular or ad hoc basis.

For example, assume that you have received budgets from multiple departments, and you want to combine them together. In this case, excel will do the work for you. You can use a consolidation to roll up these figures into a corporate budget worksheet, as shown below.



Data Grouping & Outlining - If you have a list of data that you want to group and summarize, you can create an outline of up to eight levels, one for each group. Each inner level, represented by a higher number in the outline symbols displays detail data for the preceding outer level, represented by a lower number in the outline symbols. Use an outline to quickly display summary rows or columns, or to reveal the detail data for each group. You can create an outline of rows (as shown in the example below), an outline of columns, or an outline of both rows and columns.



Data Import and Export – Excel can import data from almost any database – that is any database that is ODBC compliant – and they almost all are ODBC compliant. For example, excel can import data from a database across the internet – this is known as a web query.

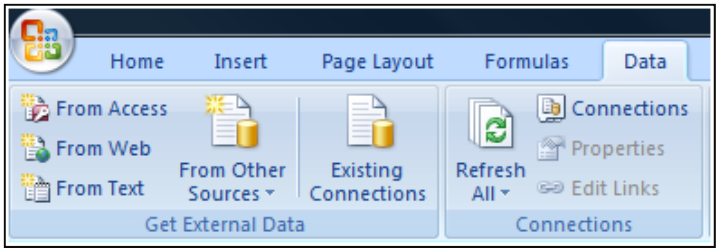
Web Queries - Excel includes pre-designed "queries" that can import commonly used data in 10 seconds. For example, you could use a web query to create a stock portfolio. All you need is a connection to the Internet and of course, some stock ticker symbols. In Excel 2003 select "Data, Import External Data, Import Data" and walk through the web query wizard for importing stock quotes. In Excel 2007 and later use the Data Ribbon, Existing Connections, Stock Quotes option. In seconds, Excel will retrieve 20 minute delayed stock prices from the web (during the hours when the stock market is open) and display a grid of complete up-to-date stick price information that is synchronized to the stock market's changing stock prices. With each click of the "Refresh" button, the stock price information in Excel is updated - this sure beats picking numbers out of the newspaper.

1	Friday, April 24, 2009											
2	11:34:42 AM											
3	**Stock Quotes Provided by MSN Money**											
4	Click here to visit MSN Money											
5				Last	Previous Close	High	Low	Volume	Change	% Change	52 Wk High	52 Wk Low
6	Microsoft Corp	Chart	News	20.29	18.92	20.45	19.5	66,077,415	1.37	7.24%	32.1	14.87
7	Apple Inc	Chart	News	124.32	125.4	125.14	123.73	6,275,076	-1.08	-0.86%	192.24	78.2
8	Coca-Cola Co	Chart	News	42.87	42.92	43.09	42.71	3,205,193	-0.05	-0.12%	61	37.44
9	United Parcel Service Inc	Chart	News	53.48	53.33	54.04	52.53	2,533,150	0.15	0.28%	74.14	37.99
10	International Business Machines Corp	Chart	News	100.33	101.42	101.97	100.09	2,665,080	-1.09	-1.07%	130.93	69.5
11	Wal-Mart Stores Inc	Chart	News	48.73	48.86	49.56	48.51	8,042,577	-0.13	-0.27%	63.85	46.25

Completing the Stock Portfolio – Next link the grid data to another worksheet, and insert new columns containing the number of shares owned, as wells as an additional column to computer the total value based on shares owned, as shown below.

1	Friday, April 24, 2009										
2	11:40:17 AM										
3	**Stock Quotes Provided by MSN Money**										
4											
5		Last	Shares Owned	Current Value	Previous Close	High	Low	Volume	Change	% Change	
6	Microsoft Corp	20.29	13,500	273,915	18.92	20.45	19.5	66077415	1.37	0.0724	
7	Apple Inc	124.32	2,400	298,368	125.4	125.14	123.73	6275076	-1.08	-0.0086	
8	Coca-Cola Co	42.87	12,000	514,440	42.92	43.09	42.71	3205193	-0.05	-0.0012	
9	United Parcel Service Inc	53.48	1,780	95,194	53.33	54.04	52.53	2533150	0.15	0.0028	
10	International Business Machines	100.33	2,800	280,924	101.42	101.97	100.09	2665080	-1.09	-0.0107	
11	Wal-Mart Stores Inc	48.73	8,300	404,459	48.86	49.56	48.51	8042577	-0.13	-0.0027	
12				1,867,300							

Refreshing the Stock Prices **-** Once you have created your portfolio, simply click the Refresh Data button on the "External Data" Toolbar in Excel 2003 or on the "Data Ribbon" in Excel 2007 shown below to update the current value of your Portfolio.



Query Parameters **-** There are numerous options to help you extract exactly the data you want they way you want it. The "Web Query Parameters Box", "Web Query Options box" and "External Data Properties Box" provide numerous options for controlling your web query.

Database Queries – Microsoft Excel can also query and retrieve data you want from an external data source. For example, you can retrieve Microsoft Excel data about a specific product by region. You can create a simple query by using the Query Wizard, or you can create a more complex query by using the advanced features of Microsoft Query.

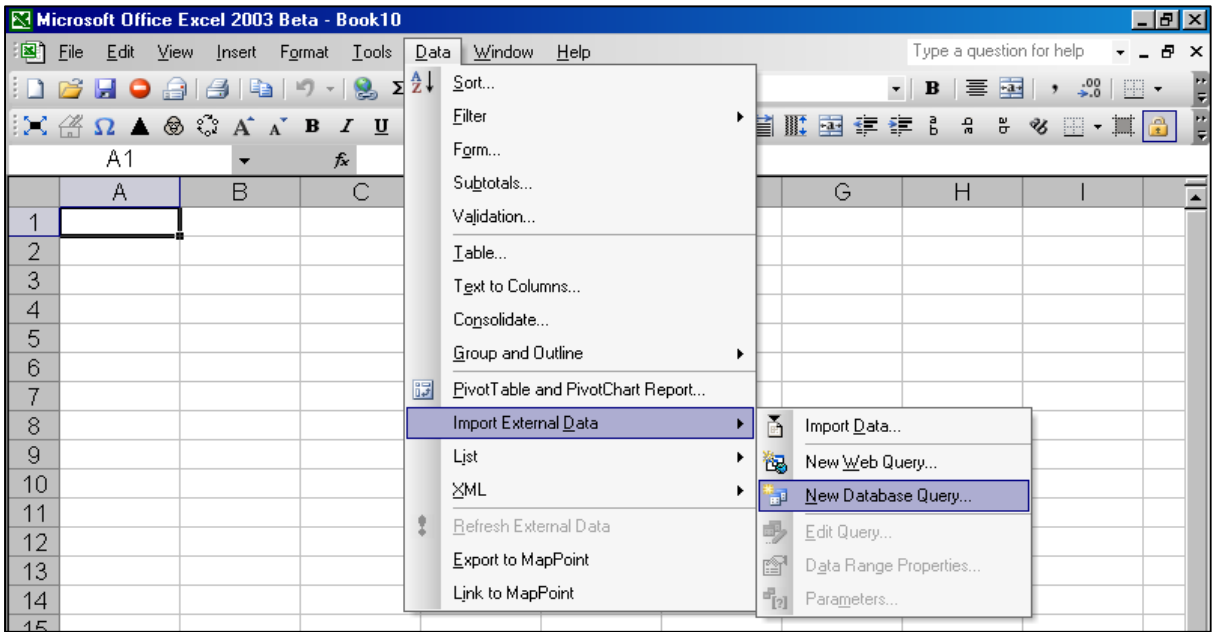
To use Microsoft Query to retrieve external data, you must:

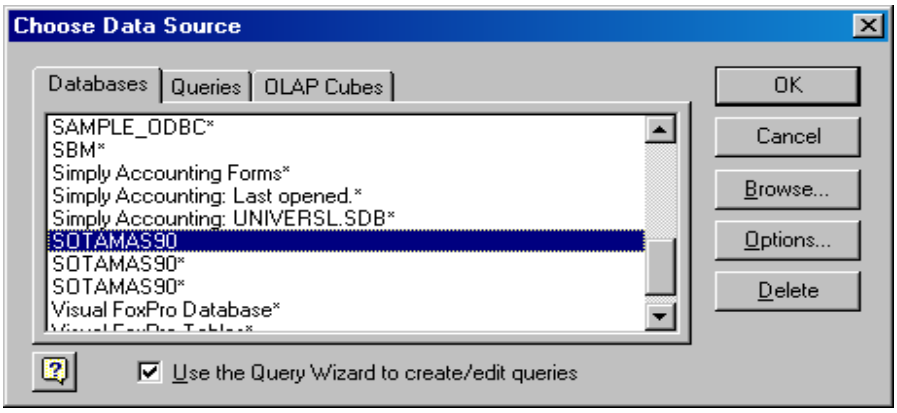
1. **Have access to an external data source -** If the data is not on your local computer, you may need to see the administrator of the external database for a password, user permission, or other information about how to connect to the database.

2. **Install Microsoft Query -** If Microsoft Query is not available, you might need to install it.

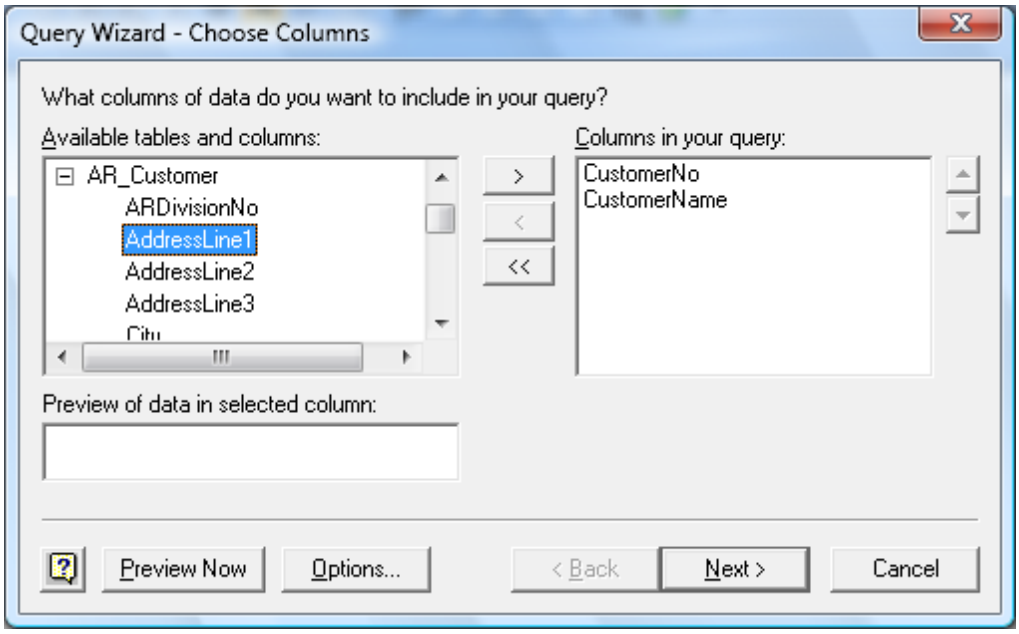
3. **Specify a source to retrieve data from, and then start using Microsoft Query** - For example, if you want to insert database information, display the Database toolbar, click Insert Database, click Get Data, and then click MS Query.

For example, suppose we have some data in our accounting system – Sage MAS 200 ERP that we would like to analyze in Excel. We can use the Database Query Wizard to build a query that will extract the data we need and place it in an Excel spreadsheet.

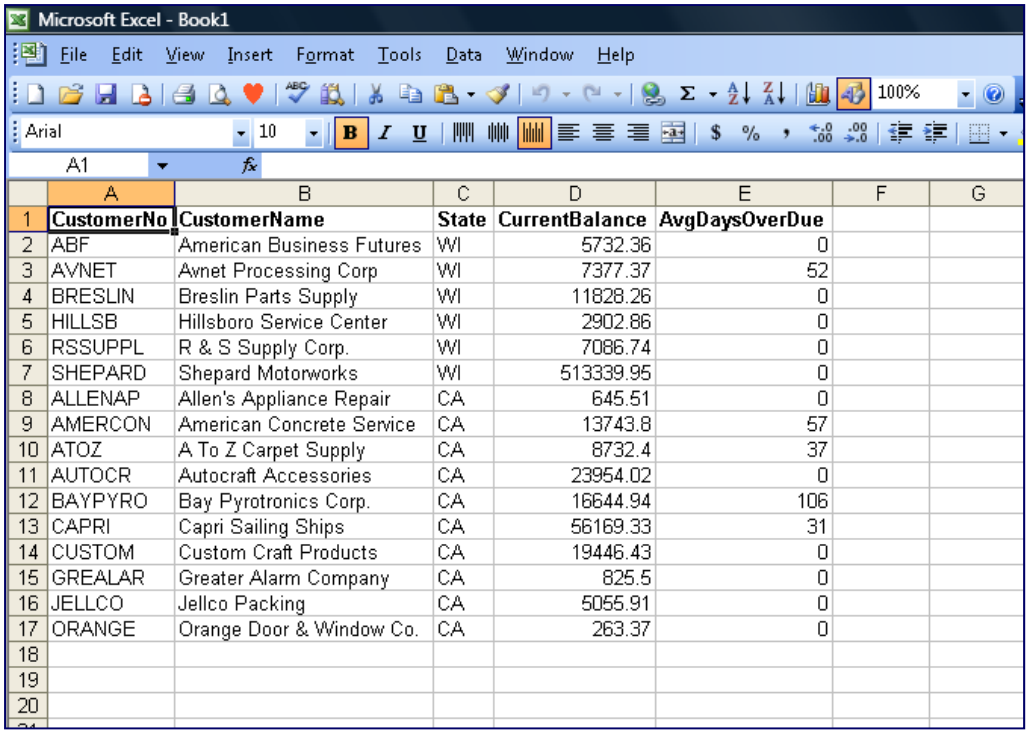




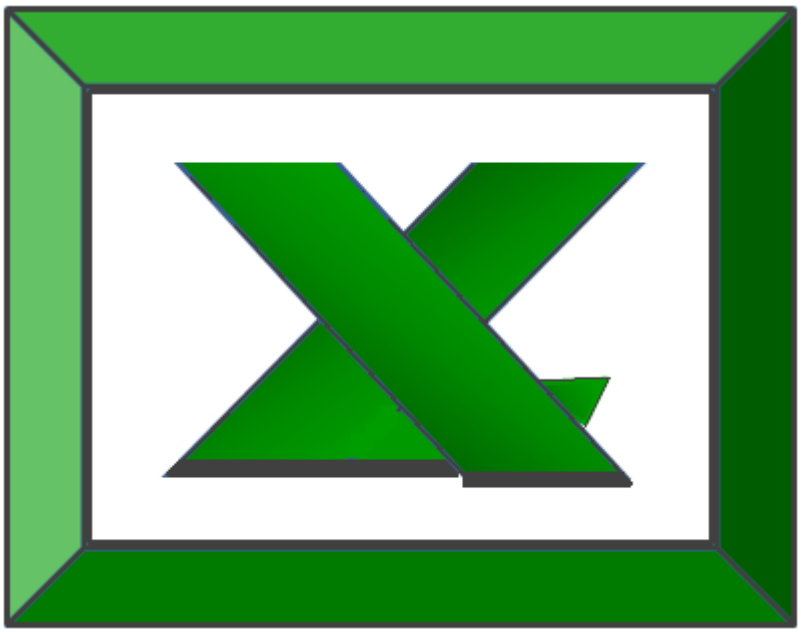
The first step is to select the type of database you want to query and to select the specific database.



Upon the selection of the desired database a list of tables will be presented. Choose the desired tables, and select the desired data fields to be imported. You will then have the option to filter and sort the data before it is imported. Finally you will be given the option to save the query so that you can run it at a later date without having to start from scratch. Excel will then return a table full of the data you requested as shown in the screen below.



	A	B	C	D	E	F	G
1	**CustomerNo**	**CustomerName**	**State**	**CurrentBalance**	**AvgDaysOverDue**		
2	ABF	American Business Futures	WI	5732.36	0		
3	AVNET	Avnet Processing Corp	WI	7377.37	52		
4	BRESLIN	Breslin Parts Supply	WI	11828.26	0		
5	HILLSB	Hillsboro Service Center	WI	2902.86	0		
6	RSSUPPL	R & S Supply Corp.	WI	7086.74	0		
7	SHEPARD	Shepard Motorworks	WI	513339.95	0		
8	ALLENAP	Allen's Appliance Repair	CA	645.51	0		
9	AMERCON	American Concrete Service	CA	13743.8	57		
10	ATOZ	A To Z Carpet Supply	CA	8732.4	37		
11	AUTOCR	Autocraft Accessories	CA	23954.02	0		
12	BAYPYRO	Bay Pyrotronics Corp.	CA	16644.94	106		
13	CAPRI	Capri Sailing Ships	CA	56169.33	31		
14	CUSTOM	Custom Craft Products	CA	19446.43	0		
15	GREALAR	Greater Alarm Company	CA	825.5	0		
16	JELLCO	Jellco Packing	CA	5055.91	0		
17	ORANGE	Orange Door & Window Co.	CA	263.37	0		
18							
19							
20							



Chapter 3

MACROS

Automating Your Key Strokes

Macros

Macros offer a powerful and flexible way to extend the features of Excel. They allow the automation of repetitive tasks such as printing, formatting, configuring, or otherwise manipulating data in Excel. In its' simplest form, a macro is a recording of your keystrokes. While macros represent one of the stronger features found in Excel, they are rather easy to create and use. There are six major points that I like to make about macros as follows.

1. **Record, Use Excel, Stop Recording** – To create a macro, simply turn on the macro recorder, use Excel as you normally do, then turn off the recorder. Presto – you have created a macro. While the process is simple from the user's point of view, underneath the covers Excel creates a Visual Basic subroutine using sophisticated Visual Basic programming commands.

2. **Macro Location** – Macros can be stored in either of two locations, as follows:

    a. The workbook you are using, or
    b. Your Personal Macro Workbook (which by default is hidden from view)

    If your macro applies to all workbooks, then store it in the Personal Macro Workbook so it will always be available in all of your Excel workbooks; otherwise store it in your current workbook. A macro stored in your current workbook will be embedded and included in the workbook, even if you e-mail the workbook to another user.

3. **Assign your Macro to an Icon, Text or a Button** – To make it easy to run your macro, you should assign it to a toolbar icon so it will always be available no matter which workbooks you have open. If the macro applies only to your current workbook, then assign it to Text or a macro Button so it will be quickly available in your current workbook.

4. **Absolute versus Relative Macros** – An "Absolute" macro will always affect the same cells each time whereas a "Relative" macro will affect those cells relative to where your cursor is positioned when you invoke the macro. It is crucial that you understand the difference.

5. **Editing Macros** – Once created, you can view and/or edit your macro using the View Macros option. This will open the macro subroutine in a Visual basic programming window and provide you with a plethora of VB tools.

6. **Advanced Visual Basic Programming** – For the truly ambitious CPA, in the Visual Basic Programming window, you have the necessary tools you need to build very sophisticated macros with dialog boxes, drop down menu options, check boxes, radio buttons – the whole works. I invite you to knock yourself out. To see all of this power, turn on the "Developer Tab" in "Excel Options" (see below).

Presented below are more detailed comments and step-by-step instructions for creating and invoking macros, followed by some example macros.

1. **Creating a Macro -** To create a macro, click "Record Macro" in the "Code Group" on the Developer Tab.

    a. **Assign a Name -** In the "Macro Name" box, enter a name for the macro.

        i. The first character of the macro name must be a letter.
        ii. Subsequent characters can be letters, numbers, or underscore characters.
        iii. Spaces cannot be used in a macro name (an underscore character is often used as a word separator.
        iv. If you use a macro name that is also a cell reference, you may get an error message that the macro name is not valid.

    b. **Assign a CTRL Combination (*optional*)** – You can assign a CTRL combination shortcut key to run the macro by typing any lowercase letter or uppercase letter that you want to use in the Shortcut key box.

        i. The shortcut key will override any equivalent default Excel shortcut key while the workbook that contains the macro is open.

    c. **Macro Location -** In the **"**Store Macro In" list, select the workbook where you want to store the macro.

        i. As mentioned above, if you want a macro to be available whenever you use Excel, select "**Personal Macro Workbook"**. When you select **Personal Macro Workbook**, Excel creates a hidden personal macro workbook (Personal.xlsb) if it does not already exist, and saves the macro in this workbook.
        ii. In Windows Vista, this workbook is saved in the C:\Users*user name*\AppData\Local\Microsoft\Excel\XLStart folder.
        iii. In Microsoft Windows XP, this workbook is saved in the C:\Documents and Settings*user name*\Application Data\Microsoft\Excel\XLStart folder.
        iv. Workbooks in the XLStart folder are opened automatically whenever Excel starts.
        v. If you want a macro in the personal macro workbook to be run automatically in another workbook, you must also save that workbook in the XLStart folder so that both workbooks are opened when Excel starts.

d. **Macro Description -** In the **Description** box, type a description of the macro.

e. **Start Recording -** Click **OK** to start recording.

f. **Start Typing -** Perform the actions that you want to record.

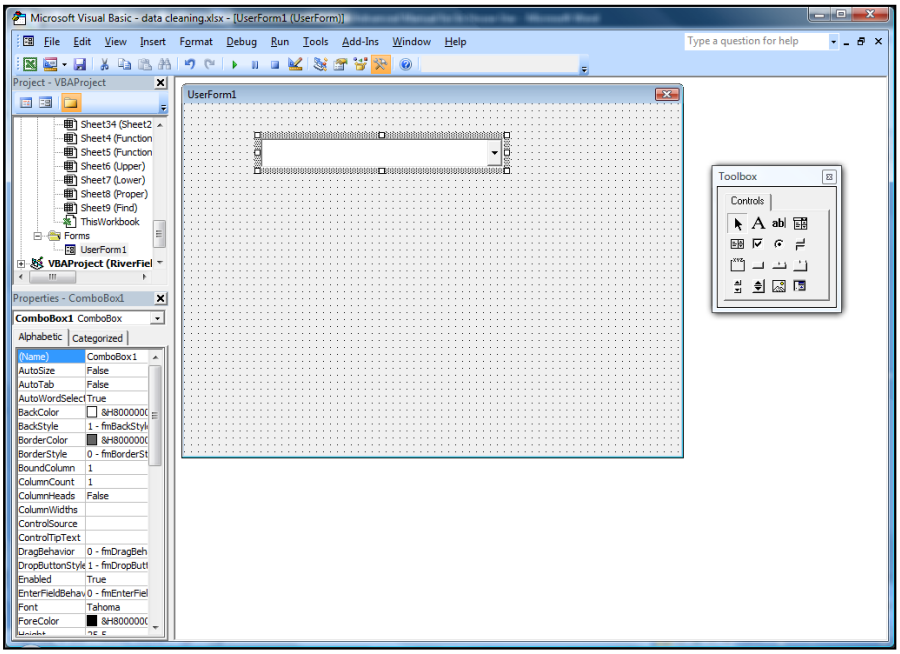
g. **Stop Recording** – When you are done click "Stop Recording" in the "Code Group" On the "Developer Tab".

   i. You can also click **Stop Recording** on the left side of the status bar.

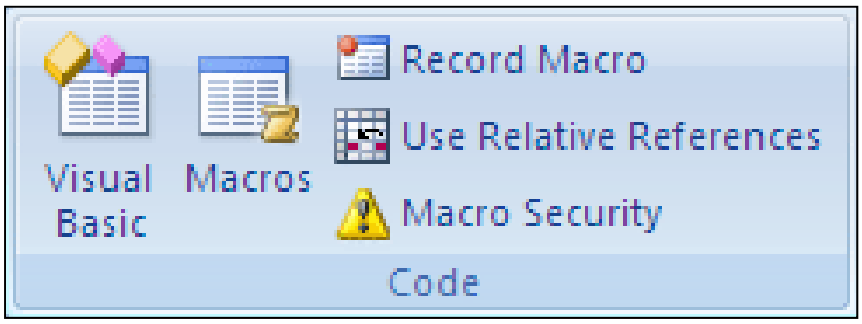
h. **Assign a macro to an object, graphic, or control -** On a worksheet, right-click the object, graphic, or control to which you want to assign an existing macro, and then click Assign Macro. In the Macro name box, click the macro that you want to assign.

2. **Menu Navigation Not Recorded -** When you record a macro, the macro recorder records all the steps required to complete the actions that you want your macro to perform. Navigation on the Ribbon is not included in the recorded steps, only the commands that are executed are recorded in the macro.

3. **Turn On The Developer Tab -** Turn on the Developer tab by clicking the Microsoft Office Start Button, and then click Excel Options. In the Popular category, under Top options for working with Excel, select the Show Developer tab in the Ribbon check box, and then click OK.



4. **Enable Macros –** If the macro functions are disabled, you can enable them by selecting Macro Security in the Code group on the Developer tab as shown below.



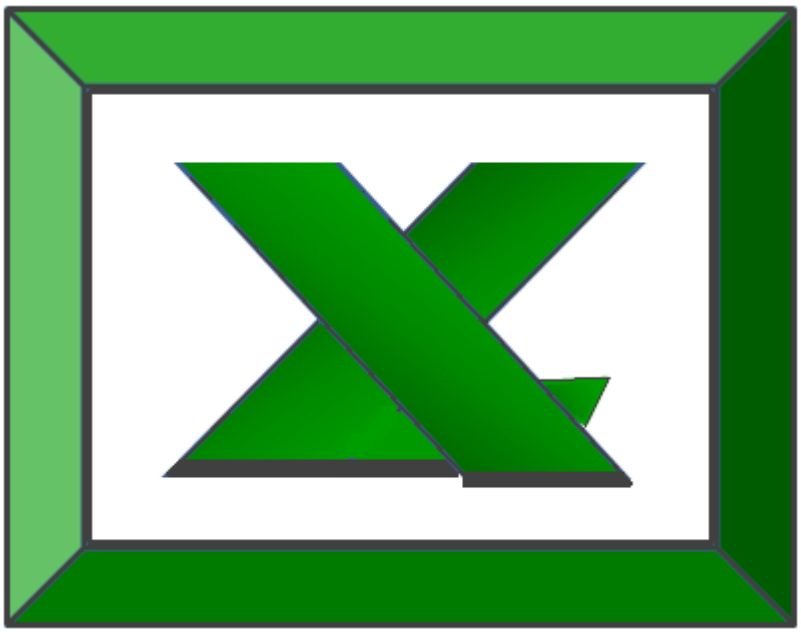
Under Macro Settings, click Enable all macros (not recommended, potentially dangerous code can run), and then click OK.

5. **Example Macros**

   a. **Page Setup Macro –** Start recording a new macro called page setup. Select all of the worksheets and then choose Page Setup and customize the header and footers to include page numbers, date and time stamps, file locations, tab names, etc. Assign the macro to an Icon on your toolbar or Quick Access Bar and insetting headers and footers will be a breeze for the rest of your life.

   b. **Print Macros –** Do you have a template that you print frequently from? If so, insert several macro buttons to print each report, a group of reports, and even multiple reports and reporting will be snap in the future.

   c. **Delete Data Macro –** Do you have a template that you use often that contains a lot of variables? If so, create a macro that visits each cell and erases that data, resetting the worksheet for use in a new set of criteria. Assign the macro to a macro button and you will never again have old assumptions mixed in with your newer template.



Chapter 4

Functions

Excel's Predefined Formulas

Introduction to Excel Functions

Excel Functions are preprogrammed formulas that make the task of writing complex formulas easier. There are a total of 333 functions in Excel. These functions are separated into 11 categories as follows:

1. Database Functions (12)
2. Date and Time Functions (20)
3. Engineering Functions (39)
4. Financial Functions (53)
5. Information Functions (17)
6. Logical Functions (6)
7. Lookup and Reference Functions (18)
8. Math and Trigonometry Functions (59)
9. Statistical Functions (80)
10. Text Functions (27)
11. External Functions (2)

Some Excel functions are more powerful than others and some are more relevant to the CPA than others. For example, most CPAs will find the IF, SUM, COUNT, SUBTOTAL, TEXT, and VLOOKUP are very relevant to the CPA while other engineering and trigonometry functions such as LOG, PI, RADIENS, DELTA, TAN, COMPLEX, and HAX2DEC are typically less relevant to CPAs. It has been my experience that the following 67 functions are most relevant to the CPA; therefore CPAs wishing to increase their command of Excel functions should concentrate on these functions first.

Carlton's List of The Top 67 Functions Most Relevant to CPAs
Sorted By Carlton's Opinion of the Most Useful

1. IF	2. SUM	3. SUMIF	4. COUNT	5. COUNTA
6. AVERAGE	7. COUNTBLANK	8. COUNTIF	9. VALUE	10. TEXT
11. VLOOKUP	12. HLOOKUP	13. LOOKUP	14. TRIM	15. PROPER
16. LOWER	17. LEFT, LEFTB	18. MID, MIDB	19. RIGHT,	20. FIND, FINDB
21. REPLACE	22. CONCATENATE	23. CLEAN	24. UPPER	25. LEN, LENB
26. SUBSTITUTE	27. NOW	28. TODAY	29. MONTH	30. DATE
31. DAY	32. YEAR	33. WEEKDAY	34. ROUND	35. ROUNDDOWN
36. ROUNDUP	37. MAX	38. MIN	39. MEDIAN	40. MODE
41. PERCENTILE	42. PERCENTRANK	43. PMT	44. NPV	45. DSUM
46. DCOUNT	47. DCOUNTA	48. AND	49. OR	50. CHOOSE
51. TIME	52. FV	53. IRR	54. YIELD	55. CELL
56. ERROR.TYPE	57. INFO	58. ISBLANK	59. ISNA	60. GETPIVOTDATA
61. HYPERLINK	62. TRANSPOSE	63. ABS	64. RAND	65. RANDBETWEEN
66. CONFIDENCE	67. REPT			

Following is a list of all Excel functions, organized by category, including a description of each function.

	Database Functions	
	Function	Description

1	DAVERAGE	Returns the average of selected database entries
2	DCOUNT	Counts the cells that contain numbers in a database
3	DCOUNTA	Counts nonblank cells in a database
4	DGET	Extracts from a database a single record that matches the specified criteria
5	DMAX	Returns the maximum value from selected database entries
6	DMIN	Returns the minimum value from selected database entries
7	DPRODUCT	Multiplies the values in a particular field of records that match the criteria in a database
8	DSTDEV	Estimates the standard deviation based on a sample of selected database entries
9	DSTDEVP	Calculates the standard deviation based on the entire population of selected database entries
10	DSUM	Adds the numbers in the field column of records in the database that match the criteria
11	DVAR	Estimates variance based on a sample from selected database entries
12	DVARP	Calculates variance based on the entire population of selected database entries
	Date and Time Functions	
	Function	Description
13	DATE	Returns the serial number of a particular date
14	DATEVALUE	Converts a date in the form of text to a serial number
15	DAY	Converts a serial number to a day of the month
16	DAYS360	Calculates the number of days between two dates based on a 360-day year
17	EDATE	Returns the serial number of the date that is the indicated number of months before or after the start date
18	EOMONTH	Returns the serial number of the last day of the month before or after a specified number of months
19	HOUR	Converts a serial number to an hour
20	MINUTE	Converts a serial number to a minute
21	MONTH	Converts a serial number to a month
22	NETWORKDAYS	Returns the number of whole workdays between two dates
23	NOW	Returns the serial number of the current date and time
24	SECOND	Converts a serial number to a second
25	TIME	Returns the serial number of a particular time
26	TIMEVALUE	Converts a time in the form of text to a serial number
27	TODAY	Returns the serial number of today's date
28	WEEKDAY	Converts a serial number to a day of the week
29	WEEKNUM	Converts a serial number to a number representing where the week falls numerically with a year
30	WORKDAY	Returns the serial number of the date before or after a specified number of workdays

31	YEAR	Converts a serial number to a year
32	YEARFRAC	Returns the year fraction representing the number of whole days between start_date and end_date
	Engineering Functions	
	Function	Description
33	BESSELI	Returns the modified Bessel Function In(x)
34	BESSELJ	Returns the Bessel Function Jn(x)
35	BESSELK	Returns the modified Bessel Function Kn(x)
36	BESSELY	Returns the Bessel Function Yn(x)
37	BIN2DEC	Converts a binary number to decimal
38	BIN2HEX	Converts a binary number to hexadecimal
39	BIN2OCT	Converts a binary number to octal
40	COMPLEX	Converts real and imaginary coefficients into a complex number
41	CONVERT	Converts a number from one measurement system to another
42	DEC2BIN	Converts a decimal number to binary
43	DEC2HEX	Converts a decimal number to hexadecimal
44	DEC2OCT	Converts a decimal number to octal
45	DELTA	Tests whether two values are equal
46	ERF	Returns the error Function
47	ERFC	Returns the complementary error Function
48	GESTEP	Tests whether a number is greater than a threshold value
49	HEX2BIN	Converts a hexadecimal number to binary
50	HEX2DEC	Converts a hexadecimal number to decimal
51	HEX2OCT	Converts a hexadecimal number to octal
52	IMABS	Returns the absolute value (modulus) of a complex number
53	IMAGINARY	Returns the imaginary coefficient of a complex number
54	IMARGUMENT	Returns the argument theta, an angle expressed in radians
55	IMCONJUGATE	Returns the complex conjugate of a complex number
56	IMCOS	Returns the cosine of a complex number
57	IMDIV	Returns the quotient of two complex numbers
58	IMEXP	Returns the exponential of a complex number
59	IMLN	Returns the natural logarithm of a complex number
60	IMLOG10	Returns the base-10 logarithm of a complex number
61	IMLOG2	Returns the base-2 logarithm of a complex number
62	IMPOWER	Returns a complex number raised to an integer power
63	IMPRODUCT	Returns the product of from 2 to 29 complex numbers
64	IMREAL	Returns the real coefficient of a complex number
65	IMSIN	Returns the sine of a complex number
66	IMSQRT	Returns the square root of a complex number

67	IMSUB	Returns the difference between two complex numbers
68	IMSUM	Returns the sum of complex numbers
69	OCT2BIN	Converts an octal number to binary
70	OCT2DEC	Converts an octal number to decimal
71	OCT2HEX	Converts an octal number to hexadecimal
	Financial Functions	
	Function	Description
72	ACCRINT	Returns the accrued interest for a security that pays periodic interest
73	ACCRINTM	Returns the accrued interest for a security that pays interest at maturity
74	AMORDEGRC	Returns the depreciation for each accounting period by using a depreciation coefficient
75	AMORLINC	Returns the depreciation for each accounting period
76	COUPDAYBS	Returns the number of days from the beginning of the coupon period to the settlement date
77	COUPDAYS	Returns the number of days in the coupon period that contains the settlement date
78	COUPDAYSNC	Returns the number of days from the settlement date to the next coupon date
79	COUPNCD	Returns the next coupon date after the settlement date
80	COUPNUM	Returns the number of coupons payable between the settlement date and maturity date
81	COUPPCD	Returns the previous coupon date before the settlement date
82	CUMIPMT	Returns the cumulative interest paid between two periods
83	CUMPRINC	Returns the cumulative principal paid on a loan between two periods
84	DB	Returns the depreciation of an asset for a specified period by using the fixed-declining balance method
85	DDB	Returns the depreciation of an asset for a specified period by using the double-declining balance method or some other method that you specify
86	DISC	Returns the discount rate for a security
87	DOLLARDE	Converts a dollar price, expressed as a fraction, into a dollar price, expressed as a decimal number
88	DOLLARFR	Converts a dollar price, expressed as a decimal number, into a dollar price, expressed as a fraction
89	DURATION	Returns the annual duration of a security with periodic interest payments
90	EFFECT	Returns the effective annual interest rate
91	FV	Returns the future value of an investment
92	FVSCHEDULE	Returns the future value of an initial principal after applying a series of compound interest rates
93	INTRATE	Returns the interest rate for a fully invested security
94	IPMT	Returns the interest payment for an investment for a given period
95	IRR	Returns the internal rate of return for a series of cash flows
96	ISPMT	Calculates the interest paid during a specific period of an investment

97	MDURATION	Returns the Macauley modified duration for a security with an assumed par value of $100
98	MIRR	Returns the internal rate of return where positive and negative cash flows are financed at different rates
99	NOMINAL	Returns the annual nominal interest rate
100	NPER	Returns the number of periods for an investment
101	NPV	Returns the net present value of an investment based on a series of periodic cash flows and a discount rate
102	ODDFPRICE	Returns the price per $100 face value of a security with an odd first period
103	ODDFYIELD	Returns the yield of a security with an odd first period
104	ODDLPRICE	Returns the price per $100 face value of a security with an odd last period
105	ODDLYIELD	Returns the yield of a security with an odd last period
106	PMT	Returns the periodic payment for an annuity
107	PPMT	Returns the payment on the principal for an investment for a given period
108	PRICE	Returns the price per $100 face value of a security that pays periodic interest
109	PRICEDISC	Returns the price per $100 face value of a discounted security
110	PRICEMAT	Returns the price per $100 face value of a security that pays interest at maturity
111	PV	Returns the present value of an investment
112	RATE	Returns the interest rate per period of an annuity
113	RECEIVED	Returns the amount received at maturity for a fully invested security
114	SLN	Returns the straight-line depreciation of an asset for one period
115	SYD	Returns the sum-of-years' digits depreciation of an asset for a specified period
116	TBILLEQ	Returns the bond-equivalent yield for a Treasury bill
117	TBILLPRICE	Returns the price per $100 face value for a Treasury bill
118	TBILLYIELD	Returns the yield for a Treasury bill
119	VDB	Returns the depreciation of an asset for a specified or partial period by using a declining balance method
120	XIRR	Returns the internal rate of return for a schedule of cash flows that is not necessarily periodic
121	XNPV	Returns the net present value for a schedule of cash flows that is not necessarily periodic
122	YIELD	Returns the yield on a security that pays periodic interest
123	YIELDDISC	Returns the annual yield for a discounted security; for example, a Treasury bill
124	YIELDMAT	Returns the annual yield of a security that pays interest at maturity
	Information Functions	
	Function	Description
125	CELL	Returns information about the formatting, location, or contents of a cell
126	ERROR.TYPE	Returns a number corresponding to an error type
127	INFO	Returns information about the current operating environment

128	ISBLANK	Returns TRUE if the value is blank
129	ISERR	Returns TRUE if the value is any error value except #N/A
130	ISERROR	Returns TRUE if the value is any error value
131	ISEVEN	Returns TRUE if the number is even
132	ISLOGICAL	Returns TRUE if the value is a logical value
133	ISNA	Returns TRUE if the value is the #N/A error value
134	ISNONTEXT	Returns TRUE if the value is not text
135	ISNUMBER	Returns TRUE if the value is a number
136	ISODD	Returns TRUE if the number is odd
137	ISREF	Returns TRUE if the value is a reference
138	ISTEXT	Returns TRUE if the value is text
139	N	Returns a value converted to a number
140	NA	Returns the error value #N/A
141	TYPE	Returns a number indicating the data type of a value
17		
	Logical Functions	
	Function	Description
142	AND	Returns TRUE if all of its arguments are TRUE
143	FALSE	Returns the logical value FALSE
144	IF	Specifies a logical test to perform
145	NOT	Reverses the logic of its argument
146	OR	Returns TRUE if any argument is TRUE
147	TRUE	Returns the logical value TRUE
	Lookup and Reference Functions	
	Function	Description
148	ADDRESS	Returns a reference as text to a single cell in a worksheet
149	AREAS	Returns the number of areas in a reference
150	CHOOSE	Chooses a value from a list of values
151	COLUMN	Returns the column number of a reference
152	COLUMNS	Returns the number of columns in a reference
153	GETPIVOTDATA	Returns data stored in a PivotTable
154	HLOOKUP	Looks in the top row of an array and returns the value of the indicated cell
155	HYPERLINK	Creates a shortcut or jump that opens a document stored on a network server, an intranet, or the Internet
156	INDEX	Uses an index to choose a value from a reference or array
157	INDIRECT	Returns a reference indicated by a text value
158	LOOKUP	Looks up values in a vector or array
159	MATCH	Looks up values in a reference or array
160	OFFSET	Returns a reference offset from a given reference

161	ROW	Returns the row number of a reference
162	ROWS	Returns the number of rows in a reference
163	RTD	Retrieves real-time data from a program that supports COM automation (Automation: A way to work with an application's objects from another application or development tool. Formerly called OLE Automation, Automation is an industry standard and a feature of the Component Object Model (COM).)
164	TRANSPOSE	Returns the transpose of an array
165	VLOOKUP	Looks in the first column of an array and moves across the row to return the value of a cell
	Math and Trigonometry Functions	
	Function	Description
166	ABS	Returns the absolute value of a number
167	ACOS	Returns the arccosine of a number
168	ACOSH	Returns the inverse hyperbolic cosine of a number
169	ASIN	Returns the arcsine of a number
170	ASINH	Returns the inverse hyperbolic sine of a number
171	ATAN	Returns the arctangent of a number
172	ATAN2	Returns the arctangent from x- and y-coordinates
173	ATANH	Returns the inverse hyperbolic tangent of a number
174	CEILING	Rounds a number to the nearest integer or to the nearest multiple of significance
175	COMBIN	Returns the number of combinations for a given number of objects
176	COS	Returns the cosine of a number
177	COSH	Returns the hyperbolic cosine of a number
178	DEGREES	Converts radians to degrees
179	EVEN	Rounds a number up to the nearest even integer
180	EXP	Returns e raised to the power of a given number
181	FACT	Returns the factorial of a number
182	FACTDOUBLE	Returns the double factorial of a number
183	FLOOR	Rounds a number down, toward zero
184	GCD	Returns the greatest common divisor
185	INT	Rounds a number down to the nearest integer
186	LCM	Returns the least common multiple
187	LN	Returns the natural logarithm of a number
188	LOG	Returns the logarithm of a number to a specified base
189	LOG10	Returns the base-10 logarithm of a number
190	MDETERM	Returns the matrix determinant of an array
191	MINVERSE	Returns the matrix inverse of an array
192	MMULT	Returns the matrix product of two arrays

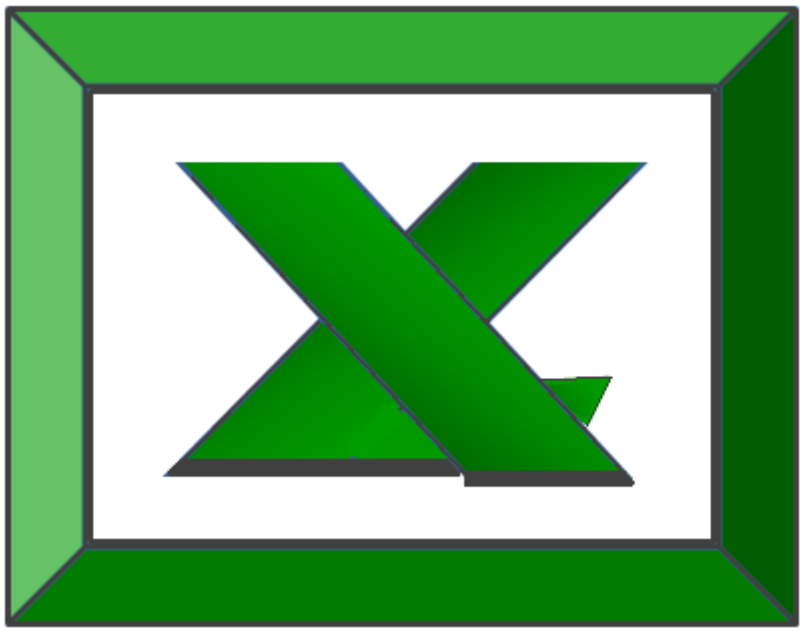
193	MOD	Returns the remainder from division
194	MROUND	Returns a number rounded to the desired multiple
195	MULTINOMIAL	Returns the multinomial of a set of numbers
196	ODD	Rounds a number up to the nearest odd integer
197	PI	Returns the value of pi
198	POWER	Returns the result of a number raised to a power
199	PRODUCT	Multiplies its arguments
200	QUOTIENT	Returns the integer portion of a division
201	RADIANS	Converts degrees to radians
202	RAND	Returns a random number between 0 and 1
203	RANDBETWEEN	Returns a random number between the numbers you specify
204	ROMAN	Converts an arabic numeral to roman, as text
205	ROUND	Rounds a number to a specified number of digits
206	ROUNDDOWN	Rounds a number down, toward zero
207	ROUNDUP	Rounds a number up, away from zero
208	SERIESSUM	Returns the sum of a power series based on the formula
209	SIGN	Returns the sign of a number
210	SIN	Returns the sine of the given angle
211	SINH	Returns the hyperbolic sine of a number
212	SQRT	Returns a positive square root
213	SQRTPI	Returns the square root of (number * pi)
214	SUBTOTAL	Returns a subtotal in a list or database
215	SUM	Adds its arguments
216	SUMIF	Adds the cells specified by a given criteria
217	SUMPRODUCT	Returns the sum of the products of corresponding array components
218	SUMSQ	Returns the sum of the squares of the arguments
219	SUMX2MY2	Returns the sum of the difference of squares of corresponding values in two arrays
220	SUMX2PY2	Returns the sum of the sum of squares of corresponding values in two arrays
221	SUMXMY2	Returns the sum of squares of differences of corresponding values in two arrays
222	TAN	Returns the tangent of a number
223	TANH	Returns the hyperbolic tangent of a number
224	TRUNC	Truncates a number to an integer
	Statistical Functions	
	Function	Description
225	AVEDEV	Returns the average of the absolute deviations of data points from their mean
226	AVERAGE	Returns the average of its arguments

227	AVERAGEA	Returns the average of its arguments, including numbers, text, and logical values
228	BETADIST	Returns the beta cumulative distribution Function
229	BETAINV	Returns the inverse of the cumulative distribution Function for a specified beta distribution
230	BINOMDIST	Returns the individual term binomial distribution probability
231	CHIDIST	Returns the one-tailed probability of the chi-squared distribution
232	CHIINV	Returns the inverse of the one-tailed probability of the chi-squared distribution
233	CHITEST	Returns the test for independence
234	CONFIDENCE	Returns the confidence interval for a population mean
235	CORREL	Returns the correlation coefficient between two data sets
236	COUNT	Counts how many numbers are in the list of arguments
237	COUNTA	Counts how many values are in the list of arguments
238	COUNTBLANK	Counts the number of blank cells within a range
239	COUNTIF	Counts the number of nonblank cells within a range that meet the given criteria
240	COVAR	Returns covariance, the average of the products of paired deviations
241	CRITBINOM	Returns the smallest value for which the cumulative binomial distribution is less than or equal to a criterion value
242	DEVSQ	Returns the sum of squares of deviations
243	EXPONDIST	Returns the exponential distribution
244	FDIST	Returns the F probability distribution
245	FINV	Returns the inverse of the F probability distribution
246	FISHER	Returns the Fisher transformation
247	FISHERINV	Returns the inverse of the Fisher transformation
248	FORECAST	Returns a value along a linear trend
249	FREQUENCY	Returns a frequency distribution as a vertical array
250	FTEST	Returns the result of an F-test
251	GAMMADIST	Returns the gamma distribution
252	GAMMAINV	Returns the inverse of the gamma cumulative distribution
253	GAMMALN	Returns the natural logarithm of the gamma Function, Γ(x)
254	GEOMEAN	Returns the geometric mean
255	GROWTH	Returns values along an exponential trend
256	HARMEAN	Returns the harmonic mean
257	HYPGEOMDIST	Returns the hypergeometric distribution
258	INTERCEPT	Returns the intercept of the linear regression line
259	KURT	Returns the kurtosis of a data set
260	LARGE	Returns the k-th largest value in a data set
261	LINEST	Returns the parameters of a linear trend
262	LOGEST	Returns the parameters of an exponential trend

263	LOGINV	Returns the inverse of the lognormal distribution
264	LOGNORMDIST	Returns the cumulative lognormal distribution
265	MAX	Returns the maximum value in a list of arguments
266	MAXA	Returns the maximum value in a list of arguments, including numbers, text, and logical values
267	MEDIAN	Returns the median of the given numbers
268	MIN	Returns the minimum value in a list of arguments
269	MINA	Returns the smallest value in a list of arguments, including numbers, text, and logical values
270	MODE	Returns the most common value in a data set
271	NEGBINOMDIST	Returns the negative binomial distribution
272	NORMDIST	Returns the normal cumulative distribution
273	NORMINV	Returns the inverse of the normal cumulative distribution
274	NORMSDIST	Returns the standard normal cumulative distribution
275	NORMSINV	Returns the inverse of the standard normal cumulative distribution
276	PEARSON	Returns the Pearson product moment correlation coefficient
277	PERCENTILE	Returns the k-th percentile of values in a range
278	PERCENTRANK	Returns the percentage rank of a value in a data set
279	PERMUT	Returns the number of permutations for a given number of objects
280	POISSON	Returns the Poisson distribution
281	PROB	Returns the probability that values in a range are between two limits
282	QUARTILE	Returns the quartile of a data set
283	RANK	Returns the rank of a number in a list of numbers
284	RSQ	Returns the square of the Pearson product moment correlation coefficient
285	SKEW	Returns the skewness of a distribution
286	SLOPE	Returns the slope of the linear regression line
287	SMALL	Returns the k-th smallest value in a data set
288	STANDARDIZE	Returns a normalized value
289	STDEV	Estimates standard deviation based on a sample
290	STDEVA	Estimates standard deviation based on a sample, including numbers, text, and logical values
291	STDEVP	Calculates standard deviation based on the entire population
292	STDEVPA	Calculates standard deviation based on the entire population, including numbers, text, and logical values
293	STEYX	Returns the standard error of the predicted y-value for each x in the regression
294	TDIST	Returns the Student's t-distribution
295	TINV	Returns the inverse of the Student's t-distribution
296	TREND	Returns values along a linear trend
297	TRIMMEAN	Returns the mean of the interior of a data set
298	TTEST	Returns the probability associated with a Student's t-test

299	VAR	Estimates variance based on a sample
300	VARA	Estimates variance based on a sample, including numbers, text, and logical values
301	VARP	Calculates variance based on the entire population
302	VARPA	Calculates variance based on the entire population, including numbers, text, and logical values
303	WEIBULL	Returns the Weibull distribution
304	ZTEST	Returns the one-tailed probability-value of a z-test
	Text Functions	
	Function	Description
305	ASC	Changes full-width (double-byte) English letters or katakana within a character string to half-width (single-byte) characters
306	BAHTTEXT	Converts a number to text, using the ß (baht) currency format
307	CHAR	Returns the character specified by the code number
308	CLEAN	Removes all nonprintable characters from text
309	CODE	Returns a numeric code for the first character in a text string
310	CONCATENATE	Joins several text items into one text item
311	DOLLAR	Converts a number to text, using the $ (dollar) currency format
312	EXACT	Checks to see if two text values are identical
313	FIND, FINDB	Finds one text value within another (case-sensitive)
314	FIXED	Formats a number as text with a fixed number of decimals
315	JIS	Changes half-width (single-byte) English letters or katakana within a character string to full-width (double-byte) characters
316	LEFT, LEFTB	Returns the leftmost characters from a text value
317	LEN, LENB	Returns the number of characters in a text string
318	LOWER	Converts text to lowercase
319	MID, MIDB	Returns a specific number of characters from a text string starting at the position you specify
320	PHONETIC	Extracts the phonetic (furigana) characters from a text string
321	PROPER	Capitalizes the first letter in each word of a text value
322	REPLACE, REPLACEB	Replaces characters within text
323	REPT	Repeats text a given number of times
324	RIGHT, RIGHTB	Returns the rightmost characters from a text value
325	SEARCH, SEARCHB	Finds one text value within another (not case-sensitive)
326	SUBSTITUTE	Substitutes new text for old text in a text string
327	T	Converts its arguments to text
328	TEXT	Formats a number and converts it to text
329	TRIM	Removes spaces from text
330	UPPER	Converts text to uppercase

331	VALUE	Converts a text argument to a number
	External Functions	
	Function	Description
332	EUROCONVERT	Converts a number to euros, converts a number from euros to a euro member currency, or converts a number from one euro member currency to another by using the euro as an intermediary (triangulation)
333	SQL.REQUEST	Connects with an external data source and runs a query from a worksheet, then returns the result as an array without the need for macro programming



Chapter 5

The =IF Function

Excel's Most Powerful Function

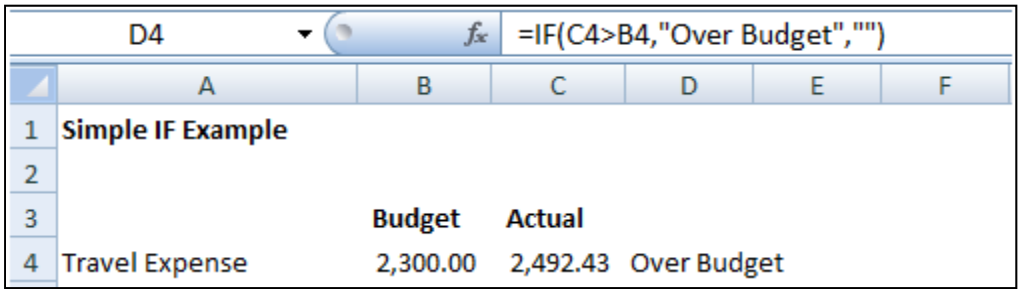
=IF

The "IF" function is the most powerful of all functions – not just in Excel, but in any programming language. Commonly referred to as "Conditional Programming", it is the IF function that enables us to introduce logical thinking into any program. This function is also referred to as the "If-Then-Else" command, "conditional expressions", or "Propositional Logic". The following Wikis explains this concept in more detail:

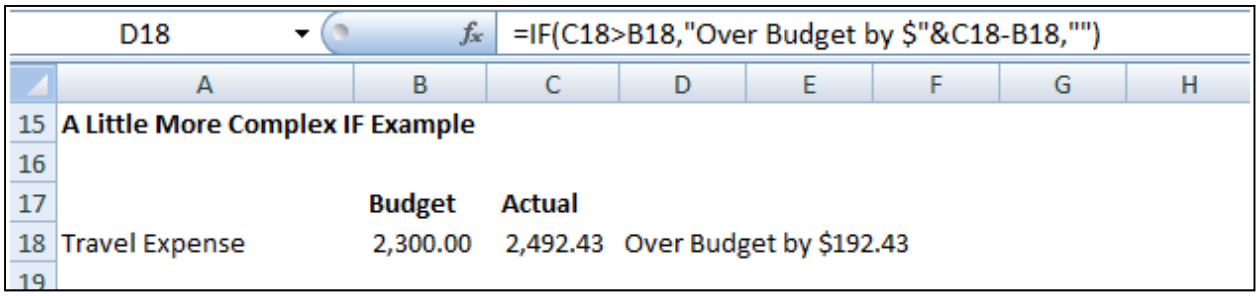
http://en.wikipedia.org/wiki/Conditional_(programming).
http://en.wikipedia.org/wiki/Logical_conditional#Conditional_statements

The clever CPA can use the IF Function to build elaborate Excel templates and financial models containing an almost unlimited amount of sophisticated programming. Presented below are several examples to help you better understand the application of this powerful tool.

Simple IF - The IF function returns one value if a condition you specify evaluates to TRUE, and another value if that condition evaluates to FALSE. Presented below is a simple example:



Simple IF with Calculation – Presented below is an example that is a little more complex:



Simple IF – Larger Example - Presented below is yet another IF example on a little larger scale – this example shows how one might apply the IF function to evaluate budget versus actual comparisons.

D13 =IF(C13>B13,"Over Budget by $"&C13-B13,"")

	A	B	C	D	E	F
11	**IF Example - A Slightly Larger Example:**					
12		**Budget**	**Actual**			
13	AUTOMOBILE EXPENSE	2,139.55	2,674.44	Over Budget by $534.89		
14	BANK SERVICE CHARGES	37.34	48.54	Over Budget by $11.2		
15	CONFERENCE REGISTRATION FEES	750.00	500.00			
16	CONTRACT LABOR	26,654.80	34,651.24	Over Budget by $7996.44		
17	CONTRIBUTIONS	1,282.53	1,603.16	Over Budget by $320.63		
18	DUES AND SUBSCRIPTIONS	6,051.13	7,866.47	Over Budget by $1815.34		
19	EQUIPMENT PURCHASE	1,235.87	1,544.84	Over Budget by $308.97		
20	EQUIPMENT RENTAL	124.50	85.03			
21	HARDWARE PURCHASE	3,950.05	4,937.56	Over Budget by $987.51		
22	INSURANCE	11,697.00	15,206.10	Over Budget by $3509.1		
23	MARKETING GIVEAWAYS	1,876.70	1,481.09			
24	MEMBERSHIPS	90.00	117.00	Over Budget by $27		
25	MISCELLANEOUS	21,010.25	26,262.81	Over Budget by $5252.56		
26	OFFICE SUPPLIES	6,861.83	8,920.38	Over Budget by $2058.55		
27	ONLINE COMPUTER SERVICES	5,789.74	7,237.18	Over Budget by $1447.44		
28	OUTSIDE SERVICES	4,563.21	508.95			
29	PARTNER SALARY DRAW	172,000.00	215,000.00	Over Budget by $43000		
30	PAYROLL EXPENSES	564.67	655.43	Over Budget by $90.76		

Simple IF with Drop Down - In the following example, the IF function is checking to see if they have signed up for insurance. If they have, the deduction amount is entered.

D9 =IF(C9="Yes",235,0)

	A	B	C	D
5	**Name**	**Hire Date**	**Insurance?**	**Deduction**
6	Wells, Diane	3/1/2008	Yes	235.00
7	Thomas, Doug	11/1/2005	No	0.00
8	Singh, Lisa	6/1/2003	No	0.00
9	Smith, John	2/1/2007	Yes	235.00
10	Simpleton, Fred	2/22/2006		0.00
11	Norris, Carnie	4/7/2002		0.00
12	Hall, Nancy	8/2/2005		0.00

Simple IF with Calculation - The next IF function example is determining each employees earned vacation days. If they have worked for more than a year, they have earned 5 vacation days plus one day for each additional full year.

D8 =IF(C8>1,INT(C8)+4,0)

	A	B	C	D
6	8/8/2009			
7		**Hire Date**	**Years Employed**	**Vacation Days Earned**
8	Garcia, Jorge	3/1/2008	1.44	5.00
9	Jones, Joe	11/1/2005	3.77	7.00
10	Singh, Lisa	6/1/2003	6.19	10.00
11	Smith, John	2/1/2009	0.51	0.00
12				

Nested IF Functions - In this sample, there are four possibilities for bonuses.

D6 =IF(C6="B. Basic Bonus",$I$5,IF(C6="C. High perfpormance Bonus",$I$6,IF(C6="D. Super Bonus",$I$7,$I$4)))

	A	B	C	D
4	8/8/2009			
5	**Employee**	**Hire date**	**Bonus Level**	**Deduction**
6	Garcia, Jorge	3/1/2008	B. Basic Bonus	1,500.00
7	Jones, Joe	11/1/2005	C. High Performance Bonus	0.00
8	Singh, Lisa	6/1/2003	D. Super Bonus	4,000.00
9	Smith, John	2/1/2007	A. No Bonus	0.00
10	Wells, Diane	3/1/2008	B. Basic Bonus	1,500.00
11	Thomas, Doug	11/1/2005	C. High Performance Bonus	0.00
12	Simpleton, Fred	2/22/2006	A. No Bonus	0.00
13	Norris, Carnie	4/7/2002	D. Super Bonus	4,000.00
14	Hall, Nancy	8/2/2005	A. No Bonus	0.00

	H	I
	A. No Bonus	-
	B. Basic Bonus	1,500
	C. High Performance Bonus	2,500
	D. Super Bonus	4,000

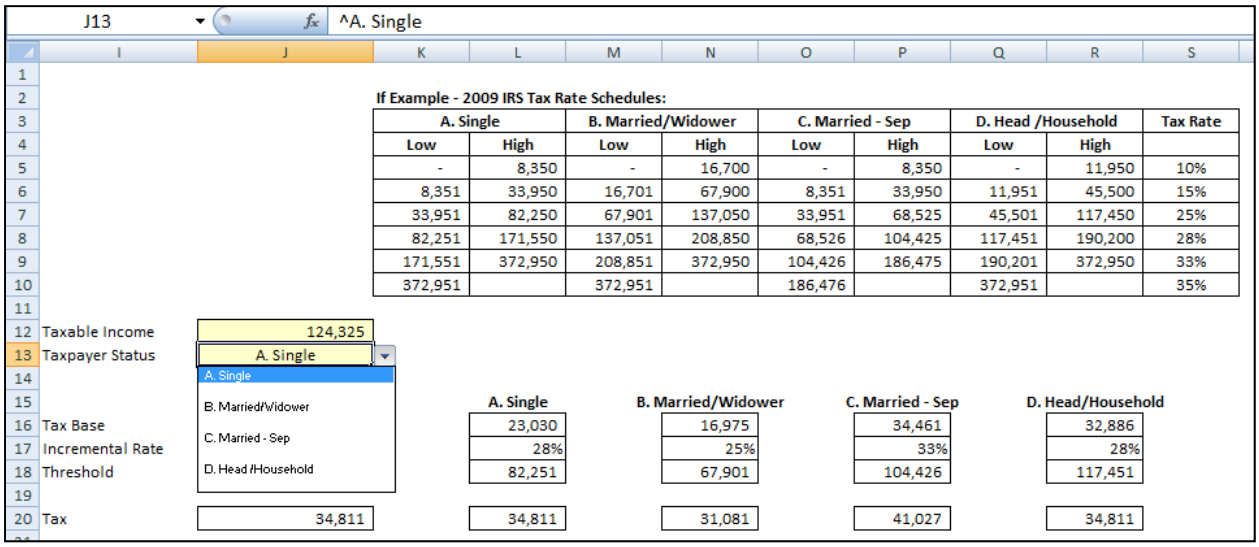
IF Function with Logical OR Argument - Teams A and C meet on Tuesday, Teams B and D meet on Thursday. We want to list the meeting days in column D.

D7 =IF(OR(C7="A",C7="C"),"Tuesday","Thursday")

	A	B	C	D
5	8/8/2009			
6	**Employee**	**Hire date**	**Team**	**Meeting Day**
7	Garcia, Jorge	3/1/2008	A	Tuesday
8	Jones, Joe	11/1/2005	B	Thursday
9	Singh, Lisa	6/1/2003	C	Tuesday
10	Smith, John	2/1/2007	D	Thursday
11	Wells, Diane	3/1/2008	A	Tuesday
12	Thomas, Doug	11/1/2005	B	Thursday
13	Simpleton, Fred	2/22/2006	C	Tuesday
14	Norris, Carnie	4/7/2002	D	Thursday
15	Hall, Nancy	8/2/2005	A	Tuesday
16				

More Complex IF Function Example - The following IF example shows a more complex application in which the user selects a taxpayer status from a drop down list, which then retrieves the correct tax base, threshold, and incremental tax rates to be used in calculating tax.

This example illustrates how a CPA might prepare an income statement template that calculates the appropriate amount of taxes as net income and the taxpayer status changes. Essentially the template calculates the correct tax given all four possible taxpayer statuses, and the IF statements are used to select the correct answers based on the taxpayer status selected.



J13 ^A. Single

If Example - 2009 IRS Tax Rate Schedules:

A. Single		B. Married/Widower		C. Married - Sep		D. Head /Household		Tax Rate
Low	High	Low	High	Low	High	Low	High	
-	8,350	-	16,700	-	8,350	-	11,950	10%
8,351	33,950	16,701	67,900	8,351	33,950	11,951	45,500	15%
33,951	82,250	67,901	137,050	33,951	68,525	45,501	117,450	25%
82,251	171,550	137,051	208,850	68,526	104,425	117,451	190,200	28%
171,551	372,950	208,851	372,950	104,426	186,475	190,201	372,950	33%
372,951		372,951		186,476		372,951		35%

		A. Single	B. Married/Widower	C. Married - Sep	D. Head/Household
Taxable Income	124,325				
Taxpayer Status	A. Single				
Tax Base		23,030	16,975	34,461	32,886
Incremental Rate		28%	25%	33%	28%
Threshold		82,251	67,901	104,426	117,451
Tax	34,811	34,811	31,081	41,027	34,811

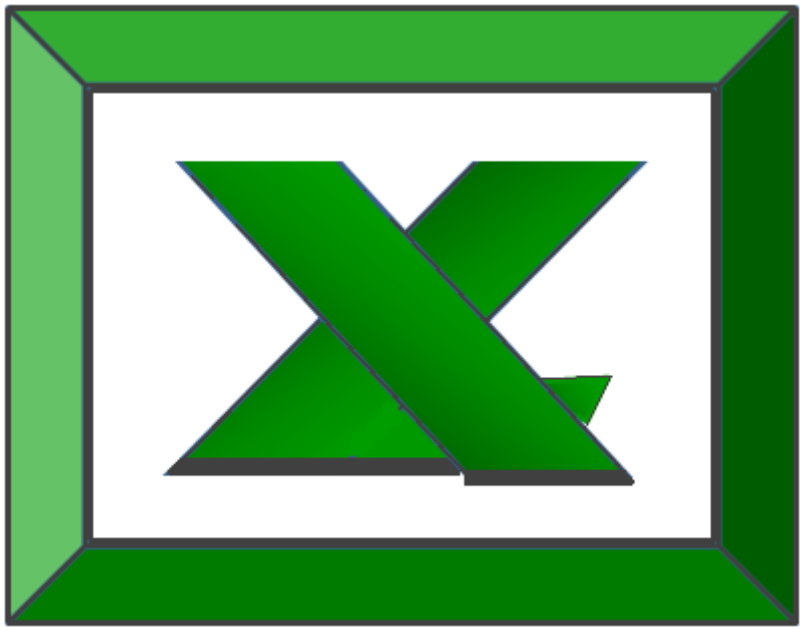
A. Single
B. Married/Widower
C. Married - Sep
D. Head /Household

Keep in mind that despite the many accolades mentioned above, the IF Function is not always the best solution. For example, the VLOOKUP would be a better and easier function to use to extract data from a list as shown in the nested IF Function a few examples above. Many Excel Functions also provide built-in "IF-Then-Else" functionality.

Key Pointers for Using the IF Function:

1. **Nesting** – You can embed up to 8 nested IF functions in a single formula in Excel 2003, and up to 64 IF nested functions in Excel 2007.
2. **AND, OR** – You can use the AND and/or OR operator to add more conditions to an IF Function.
3. **Variations of IF** - Excel offers several variations of the IF function as follows: COUNTIF, COUNTIFS, SUMIF, SUMIFS.
4. **Evaluating an IF Error** – Since the IF statement provides only a true or false result, there is no way to evaluate an IF Function to ERROR. If you receive an error, you wrote the formula wrong.
5. **The Null Set** - The Double Quotes is the Null Set, or absence of a value. For example, when testing for a Zero balance or testing for a blank cell, the following IF functions would apply:
    a. =IF(A1=0,"ZERO","")

b. =IF(A1="","Blank","")
(Excel also provides an ISBLANK Function that would also work.)



Chapter 6

Using Functions To Clean & Crunch Data

Cleaning Data Using Functions

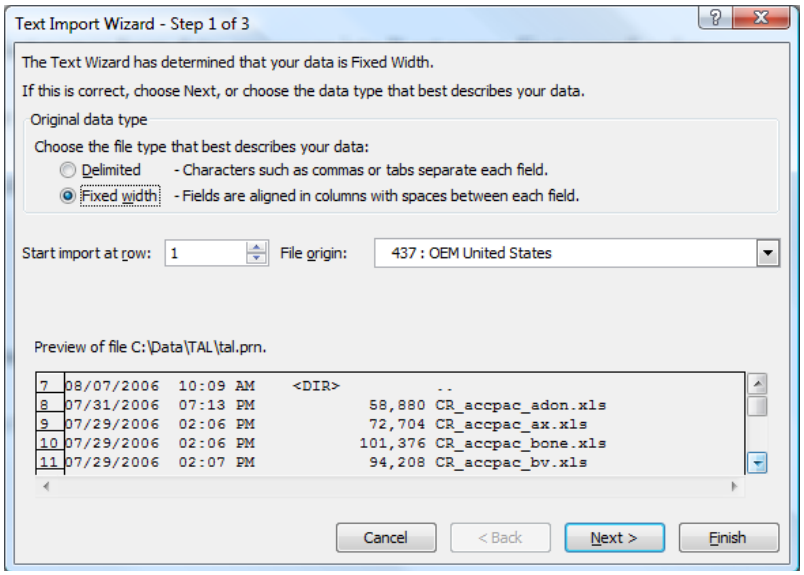
CPAs often receive or retrieve data from many sources in a wide variety of formats such as Text or CSV formats. You don't always have control over the format and type of data that you import from an external data source, such as a database, text file, or a Web page. Before you can analyze the data, you often need to clean it up. Fortunately, Office Excel has many features to help you get data in the precise format that you want. Sometimes, the task is straightforward and there is a specific feature that does the job for you.

For example, you can easily use Spell Checker to clean up misspelled words in columns that contain comments or descriptions. Or, if you want to remove duplicate rows, you can quickly do this by using the **Remove Duplicates** dialog box. At other times, you may need to manipulate one or more columns by using a formula to convert the imported values into new values.

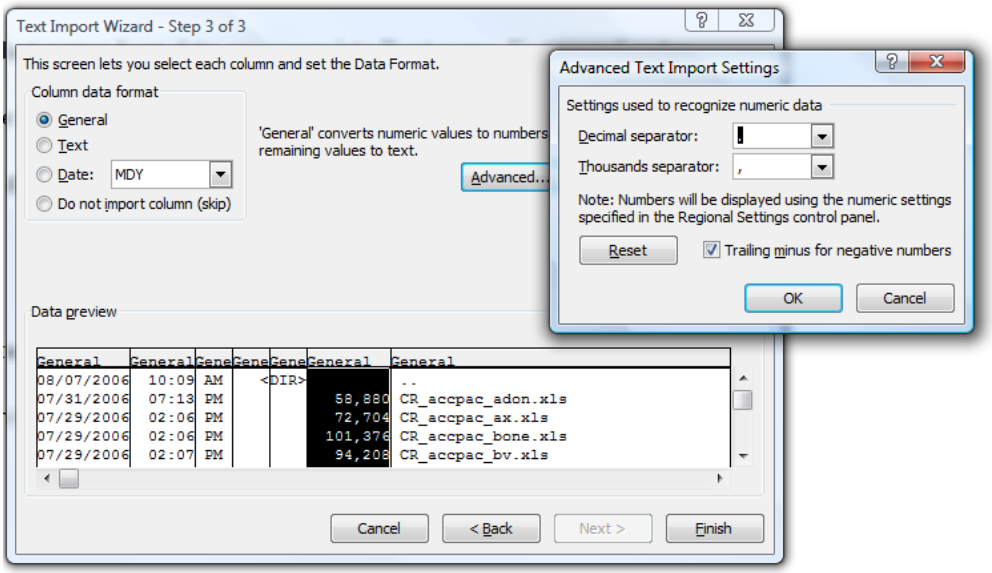
For example, if you want to remove trailing spaces, you can create a new column to clean the data by using a formula, filling down the new column, converting that new column's formulas to values, and then removing the original column. Excel provides many functions to help you clean your data as follows:

1. Import
2. Text to Columns
3. Remove Duplicates
4. Find & Replace
5. Spell Check
6. =UPPER
7. =LOWER
8. =PROPER
9. =FIND
10. =SEARCH
11. =LEN
12. =SUBSTITUTE
13. =REPLACE
14. =LEFT
15. =MID
16. =RIGHT
17. =VALUE
18. =CONCATENATE
19. =TEXT
20. =TRIM
21. =CLEAN
22. =FIXED
23. =DOLLAR
24. =CODE
25. Macros

1. **Importing Data into Excel –** Of course Excel opens up Excel files, but what happens when you attempt to open data that is not contained in an Excel format? The answer is that Excel automatically imports that data on the fly and displays a Import Wizard to help you complete the process. The Text Import Wizard examines the text file that you are importing and helps you import the data the way that you want. To start the Text Import Wizard, on the Data tab, in the Get External Data group, click From Text. Then, in the Import Text File dialog box, double-click the text file that you want to import. The following dialog box will be displayed:

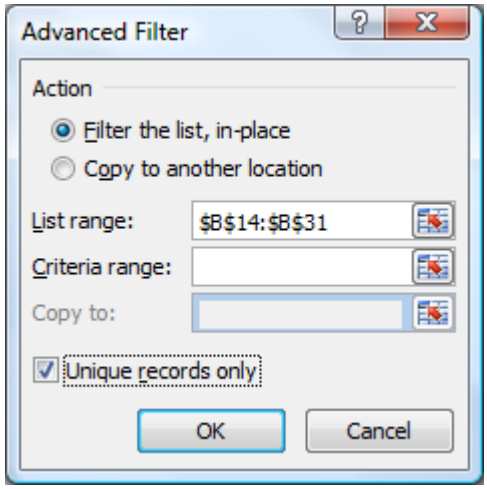


If items in the text file are separated by tabs, colons, semicolons, spaces, or other characters, select Delimited. If all of the items in each column are the same length, select Fixed width. In step 3, click the Advanced button to specify that one or more numeric values may contain a trailing minus sign. Also click the desired data format for each column to be imported.

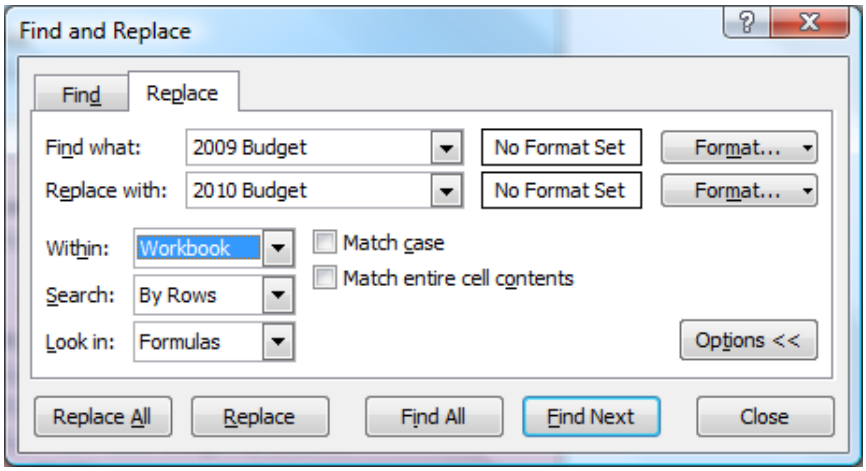


2. **Text to Columns** – The Text to Columns command located on the Data Ribbon works exactly the same way as described above – the user simply launches it to convert data within an existing worksheet.

3. **Removing Duplicate Rows -** Duplicate rows are a common problem when you import data. You can identify and remove duplicate rows by using the Data, Advanced Filter, Unique Records Only tool as show in the screen below.



4. **Find and Replace Text –** This tool can be used to identify and remove leading string, such as a label followed by a colon and space, or a suffix, such as a parenthetic phrase at the end of the string that is obsolete or unnecessary. You can do this by finding instances of that text and then replacing it with no text or other text.

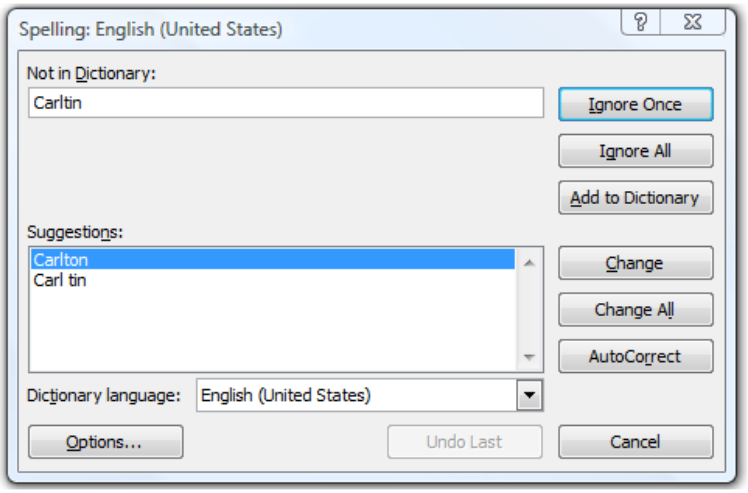


Noteworthy Find and Replace Points:

1. You can search and replace for an entire worksheet, or the entire workbook.

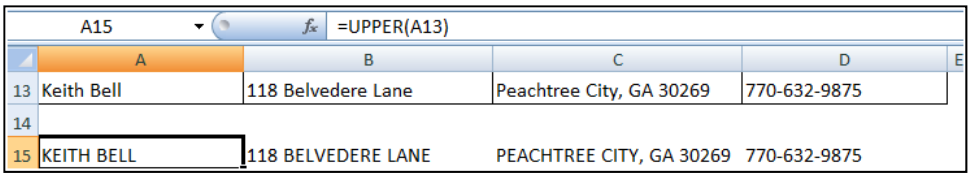
2. You can find and replace formats with new formats.
3. There is a cell chooser option that makes it easier to find and replace formats.
4. If you highlight a range of cells, then search and replace only searches and replaces within that range of cells.
5. You can replace all at once or one at a time.
6. You could also find and replace references in a formula.

5. **Spell Check -** You can use a spell checker to not only find misspelled words, but to find values that are not used consistently, such as product or company names, by adding those values to a custom dictionary. The spell check function also checks your grammar as well.

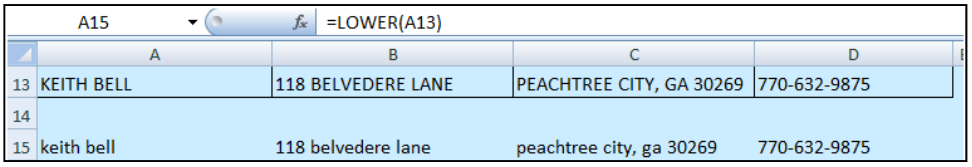


Changing The Case Of Text – You can use one or more of the three Case functions to convert text to lowercase letters, such as e-mail addresses, uppercase letters, such as product codes, or proper case, such as names or book titles.

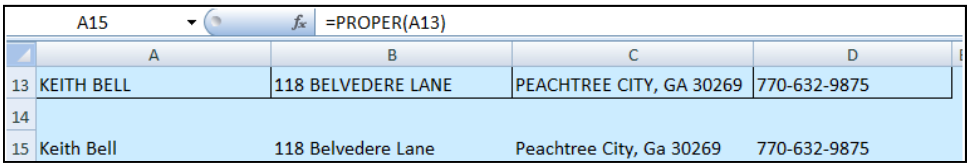
6. **= UPPER** - Converts text to uppercase letters.



7. **=LOWER** - Converts all uppercase letters in a text string to lowercase letters.

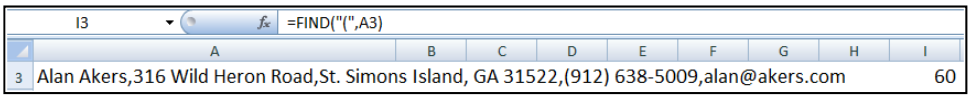


8. **=PROPER** - Capitalizes the first letter in a text string and any other letters in text that follow any character other than a letter. Converts all other letters to lowercase letters.

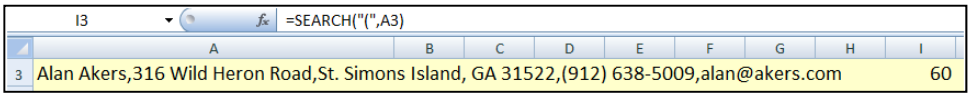


Merging And Splitting Columns - A common task after importing data from an external data source is to either merge two or more columns into one, or split one column into two or more columns. For example, you may want to split a column that contains a full name into a first and last name. Or, you may want to split a column that contains an address field into separate street, city, region, and postal code columns. The reverse may also be true. Presented below are functions that to help you accomplish these tasks:

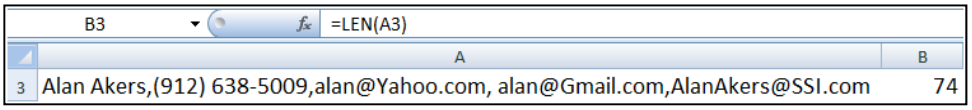
9. **=FIND** – Use Returns the starting position of a character, string of characters or word with a cell. Find is case sensitive.



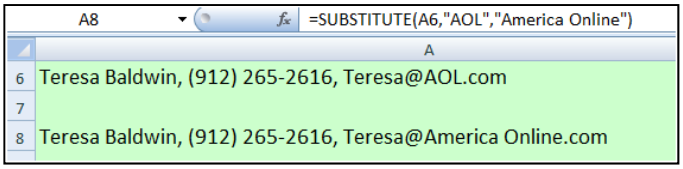
10. **=SEARCH** – Returns the starting position of a character, string of characters or word with a cell. Search is not case sensitive.



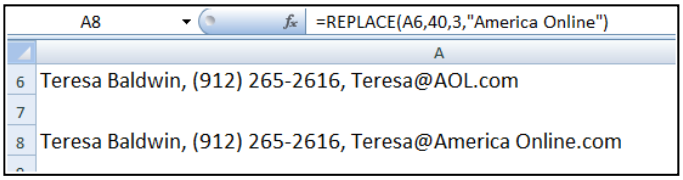
11. **=LEN** – Displays the length or number of characters in a cell.



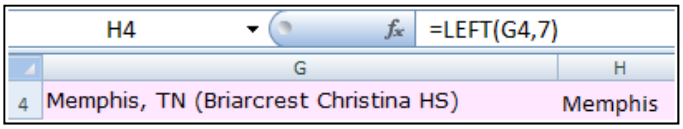
12. **=SUBSTITUTE** – Replaces a character or characters with a character or characters that you specify.



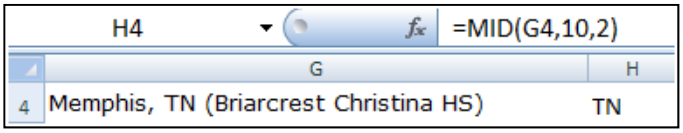
13.=REPLACE - Replaces a character or characters with a character or characters that you specify.



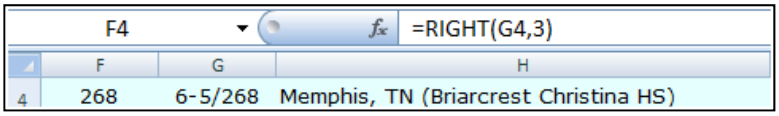
14.=LEFT – Extracts the specified number of characters from a cell, starting from the left.



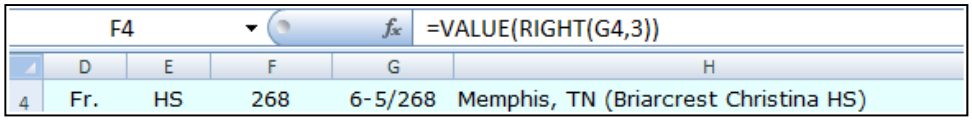
15.=MID – Extracts the specified number of characters from a cell, starting from somewhere in the middle of the cell.



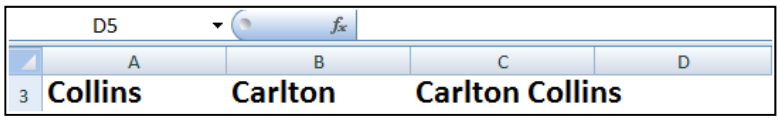
16.=RIGHT – Extracts the specified number of characters from a cell, starting from the right.



17.=Value – Converts text to values so the data can be added, subtracted, multiplied, divided or referenced in a function.



18.=CONCATENATE - Joins two or more text strings into one text string.

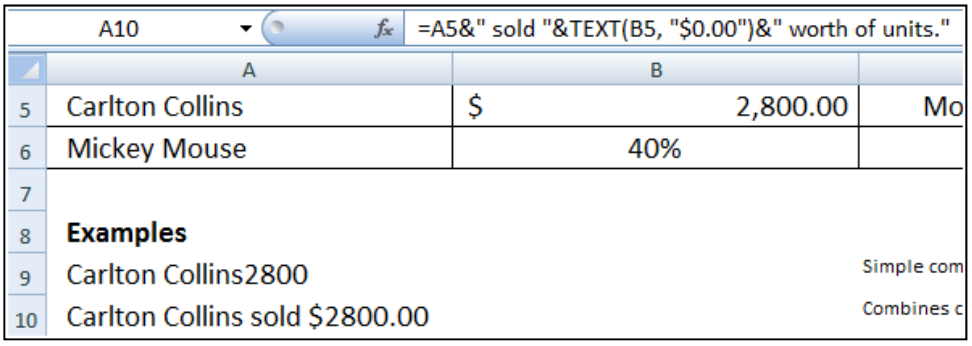


Variations of these functions that are used when working with foreign languages:

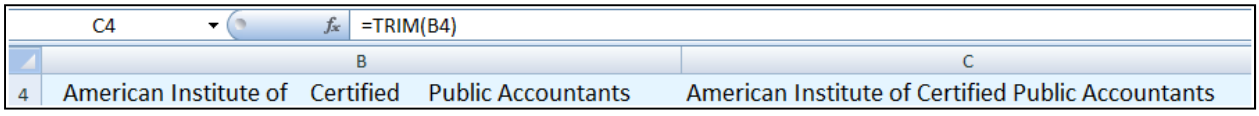
=FINDB – Use this when working with foreign characters like these (京", " 東 京 都)
=SEARCHB – Use this when working with foreign characters like these (京", " 東 京 都)
=REPLACEB – Use this when working with foreign characters like these (京", " 東 京 都)
=LEFTB – Use this when working with foreign characters like these (京", " 東 京 都)
=RIGHTB – Use this when working with foreign characters like these (京", " 東 京 都)
=LENB – Use this when working with foreign characters like these (京", " 東 京 都)
=MIDB – Use this when working with foreign characters like these (京", " 東 京 都)

Cleaning Text – (Removing Spaces And Nonprinting Characters From Text) - Sometimes text values contain leading, trailing, or multiple embedded space characters (Unicode character set values 32 and 160), or nonprinting characters (Unicode character set values 0 to 31, 127, 129, 141, 143, 144, and 157). These characters can sometimes cause unexpected results when you sort, filter, or search. For example, in the external data source, users may make typographical errors by inadvertently adding extra space characters, or imported text data from external sources may contain nonprinting characters that are embedded in the text. Because these characters are not easily noticed, the unexpected results may be difficult to understand. Following is a list of functions you can use to remove these unwanted characters:

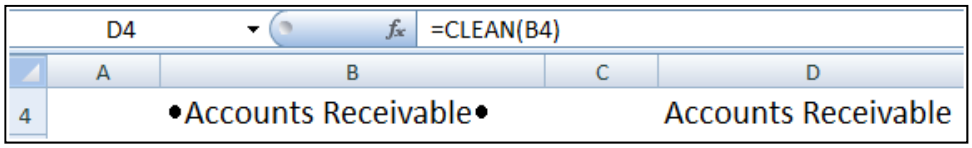
19.=TEXT - Converts a value to text in a specific number format.



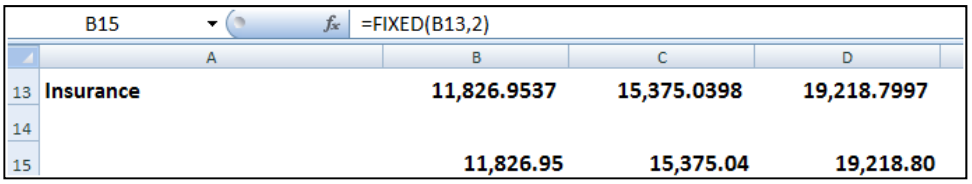
20.=TRIM - Removes the 7-bit ASCII space character (value 32) from text.



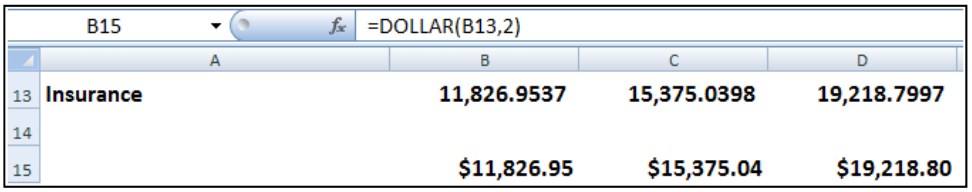
21.=CLEAN - Removes the first 32 nonprinting characters in the 7-bit ASCII code (values 0 through 31) from text.



22.=FIXED - Rounds a number to the specified number of decimals, formats the number in decimal format by using a period and commas, and returns the result.



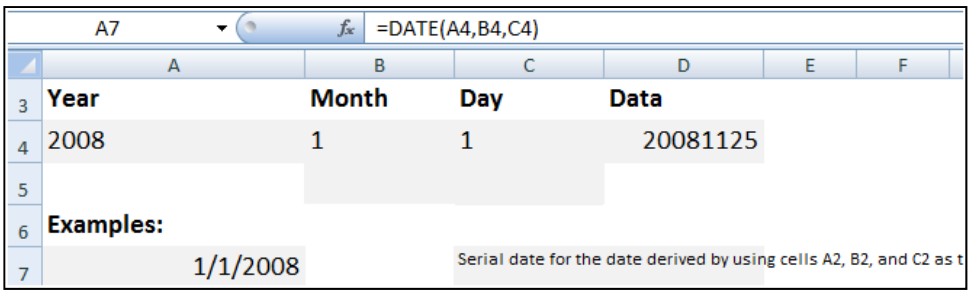
23.=DOLLAR - Converts a number to text format and applies a currency symbol.



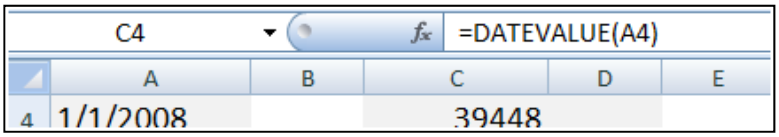
24.=CODE - Returns a numeric code for the first character in a text string.

Fixing Dates and Times - There are many different date formats, and these varied formats may be confused with numbered part codes or other strings that contain slash marks or hyphens, dates and times often need to be converted and reformatted. Presented below is a list of functions that help you accomplish this task.

25.=DATE - Returns the sequential serial number that represents a particular date. If the cell format was General before the function was entered, the result is formatted as a date.



26.=DATEVALUE - Converts a date represented by text to a serial number.

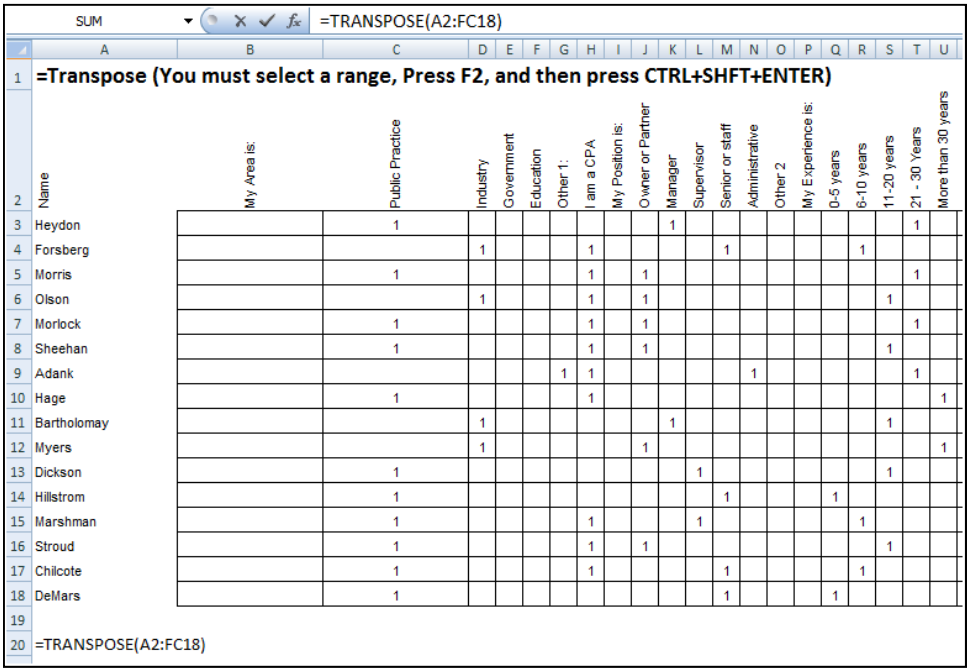


27.=TIME - Returns the decimal number for a particular time. If the cell format was General before the function was entered, the result is formatted as a date.

28.=TIMEVALUE - Returns the decimal number of the time represented by a text string. The decimal number is a value ranging from 0 (zero) to 0.99999999, representing the times from 0:00:00 (12:00:00 AM) to 23:59:59 (11:59:59 P.M.).

Transforming And Rearranging Columns And Rows - Most of the analysis and formatting features in Office Excel assume that the data exists in a single, flat two-dimensional table. Sometimes you may want to make the rows become columns, and the columns become rows. At other times, data is not even structured in a tabular format, and you need a way to transform the data from a nontabular to a tabular format. The following function can help you achieve this goal:

29.=TRANSPOSE - Returns a vertical range of cells as a horizontal range, or vice versa.



30.Data Fill In Trick – A clever trick for filling in missing data can be accomplished using the GOTO, Special, Blanks command. Here is how it works. This trick

works well when you have a large volume of data but descriptions are not provided for every row, as shown in the example below:

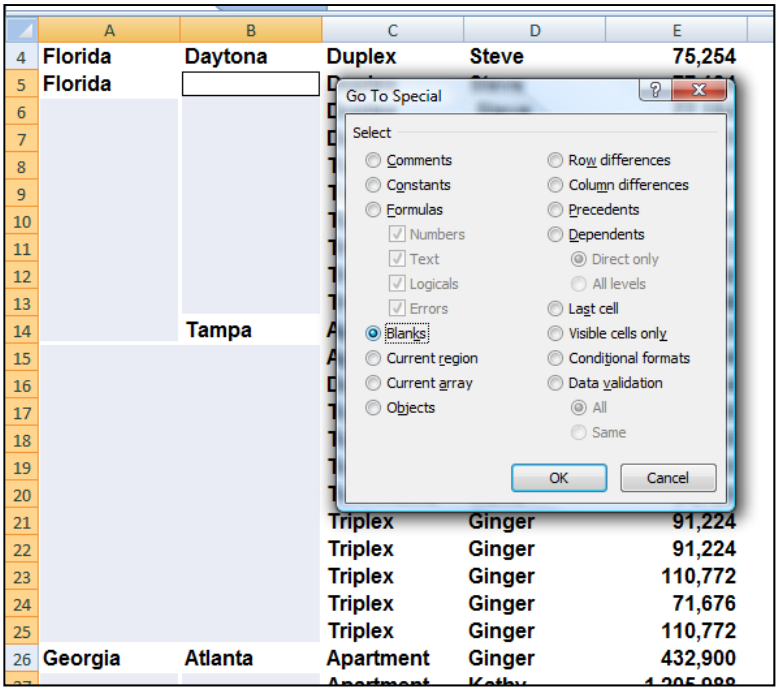
	A	B	C	D	E	F	G	H
26	Georgia	Atlanta	Apartment	Ginger	432,900	367,965	64,935	24.7%
27			Apartment	Kathy	1,205,988	1,073,329	132,659	43.2%
28			Apartment	Ginger	96,768	70,641	26,127	53.3%
29			Apartment	Kathy	328,563	305,564	22,999	39.8%
30			Duplex	Steve	57,888	55,572	2,316	31.5%
31			Duplex	Steve	79,114	64,873	14,240	27.6%
32			Duplex	Steve	57,888	55,572	2,316	18.7%
33			Duplex	Steve	79,114	64,873	14,240	54.4%
34			Townhome	Steve	39,600	38,016	1,584	56.4%
35			Townhome	Steve	51,480	58,172	(6,692)	26.5%
36			Triplex	Ginger	181,988	205,646	(23,658)	43.2%
37			Triplex	Steve	71,676	70,959	717	53.3%
38			Triplex	Ginger	121,198	112,714	8,484	15.4%
39		Macon	Apartment	Ginger	128,563	119,564	8,999	15.4%
40			Apartment	Steve	296,700	216,591	80,109	23.3%
41			Apartment	Ginger	128,563	119,564	8,999	13.4%
42			Duplex	Steve	76,219	60,213	16,006	26.5%
43			Duplex	Steve	75,254	58,698	16,556	35.6%
44			Townhome	Steve	52,800	46,992	5,808	18.7%
45		Savannah	Apartment	Ginger	76,032	75,272	760	65.0%
46	Texas	Dallas	Apartment	Fred	432,900	367,965	64,935	24.7%
47			Apartment	Martha	1,205,988	1,073,329	132,659	43.2%
48			Apartment	Kathy	328,563	305,564	22,999	39.8%

Start by entering a simple formula referencing the data label in the above cell, just like this:

SUM =A4

	A	B	C	D	E	F
3	State	City	Type	Manager	Revenue	Expenses
4	Florida	Daytona	Duplex	Steve	75,254	58,698
5	=A4		Duplex	Steve	77,184	87,218

a. Next copy that formula...
b. Highlight the entire range containing data labels in columns A and B. columns...
c. Press the F5 key to launch the GoTo dialog box...
d. Select the Options Box...
e. Click on the “Blanks” radio button...
f. Press Enter...
g. Paste.

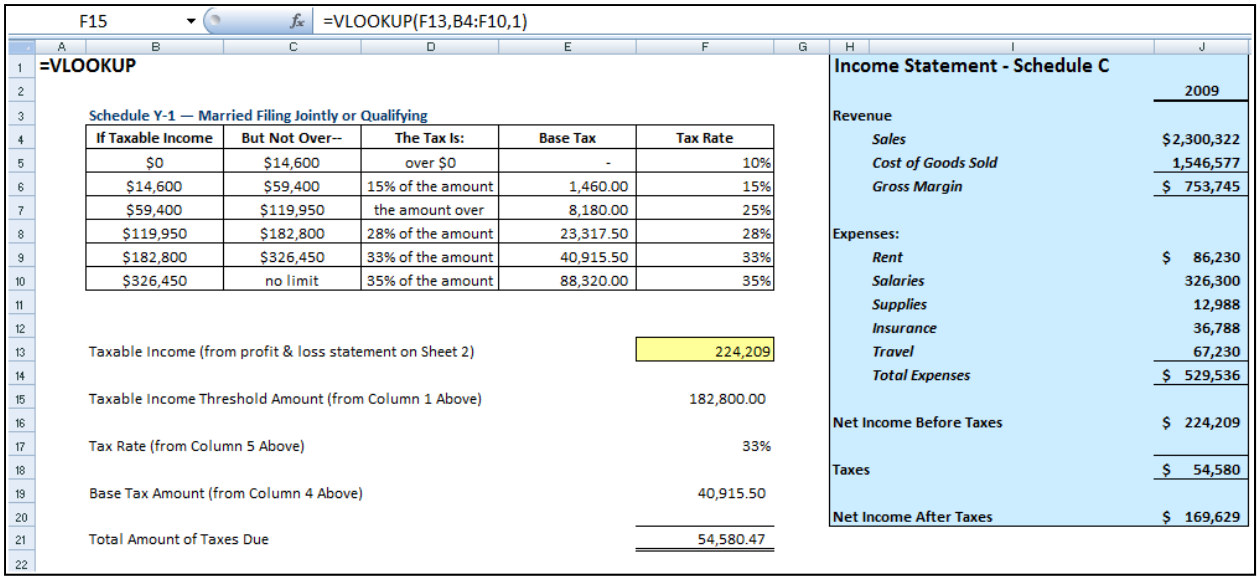


This action will cause all data labels to repeat in the empty cells beneath. Next:

h. Copy columns A & B...
i. Paste Special as values to convert the formulas to text based data labels...
j. You are now ready to sort, filter, subtotal and pivot your data.

Fetching Data - Occasionally, database administrators use Office Excel to find and correct matching errors when two or more tables are joined. This might involve reconciling two tables from different worksheets, for example, to see all records in both tables or to compare tables and find rows that don't match.

31. =VLOOKUP - Searches for a value in the first column of a table array and returns a value in the same row from another column in the table array. For example, consider the example below which uses a =VLOOKUP function to calculate the appropriate amount of tax due based on the IRS rate schedule.



F15 =VLOOKUP(F13,B4:F10,1)

=VLOOKUP

Schedule Y-1 — Married Filing Jointly or Qualifying

If Taxable Income	But Not Over--	The Tax Is:	Base Tax	Tax Rate
$0	$14,600	over $0	-	10%
$14,600	$59,400	15% of the amount	1,460.00	15%
$59,400	$119,950	the amount over	8,180.00	25%
$119,950	$182,800	28% of the amount	23,317.50	28%
$182,800	$326,450	33% of the amount	40,915.50	33%
$326,450	no limit	35% of the amount	88,320.00	35%

Taxable Income (from profit & loss statement on Sheet 2)	224,209
Taxable Income Threshold Amount (from Column 1 Above)	182,800.00
Tax Rate (from Column 5 Above)	33%
Base Tax Amount (from Column 4 Above)	40,915.50
Total Amount of Taxes Due	54,580.47

Income Statement - Schedule C

	2009
Revenue	
Sales	$2,300,322
Cost of Goods Sold	1,546,577
Gross Margin	$ 753,745
Expenses:	
Rent	$ 86,230
Salaries	326,300
Supplies	12,988
Insurance	36,788
Travel	67,230
Total Expenses	$ 529,536
Net Income Before Taxes	$ 224,209
Taxes	$ 54,580
Net Income After Taxes	$ 169,629

As the Income statement shown in the shaded area is updated , the resulting taxable income amount is referenced in Cell F13. Next, 3 VLOOKUP functions pull the appropriate rate, base and threshold information from the rate schedule to be used in calculating income tax. Once calculated, the resulting tax is referenced back to the income statement for the purposes of computing Net income After taxes.

Key points to Consider when Using VLOOKUP:

a. If you are looking up based on text, the first column containing lookup values must be sorted alphabetically in descending order – else it will not work properly.

b. If you are looking up based on text, you must have an exact match between the lookup value and the table array value.

c. If you are looking up based on values, the first column containing lookup values must be sorted numerically in descending order – else it will not work properly.

d. If you are looking up based on values, then Excel will choose the closest value without going over. For example, if the lookup value is 198,000 and the table array contains values of 100,000 and 200,000, the n excel will choose 100,000 because 200,000 goes over or exceeds 198,000. (It might be helpful to think back to the old Bob barker game show the Price is Right.)

32.=HLOOKUP - Searches for a value in the top row of a table or an array of values, and then returns a value in the same column from a row you specify in the table or array.

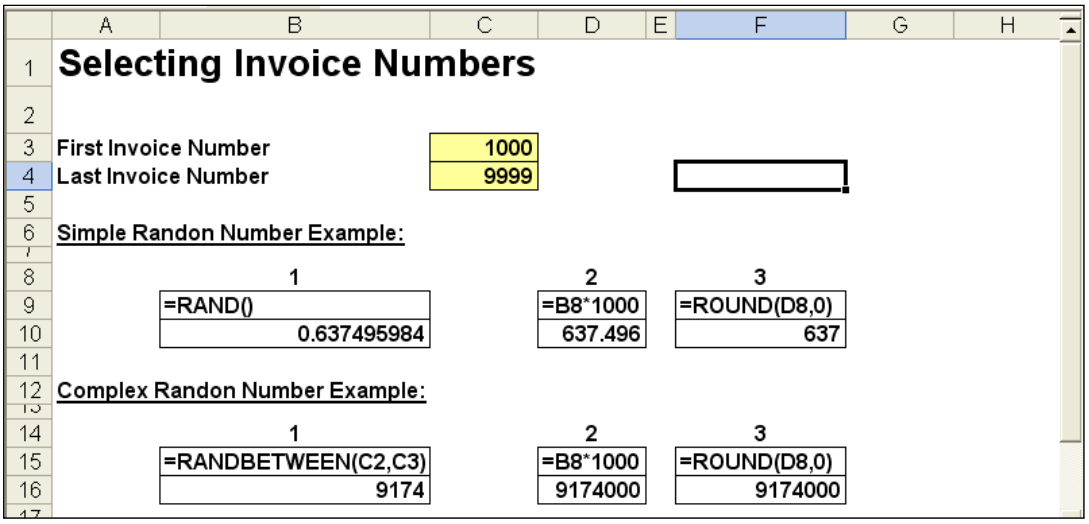
33.=INDEX - Returns a value or the reference to a value from within a table or range. There are two forms of the INDEX function: the array form and the reference form.

34. =MATCH - Returns the relative position of an item in an array that matches a specified value in a specified order. Use MATCH instead of one of the LOOKUP functions when you need the position of an item in a range instead of the item itself.

35. =OFFSET - Returns a reference to a range that is a specified number of rows and columns from a cell or range of cells. The reference that is returned can be a single cell or a range of cells. You can specify the number of rows and the number of columns to be returned.

36. Data Cleaning with Macros - To periodically clean the same data source, consider recording a macro or writing code to automate the entire process. There are also a number of external add-ins written by third-party vendors, listed in the Third-party providers section, that you can consider using if you don't have the time or resources to automate the process on your own.

37. RAND( ), RANDBETWEEN( ), ROUND( ) – In Excel 2003, RANDBETWEEN is not in the standard EXCEL installation but if the analysis tool pack is installed and the add-in activated it is an extremely useful function.



Selecting Invoice Numbers

First Invoice Number	1000
Last Invoice Number	9999

Simple Randon Number Example:

1	2	3
=RAND()	=B8*1000	=ROUND(D8,0)
0.637495984	637.496	637

Complex Randon Number Example:

1	2	3
=RANDBETWEEN(C2,C3)	=B8*1000	=ROUND(D8,0)
9174	9174000	9174000

38. Informational Functions

CELL(info_type,reference) - Info_type is a text value that specifies what type of cell information you want. The following list shows the possible values of info_type and the corresponding results.

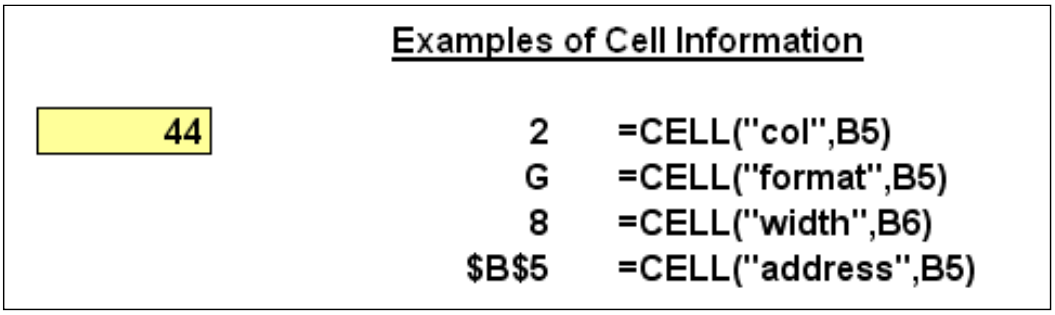
Info_type	Returns
"address"	Reference of the first cell in reference, as text.
"col"	Column number of the cell in reference.
"color"	1 if the cell is formatted in color for negative values; otherwise returns 0 (zero).
"contents"	Value of the upper-left cell in reference; not a formula.
"filename"	Filename (including full path) of the file that contains reference, as text. Returns empty text ("") if the worksheet that contains reference has not yet been saved.
"format"	Text value corresponding to the number format of the cell. The text values for the various formats are shown in the following table. Returns "-" at the end of the text value if the cell is formatted in color for negative values. Returns "()" at the end of the text value if the cell is formatted with parentheses for positive or all values.
"parentheses"	1 if the cell is formatted with parentheses for positive or all values; otherwise returns 0.
"prefix"	Text value corresponding to the "label prefix" of the cell. Returns single quotation mark (') if the cell contains left-aligned text, double quotation mark (") if the cell contains right-aligned text, caret (^) if the cell contains centered text, backslash (\) if the cell contains fill-aligned text, and empty text ("") if the cell contains anything else.
"protect"	0 if the cell is not locked, and 1 if the cell is locked.
"row"	Row number of the cell in reference.
"type"	Text value corresponding to the type of data in the cell. Returns "b" for blank if the cell is empty, "l" for label if the cell contains a text constant, and "v" for value if the cell contains anything else.

"width" Column width of the cell rounded off to an integer. Each unit of column width is equal to the width of one character in the default font size.

Reference the cell that you want information about. If omitted, information specified in info_type is returned for the last cell that was changed. The following list describes the text values CELL returns when info_type is "format", and reference is a cell formatted with a built-in number format.

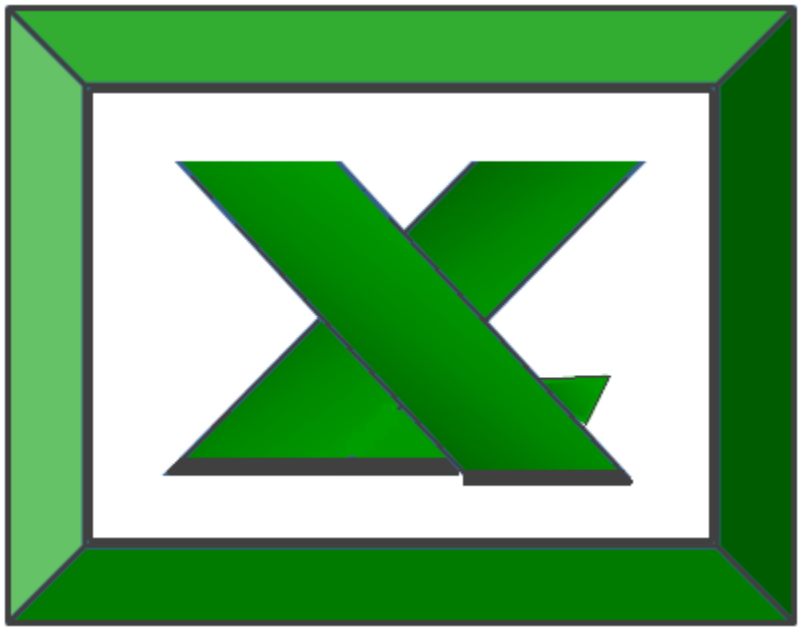
If the Microsoft Excel format is	CELL returns
General	"G"
0	"F0"
#,##0	",0"
0.00	"F2"
#,##0.00	",2"
$#,##0_);($#,##0)	"C0"
$#,##0_);[Red]($#,##0)	"C0-"
$#,##0.00_);($#,##0.00)	"C2"
$#,##0.00_);[Red]($#,##0.00)	"C2-"
0%	"P0"
0.00%	"P2"
0.00E+00	"S2"
# ?/? or # ??/??	"G"
m/d/yy or m/d/yy h:mm or mm/dd/yy	"D4"
d-mmm-yy or dd-mmm-yy	"D1"
d-mmm or dd-mmm	"D2"
mmm-yy	"D3"
mm/dd	"D5"
h:mm AM/PM	"D7"
h:mm:ss AM/PM	"D6"
h:mm	"D9"
h:mm:ss	"D8"

If the info_type argument in the CELL formula is "format", and if the cell is formatted later with a custom format, then you must recalculate the worksheet to update the CELL formula.



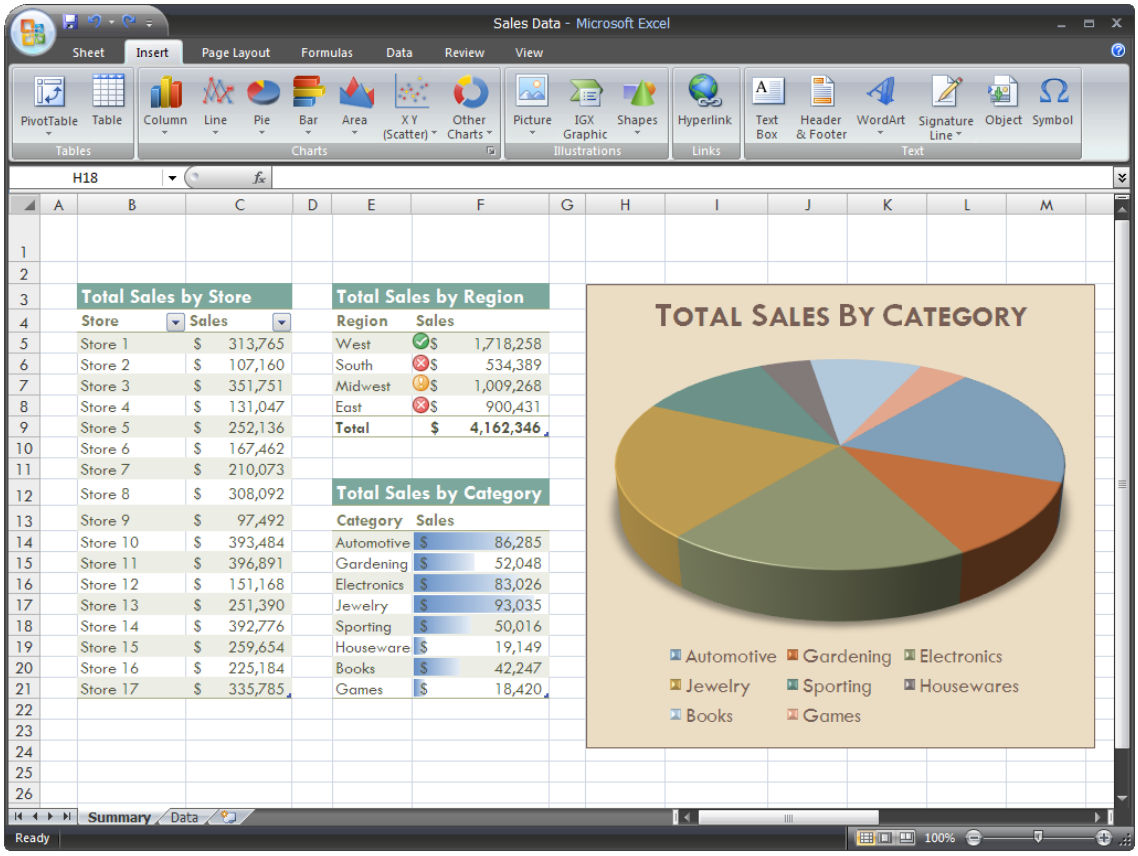
Third-Party Solutions – In case Excels built in functions are not sufficient to meet your needs, following is a partial list of third-party providers that have products that are used to clean data in a variety of ways.

Provider	Product
Add-in Express Ltd.	Advanced Find & Replace, Merge Cells Wizard
Add-Ins.com	Duplicate Finder
AddinTools	AddinTools Assist
CDX	Zip Stream
Click 2 Convert	Converts PDF to Excel formats
DigDB	Add-ins for Excel®
JKP Application Development	Flexfind for Excel
J-Walk & Associates, Inc.	Power Utility Pak Version 7
Office Assistance LLC	Similar Data Finder for Excel®
PATools	PATools Advanced Find Replace
PDF2XL	Converts PDF files to Excel Formats
Spinnaker Software Solutions	Spinnaker DB tools for Excel
Vonnix	Excel Power Expander 4.6
WinPure	ListCleaner Lite
ListCleaner Pro	
Clean and Match 2007	



Chapter 7

What's New in Excel 2007?



Enhancements to Excel 2007

1. **More Columns -** Increased the total number of available columns in Excel from 256 (2^8) to 16,000 (2^14).

2. **More Rows -** Increased the total number of available rows in Excel from 64,000 (2^16) to 1,000,000 (2^20).

3. **More Memory -** Increased the total amount of PC memory that Excel can use from 1GB to as much RAM as Windows sees.

4. **Dual Core Chips -** Office Excel 2007 supports multiple microcomputer processors and multithreaded chipsets.

5. **More Colors** - Excel 2007 now supports up to 16 million colors, up from 256.

6. **Sort by Color**. Wow!

7. **More Sorting Criteria -** Increased the number of levels of sorting on a range or table from 3 to 64.

8. **More Characters in a cell -** Increased the total number of characters that can display in a cell by 32-fold. More specifically, this limit was increased from 1k (when the text is formatted) to 32k or unlimited (regardless of formatting).

9. **Find More items -** Increased the maximum number of items found by "Find All" from 65,472 to 2 Billion.

10. **More Pivot Rows** - Increased the number of rows allowed in a PivotTable from 64k to 1,000,000 (2^20).

11. **Arrays Reference More Rows -** Eliminated the limit on the number of rows of a column or columns that can be referred to in an array formula.

12. **More Conditional Formats -** Increased the number of conditional format conditions on a cell from 3 conditions to limited by available memory.

13. **More AutoFilter Results -** Increased the number of items shown in the Auto-Filter dropdown from 1,000 to 10,000.

14. **Print More Characters in a Cell -** Increased the number of characters per cell that Excel can print from 1k to 32k.

15. **More Styles -** Increased the total number of unique cell styles in a workbook (combinations of all cell formatting) from 4,000 to 64,000.

16. **Larger Formulas -** Increased the maximum length of formulas (in characters) from 1,000 characters to 8,000 characters.

17. **More Formula Nesting -** Increased the number of levels of nesting that Excel allows in formulas from 7 to 64.

18. **More Arguments -** Increased the maximum number of arguments to a function from 30 to 255.

19. **More Pivot Columns -** Increased the number of columns allowed in a Pivot Table from 255 to 16,000.

20. **More Unique Pivot Items -** Increased maximum number of unique items within a single Pivot Field from 32,000 to 1,000,000.

21. **More Pivot Fields -** Increased the number of fields (as seen in the field list) that a single PivotTable can have from 255 to 16,000.

22. **Longer Pivot Names -** Increased length of the MDX name for a Pivot Table item; also the string length for a relational Pivot Table from 255 characters to 32,000.

23. **Better Pivot Truncation -** Increased the length at which fields' labels are truncated when added to PivotTable; this also includes caption length limitations from 255 to 32,000.

24. **Better Partial Calculations -** Increased the number of cells that may depend on a single area before Excel must do full calculations instead of partial calculations (because it can no longer track the dependencies required to do partial calculations) from 8,000 to limited by available memory.

25. **More Array References -** Increased the number of array formulas in a worksheet that can refer to another (given) worksheet from 65,000 to limited by available memory.

26. **Bucket More Functions -** Increased the number of categories that custom functions can be bucketed into from 32 to 255.

27. **Better External Updates -** Increased the number of characters that may be updated in a non-resident external workbook reference from 255 to 32,000.

28. **Themes -** Excel allows users to format data by applying a theme using a specific style.

29. **Share Themes -** Themes can be shared across other 2007 Office release programs. You can also customize a theme style.

30. **Chart Styles –** Excel offers predefined chart styles, but you cannot create your own chart styles.

31. **Quicker Styles -** Excel now provides a quicker method to apply a predefined cell style.

32. **Better Conditional Formatting -** Use conditional formatting to visually annotate your data for both analytical and presentation purposes.

33. **Stronger Conditional Formatting -** To easily find exceptions and to spot important trends in your data, you can implement and manage multiple conditional formatting rules that apply rich visual formatting in the form of gradient colors, data bars, and icon sets to data that meets those rules. Conditional formats are also easy to apply—in just a few clicks, you can see relationships in your data that you can use for your analysis purposes.

34. **Resizable formula bar** - The formula bar automatically resizes to accommodate long, complex formulas, which prevents the formulas from covering other data in your worksheet.

35. **Function AutoComplete** - Function AutoComplete helps users write formulas using the proper formula syntax.

36. **Structured References** - In addition to cell references, such as A1 and R1C1, Excel now provides structured references to named ranges and tables in a formula.

37. **Easier Access to Named Ranges** - Excel name manager organizes, updates, and manages multiple named ranges in a central location, which helps anyone who needs to work on your worksheet interpret its formulas and data.

38. **New OLAP -** When you work with multidimensional databases (such as SQL Server Analysis Services) Excel can use OLAP formulas to build complex, free form, OLAP data bound reports. New cube functions are used to extract OLAP data (sets and values) from Analysis Services and display it in a cell. OLAP formulas can be generated when you convert PivotTable formulas to cell formulas or when you use AutoComplete for cube function arguments when you type formulas.

39. **Enhanced Filtering -** Filter data by color or by dates, display more than 1000 items in the AutoFilter drop-down list, select multiple items to filter, and filter data in PivotTables.

40. **Table Enhancements** - New or improved functionality for tables includes the following features:

    a. **Table Header Rows** - Table header rows can be turned on or off. When table headers are displayed, they stay visible with the data in the table columns by replacing the worksheet headers when you move around in a long table.

    b. **Calculated Columns** - A calculated column uses a single formula that adjusts for each row. It automatically expands to include additional rows so that the formula is immediately extended to those rows. All that you have to do is enter a formula once—you don't need to use the Fill or Copy commands.

    c. **Automatic Autofiltering** - AutoFilter is turned on by default in a table to enable powerful sorting and filtering of table data.

    d. **Structured References** - This type of reference allows you to use table column header names in formulas instead of cell references, such as A1 or R1C1.

    e. **Total Rows** - In a total row, you can now use custom formulas and text entries.

    f. **Table Styles** - You can apply a table style to quickly add designer-quality, professional formatting to tables. If an alternate-row style is enabled on a table, Excel will maintain the alternating style rule through actions that would have

traditionally disrupted this layout, such as filtering, hiding rows, or manual rearranging of rows and columns.

41. **Presentation Quality Charts** - New charting tools to create professional-looking charts. The new, up-to-date look for charts includes special effects, such as 3-D, transparency, and soft shadows.

42. **Chart Themes –** Charts follow the theme that is applied to your workbook.

43. **Visual Chart Element Pickers** - Quickly change every element of the chart to best present your data. For example, in a few clicks, you can add or remove titles, legends, data labels, trendlines, and other chart elements.

44. **A Modern look with OfficeArt** - Because charts in Excel are now drawn with OfficeArt, almost anything you can do to an OfficeArt shape can also be done to a chart and its elements. For example, you can add a soft shadow or bevel effect to make an element stand out or use transparency to make elements visible that are partially obscured in a chart layout. You can also use realistic 3-D effects.

45. **Clear Lines and Fonts** - Lines in charts appear less jagged, and ClearType fonts are used for text to improve readability.

46. **Chart Templates** - Save your favorite charts as a chart template.

47. **Using Excel Charts in Other Programs** - Charts shared between Excel, Word, and PowerPoint now incorporate the powerful charting features of Excel, including the use of formulas, filtering, sorting, and the ability to link a chart to external data sources, such as Microsoft SQL Server and Analysis Services (OLAP), for up-to-date information in your chart.

48. **Copying charts to other programs** Charts can be easily copied and pasted between documents or from one program to another. When you copy a chart from Excel to Word or PowerPoint, it automatically changes to match the Word document or PowerPoint presentation, but you can also retain the Excel chart format. The Excel worksheet data can be embedded in the Word document or PowerPoint presentation, but you can also leave it in the Excel source file.

49. **Animating charts in PowerPoint** In PowerPoint, you can more easily use animation to emphasize data in an Excel-based chart. You can animate the entire chart or the legend entry and axis labels. In a column chart, you can even animate individual columns to better illustrate a specific point. Animation features are easier to find and you have a lot more control. For example, you can make changes to individual animation steps, and use more animation effects.

50. **New PivotTable Controls** - New PivotTable controls provide better drag and drop zone targets.

51. **New PivotTable Features** - New or improved features are provided to summarize, analyze, and format PivotTable data.

52. **Using Undo in PivotTables** - You can now undo most actions that you take to create or rearrange a PivotTable.

53. **Plus and Minus Drill-Down Indicators** - These indicators are used to indicate whether you can expand or collapse parts of the PivotTable to see more or less information.

54. **Sorting and filtering** Sorting is now as simple as selecting an item in the column that you want to sort and using sort buttons. You can filter data by using PivotTable filters, such as date filters, label filters, value filters, or manual filters.

55. **Conditional formatting** You can apply conditional formatting to an Office Excel 2007 Pivot Table by cell or by intersection of cells.

56. **PivotTable style and layout** Just like you can for Excel tables and charts, you can quickly apply a predefined or custom style to a PivotTable. And changing the layout of a PivotTable is also much easier to do in the new user interface.

57. **PivotCharts** Like PivotTables, PivotCharts are much easier to create in the new user interface. All of the filtering improvements are also available for PivotCharts. When you create a PivotChart, specific PivotChart tools and context menus are available so that you can analyze the data in the chart. You can also change the layout, style, and format of the chart or its elements the same way that you can for a regular chart. In Office Excel 2007, the chart formatting that you apply is preserved when you make changes to the PivotChart, which is an improvement over the way it worked in earlier versions of Excel.

58. **Quick Connections To External Data** In Office Excel 2007, you no longer need to know the server or database names of corporate data sources. Instead, you can use Quick Launch to select from a list of data sources that your administrator or workgroup expert has made available for you. A connection manager in Excel allows you to view all connections in a workbook and makes it easier to reuse a connection or to substitute a connection with another one.

59. **New File Formats Xml-Based File Format** In 2007 Microsoft Office system, Microsoft is introducing new file formats for Word, Excel, and PowerPoint, known as the Office Open XML formats. These new file formats facilitate integration with external data sources, and also offer reduced file sizes and improved data recovery. In Office Excel 2007, the default format for an Excel workbook is the Office Excel 2007 XML-based file format (.xlsx). Other available XML-based formats are the Office Excel 2007 XML-based and

macro-enabled file format (.xlsm), the Office Excel 2007 file format for an Excel template (.xltx), and the Office Excel 2007 macro-enabled file format for an Excel template (.xltm).

60. **Office Excel 2007 binary file format** In addition to the new XML-based file formats, Office Excel 2007 also introduces a binary version of the segmented compressed file format for large or complex workbooks. This file format, the Office Excel 2007 Binary (or BIFF12) file format (.xls), can be used for optimal performance and backward compatibility.

61. **Compatibility with earlier versions of Excel** You can check an Office Excel 2007 workbook to see if it contains features or formatting that are not compatible with an earlier version of Excel so that you can make the necessary changes for better backward compatibility. In earlier versions of Excel, you can install updates and converters that help you open an Office Excel 2007 workbook so that you can edit it, save it, and open it again in Office Excel 2007 without losing any Office Excel 2007-specific functionality or features.

62. **Page Layout View** The **Normal** view and **Page Break Preview** view, Office Excel 2007 provides a **Page Layout** View. You can use this view to create a worksheet while keeping an eye on how it will look in printed format. In this view, you can work with page headers, footers, and margin settings right in the worksheet, and place objects, such as charts or shapes, exactly where you want them. You also have easy access to all page setup options on the **Page Layout** tab in the new user interface so that you can quickly specify options, such as page orientation. It's easy to see what will be printed on every page, which will help you avoid multiple printing attempts and truncated data in printouts.

63. **Saving to PDF and XPS format** You can save as a PDF or XPS file from a 2007 Microsoft Office system program only after you install an add-in.

64. **Using Excel Services to share your work** If you have access to Excel Services, you can use it to share your Office Excel 2007 worksheet data with other people, such as executives and other stakeholders in your organization. In Office Excel 2007, you can save a workbook to Excel Services and specify the worksheet data that you want other people to see. In a browser, they can then use Microsoft Office Excel Web Access to view, analyze, print, and extract this worksheet data. They can also create a static snapshot of the data at regular intervals or on demand. Office Excel Web Access makes it easy to perform activities, such as scrolling, filtering, sorting, viewing charts, and using drill-down in PivotTables. You can also connect the Excel Web Access Web Part to other Web Parts to display data in alternative ways. And with the right permissions, Excel Web Access users can open a workbook in Office Excel 2007 so that they can use the full power of Excel to analyze and work with the data on their own computers if they have Excel installed. Using this method to share your work ensures that other people have access to one version of the data in one location, which you can keep current with the

latest details. If you need other people, such as team members, to supply you with comments and updated information, you may want to share a workbook the same way that you did in earlier versions of Excel to collect the information you need before you save it to Excel Services.

65. **Using Document Management Server** Excel Services can be integrated with Document Management Server to create a validation process around new Excel reports and workbook calculation workflow actions, such as a cell-based notification or a workflow process based on a complex Excel calculation. You can also use Document Management Server to schedule nightly recalculation of a complex workbook model.

66. Quick Access To More Templates In Office Excel 2007, you can base a new workbook on a variety of templates that are installed with Excel, or you can quickly access and download templates from the Microsoft Office Online Web site.

What's Missing in Excel 2007?

While it may appear that there is a lot of stuff missing in Excel 2007 compared to the 2003 edition, almost everything is still there – you just may need to look for it a while to find it. A few of the hard-to-find things I had trouble located were as follows:

1. The "Create PivotTable from Multiple sources" feature is gone from the insert PivotTable menu, but you can still find it by customizing your Quick-Launch toolbar and adding the "PivotTable and Chart Wizard" icon. Yu will see that this functionality is still there.

2. The ability to send a worksheet as body of e-mail is also gone from the Start, Send, E-mail option. However you can still find it by customizing your Quick-Launch toolbar and adding the "Send to mail Recipient" icon. You will see that this functionality is also still there.

3. The "Speak Cells" command is missing from the ribbons, but this command is still available by customizing the Quick Launch toolbar and adding the "Speak Cells" command.

4. The Data Form Tool is not gone. You can still find it by customizing your Quick-Launch toolbar and adding the "FORM" icon.

5. In fact there are a total of 219 commands in Excel that do not appear on the Excel Ribbon – you can view a complete list of these commands by customizing the Quick Launch Toolbar and choosing the option to view "Commands Not in the Ribbon".

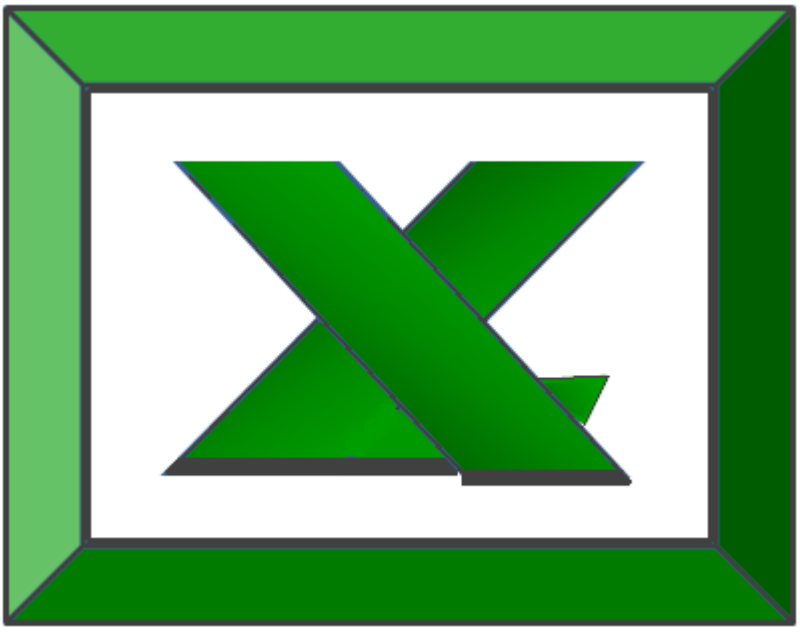
However, there are some things that have disappeared as follows:

1. No more publishing interactive web pages.

2. Embedded video clips and sound clips n longer play within Excel, they switch the user over to Media player instead.

3. The AutoFormat as we knew it is gone. It has been replaced with the "Format as Table" option in the Styles group of the Home tab, but it does more than format your table. It converts your table to what Excel used to call an Excel List, complete with list arrows and filter options and all kinds of junk you really don't need and probably don't want if your goal is just to dress up your data. Unfortunately this new functionality does not apply a unique format to subtotal rows like Excel 2003 did. Bummer. Therefore you must collapse your rows in Outline, select visible cells, and apply a different color, then expand your rows again to pull off this type of format.

4. Excel 2003 allowed you to save data to a dbase format whereas Excel 2007 does not.



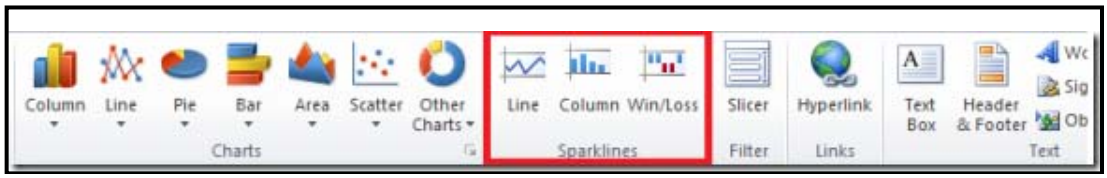
Chapter 8

What's New in Excel 2010?

What's New in Excel 2010?

Microsoft has announced that it will begin shipping Office 2010 in Spring 2010. This begs the question, what's new in Excel 2010? The short answer is that there are a dozen or so interesting improvements, but for the most part Excel 2010 looks a lot like Excel 2007. This is because when Office 2010 was released in January 2007, the new menus only appeared in 4.5 of the applications – Word, Excel, Access, PowerPoint and half of Outlook. With Office 2010, Microsoft has brought the other applications up to date with the new menu as well. Therefore don't expect to see many differences in Word, Excel, Access, or PowerPoint. However, these are a few improvements in Excel 2010, as follows:

1. **Sparklines** – Sparklines are small cell-sized charts that you can embed in a worksheet next to data to get a quick visual representation of the data. For example, if you had a worksheet that tracked the performance of several dozen stocks, you could create a Sparkline for each stock that graphed its performance over time, in a very compact way. Here is an example:

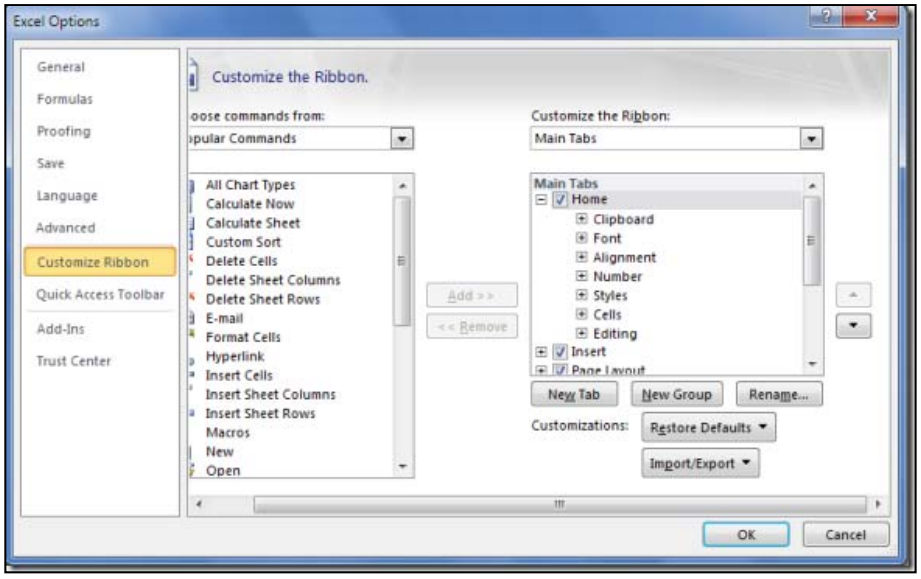


2. **Conditional Formatting Improvements** – Microsoft has improved and added more styles and icons regarding the ability to apply a format to a range of cells, and then have the formatting change according to the value of the cell or formula.

3. **Improved Sharing** – As with all of the Office 2010 applications, Excel **2010** has new and improved tools for sharing data with other people, including multiple people working on a document at a time.

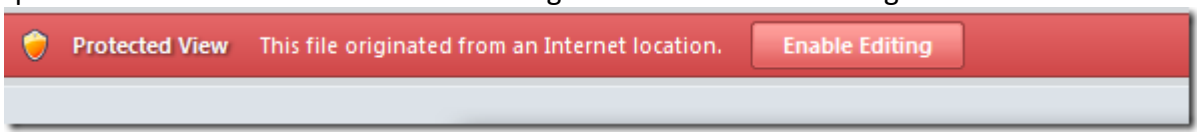
4. **Millions of Rows -** Microsoft now offers Project Gemini add-on for Excel 2010 that can handle very large amounts of data -- even worksheets that include hundreds of millions of rows. It will ship as part of SQL Server 2008 R2 in the first half of 2010; a community technology preview will be available in the second half of 2009.

5. **Enhanced Ribbon Toolbar -** The Ribbon tool bar has been enhanced to be highly customizable now.

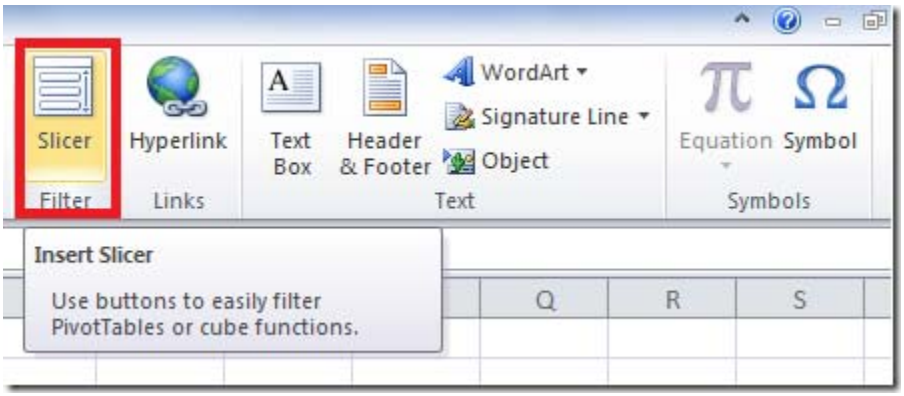


6. **Compatibility of .xlsx -** In Excel 2007, Microsoft introduced a new XML format (.xlsx) which was not compatible with former .xls spreadsheet formats. This problem has been resolved - Excel files created in Excel 2010 may easily be opened in versions of Excel prior to Excel 2007. Now Excel 2010 will save files just as safe as the former Excel 2007, and the spreadsheet size is 75% smaller than the old .XLS version.

7. Protected Mode - Each time you download a document , Microsoft Office 2010 automatically opens it in Protected Mode which means that Excel will not allow you to edit the documents unless document editing is enabled. To do this, click the *Enable Editing* option in order to enable document editing as shown in the following screen shot.



7. **Slicer -** The Slicer feature provides new slice and dice capabilities within PivotTables – this helps you dynamically segment and filter the data. This feature is located on the *Insert* Tab.



8. **Macro -** Macros in Excel 2010 now support working with shapes, including creating, moving or editing shapes.

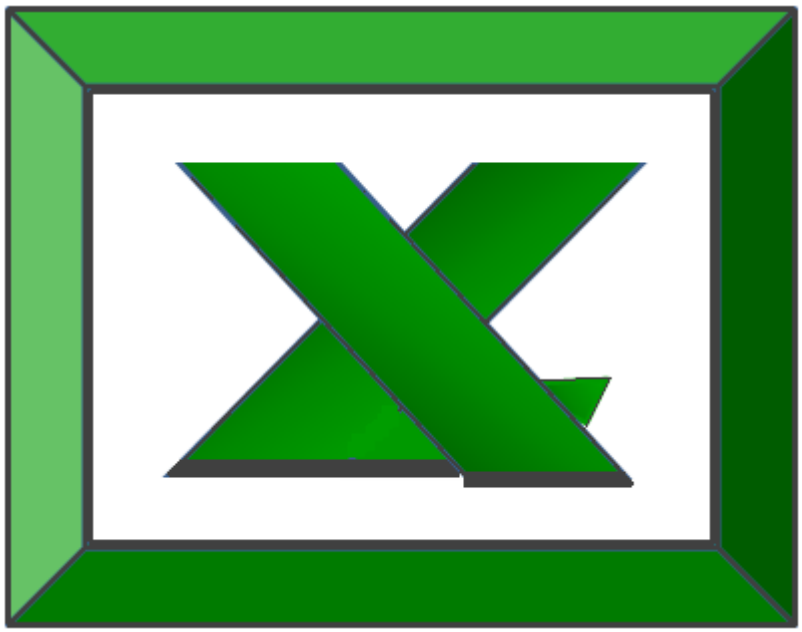
9. **Enhanced Chart Diagram -** In Excel 2010 double clicking a chart element automatically opens the chart's format dialog box.

10. **Web Version of Excel 2010** – A new web version of Excel 2010 allows you to create, edit and save spreadsheet via your web browser directly and share them online. The web version reportedly will be available for free to everyone who has Windows Live account. The web version is as same as the Excel 2010 on desktop, with some of Excel functionality disabled.

11. **64-bit version of Excel 2010** - Excel 2010 is now available in a 64-bit version, which means that it can take full advantage of your computer's 64-bit motherboard and access more than 4 GBs of RAM. The result is even faster performance.

12. **Microsoft SQL Server PowerPivot for Excel** - Excel 2010 now includes an add-in tool called Microsoft SQL Server PowerPivot which is a Business Intelligence tool that enables you to query multiple SQL Server databases across multiple corporate systems and web data on a real-time basis to produce PivotTables that can be shared via SharePoint. You can try this online at the following Virtual Labs web site: https://cmg.vlabcenter.com/prepare.aspx?moduleid=ad3bd3e9-8d2b-498d-94fa-e41e1b09730d&ticks=633992819904236083.

13. **Named Sets -** Named Sets have been added to Microsoft Excel 2010, allows you to create your own named sets. Simply locate the *Fields, Items, & Sets* button under the Ribbon, and it will allow you to define your own Named Sets.



Chapter 9

Hand's On Excel

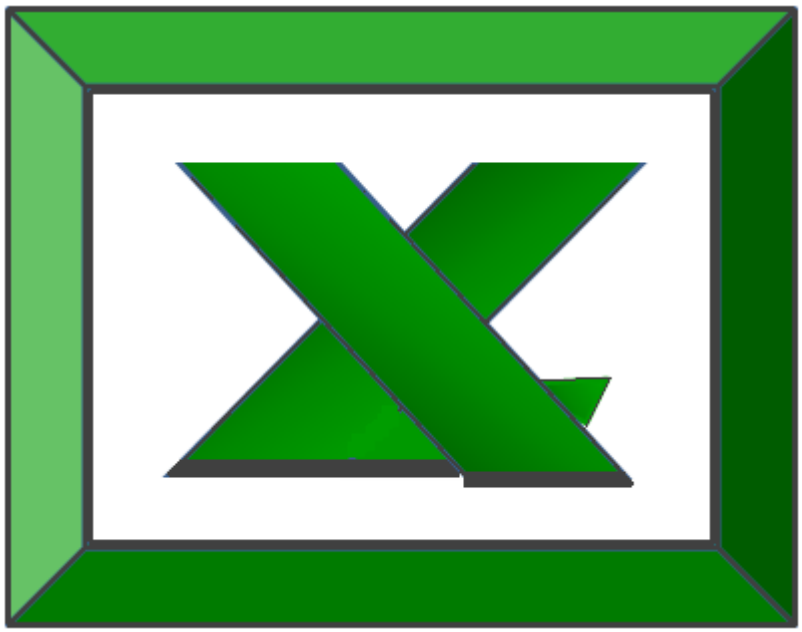
2007 Excel for CPAs
50 Quick Tips
Table of Contents

The Excel workbook used in class to demonstrate these quick tips can be downloaded instantly at the following address: www.ExcelAdvisor.net Password: 2007collins

42	Shift+Spacebar - *(Select a row)*
43	Alt+Tab - *(Toggle between applications or Excel workbooks)*
44	Delete Blank Rows and Columns, Ctrl+S - *(Reduce relevant area and scroll bar)*
45	Copy Formula, to Blank Cells - *(Fill in missing data in a list)*
46	=ISTEXT(A1) - *(Use this formula in conditional formatting to format text only)*
47	Replace, Within - *(Tip for replacing throughout entire workbook)*
48	=LEN(A1)-LEN(SUBSTITUTE(A1,A2,"")) - *(Count the occurrence of a character)*
49	=MID(A25,FIND("*",SUBSTITUTE(A25,"\","*",LEN(A25)- LEN(SUBSTITUTE(A25,"\",""))))+1,LEN(A25)) - *(Extract the Filename)*
50	=SumIF - *(Sum only those numbers that meet specific criteria)*

Bonus Tips – 20 Additional Excel Tips:

1. =Left
2. =Find
3. =Mid
4. =Right
5. =Len
6. Transition turned on
7. Move on edit turned off
8. AutoCorrect
9. Rename Tab
10. Color Tab
11. Reorder Tabs
12. Select Multiple Tabs
13. Fixed decimal places
14. Turn off AutoComplete - Tools, Options, Edit
15. Enter Formats automatically
16. Show 9 recently used files
17. Default File Format - Tools, Options, Transition
18. Embedded Voice clips
19. Embedded Video Clips
20. Organization Charts



Chapter 10

EXAMPLE Case Studies

Amortization Schedule Case Study

The Situation - Your client (Doug and Tina) have an outstanding home loan which was originally obtained in March of 2002 in the amount of $400,000 at 5.75% interest, payable over 15 years. In 2007, your clients inherit $75,000 and they want to explore various strategies for using this money to pay down the loan amount. They cannot seem to agree on which strategy is best, and they want your help to better understand the implications of both strategies. Tina wants to pay down the principle now and Doug wants to pay down the principle more slowly, keeping the cash more readily available to earn interest and use in case of an emergency.

Specifically, Tina wants to know how much sooner the loan will be completely repaid if they apply $75,000 to the principle amount of the loan in July 2007, and how much interest this would save over the remaining loan period. Doug wants to know the same thing if the $75,000 is placed in a mutual fund earning 6.5% a year, and $15,000 is withdrawn from that mutual fund each year to pay down the principle amount at year end, beginning in December 2007.

The Big Picture - Your Goals Are:

1. Create a loan amortization schedule in Excel using Doug and Tina's original loan terms.

2. Create a copy of the amortization schedule and reduce the principle payments by $75,000 in July 2007 to obtain an answer for Tina.

3. Create an investment schedule showing the growth of $75,000 at 6.5%, with $15,000 removed each year end.

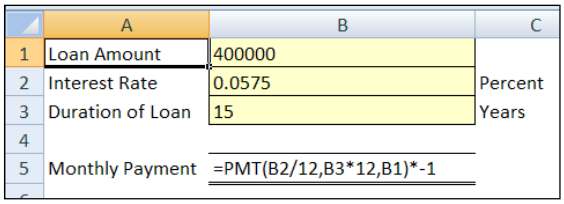
4. Create another copy of the amortization and adjust the principle payments by $15,000 annually to obtain an answer for Doug.

This Case Study Covers the following Excel Features and Concepts:

1. The =PMT Function
2. Filling Dates
3. Absolute References in Formulas
4. Using the F4 Key to Insert Absolute References
5. Copying with the Fill Handle
6. Deleting Rows
7. The =SUM Formula
8. Copying Sheets
9. Pasting Column Widths
10. Inserting Columns
11. Double Clicking the Fill Handle to Copy Down
12. Goal Seeking
13. Freezing Panes
14. Print preview
15. Fit-To Printing
16. Headers and Footers

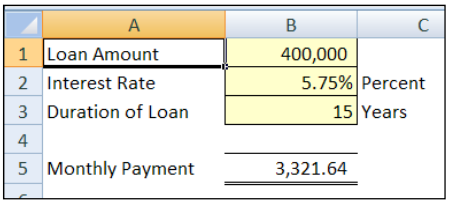
Steps:

1. On Sheet1, set up a loan assumptions and monthly payment calculation section as shown below.



	A	B	C
1	Loan Amount	400000	
2	Interest Rate	0.0575	Percent
3	Duration of Loan	15	Years
4			
5	Monthly Payment	=PMT(B2/12,B3*12,B1)*-1	

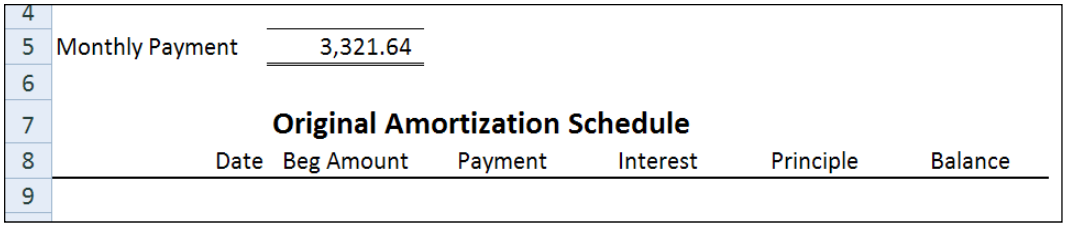
Formulas



	A	B	C
1	Loan Amount	400,000	
2	Interest Rate	5.75%	Percent
3	Duration of Loan	15	Years
4			
5	Monthly Payment	3,321.64	

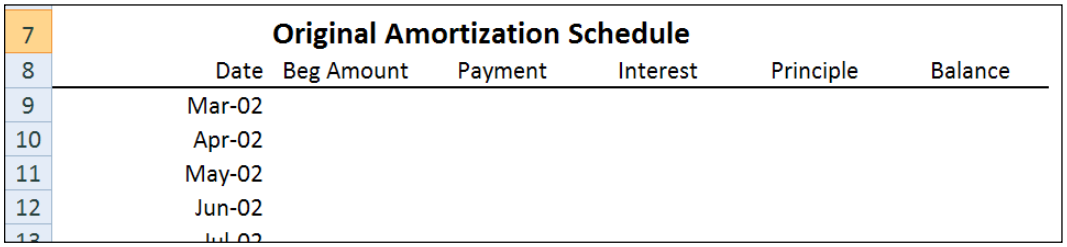
Results

2. On Sheet1, set up the headings for an amortization schedule as shown below.



4						
5	Monthly Payment	3,321.64				
6						
7		**Original Amortization Schedule**				
8	Date	Beg Amount	Payment	Interest	Principle	Balance
9						

3. On Sheet1, insert dates below the "Date" heading. Enter March 2002 and April 2002, and then use the Fill handle to extend the dates down several hundred rows.



7		**Original Amortization Schedule**				
8	Date	Beg Amount	Payment	Interest	Principle	Balance
9	Mar-02					
10	Apr-02					
11	May-02					
12	Jun-02					
13	Jul-02					

4. On Sheet1, enter the formulas for the first two rows of the amortization schedule. Make sure to insert the proper "$" symbols to control relative and absolute

references in the formulas. Use the F4 key to toggle these absolute references on or off.

7	**Original Ar**					
8	Date	Beg Amount	Payment	Interest	Principle	Balance
9	37316	=B1	=$B$5	=B9*$B$2/12	=C9-D9	=B9-E9
10	37347	=F9	=$B$5	=B10*$B$2/12	=C10-D10	=B10-E10

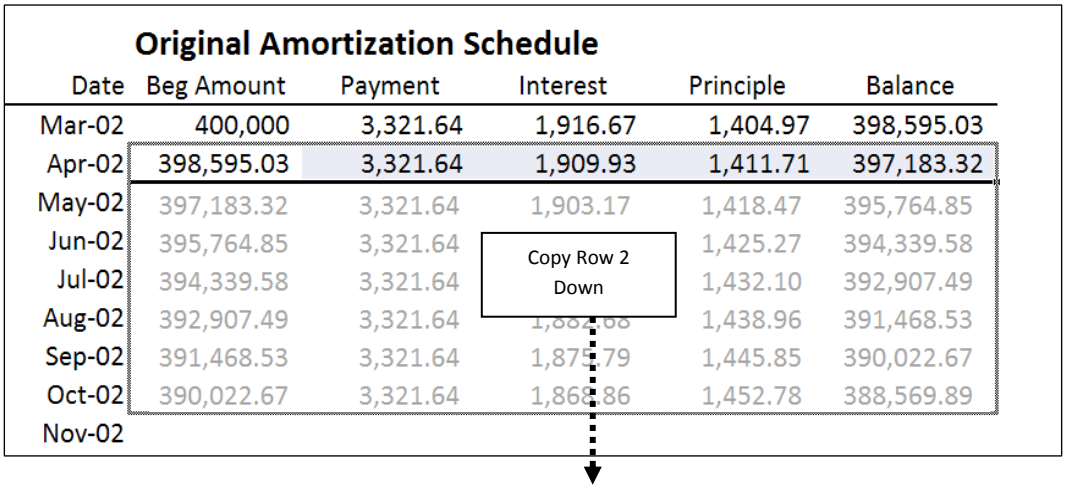
Formulas

Original Amortization Schedule

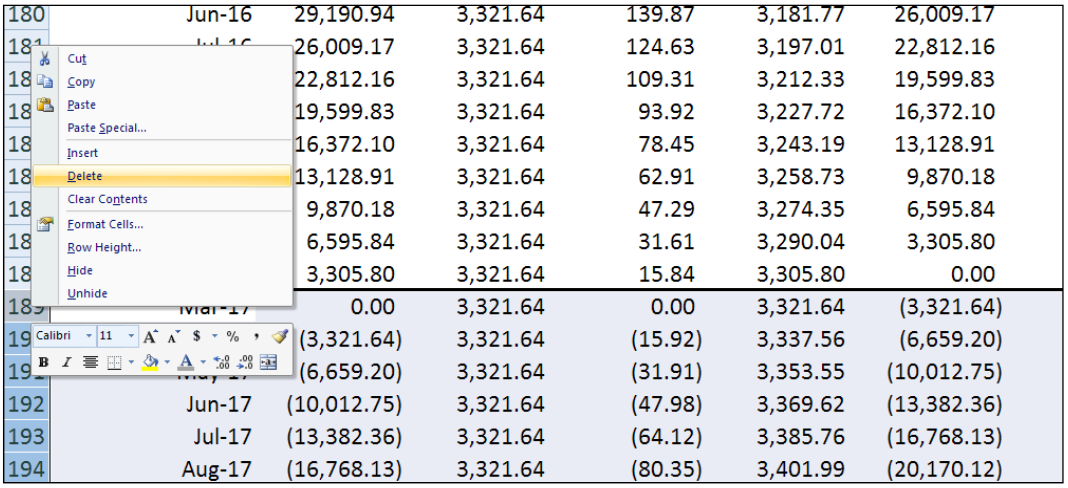
Date	Beg Amount	Payment	Interest	Principle	Balance
Mar-02	400,000	3,321.64	1,916.67	1,404.97	398,595.03
Apr-02	398,595.03	3,321.64	1,909.93	1,411.71	397,183.32

Results

5. Highlight the newly entered formulas on the second row and drag them down several hundred rows to complete the Amortization schedule.



6. Scroll down the amortization schedule and locate the point in which the outstanding balance is reduced to zero, and delete all of the rows below that point.

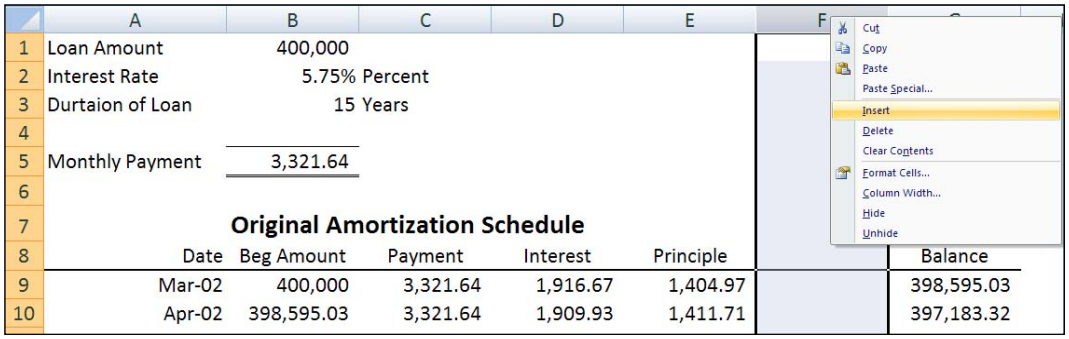


180	Jun-16	29,190.94	3,321.64	139.87	3,181.77	26,009.17
181		26,009.17	3,321.64	124.63	3,197.01	22,812.16
182		22,812.16	3,321.64	109.31	3,212.33	19,599.83
183		19,599.83	3,321.64	93.92	3,227.72	16,372.10
184		16,372.10	3,321.64	78.45	3,243.19	13,128.91
185		13,128.91	3,321.64	62.91	3,258.73	9,870.18
186		9,870.18	3,321.64	47.29	3,274.35	6,595.84
187		6,595.84	3,321.64	31.61	3,290.04	3,305.80
188		3,305.80	3,321.64	15.84	3,305.80	0.00
189	Mar-17	0.00	3,321.64	0.00	3,321.64	(3,321.64)
190		(3,321.64)	3,321.64	(15.92)	3,337.56	(6,659.20)
191		(6,659.20)	3,321.64	(31.91)	3,353.55	(10,012.75)
192	Jun-17	(10,012.75)	3,321.64	(47.98)	3,369.62	(13,382.36)
193	Jul-17	(13,382.36)	3,321.64	(64.12)	3,385.76	(16,768.13)
194	Aug-17	(16,768.13)	3,321.64	(80.35)	3,401.99	(20,170.12)

7. Enter a formula under the interest column to calculate the total amount of interest paid.

	A	B	C	D	E	F
186	Dec-16	9,870.18	3,321.64	47.29	3,274.35	6,595.84
187	Jan-17	6,595.84	3,321.64	31.61	3,290.04	3,305.80
188	Feb-17	3,305.80	3,321.64	15.84	3,305.80	0.00
189				197,895.26	400,000.00	

8. Select Sheet1 and copy the contents to Sheet2. Next copy Sheet1 and paste the Column Widths to Sheet2. Insert a new blank column before the ending balance column to accommodate additional principle payments.



	A	B	C	D	E	F	G
1	Loan Amount	400,000					
2	Interest Rate	5.75% Percent					
3	Durtaion of Loan	15 Years					
4							
5	Monthly Payment	3,321.64					
6							
7	**Original Amortization Schedule**						
8	Date	Beg Amount	Payment	Interest	Principle		Balance
9	Mar-02	400,000	3,321.64	1,916.67	1,404.97		398,595.03
10	Apr-02	398,595.03	3,321.64	1,909.93	1,411.71		397,183.32

9. Edit the first outstanding balance formula to subtract both the principle portion of the monthly payments, and the additional principle payments. Copy this formula down the column by double clicking on the formula cell's Fill Handle. Scroll down to July 2007 and enter a principle payment amount of $75,000 into this newly created column.

71	May-07	298,849.85	3,321.64	1,431.99	1,889.65		296,960.20
72	Jun-07	296,960.20	3,321.64	1,422.93	1,898.71		295,061.49
73	Jul-07	295,061.49	3,321.64	1,413.84	1,907.80	75,000.00	=B73-E73-F73
74	Aug-07	218,153.69	3,321.64	1,045.32	2,276.32		215,877.37
75	Sep-07	215,877.37	3,321.64	1,034.41	2,287.23		213,590.14
76	Oct-07	213,590.14	3,321.64	1,023.45	2,298.19		211,291.95

Sheet1 Sheet2 Sheet3

Edit

10. Scroll down the amortization schedule to the point in which the outstanding balance of the loan is paid in full. Note the date in which this occurs and report that information to Doug and Tina. Delete the rows after the loan amount is paid in full and insert a SUM formula under the interest and principle columns.

	A	B	C	D	E	F	G
149	Nov-13	13,306.22	3,321.64	63.76	3,257.88		10,048.34
150	Dec-13	10,048.34	3,321.64	48.15	3,273.49		6,774.85
151	Jan-14	6,774.85	3,321.64	32.46	3,289.18		3,485.67
152	Feb-14	3,485.67	3,321.64	16.70	3,304.94		180.73
153	Mar-14	180.73	3,321.64	0.87	3,320.77		(3,140.04)
154							

11. Use Excel's Goal Seek command (Data Ribbon, What-If Analysis, Goal Seek) to determine the amount of payment needed in the last month in order to completely pay off the loan amount and accrued interest.

	A	B	C	D	E	F	G
149	Nov-13	13,306.22	3,321.64	63.76	3,257.88		10,048.34
150	Dec-13	10,048.34	3,321.64	48.15	3,273.49		6,774.85
151	Jan-14	6,774.85	3,321.64	32.46	3,289.18		3,485.67
152	Feb-14	3,485.67	3,321.64	16.70	3,304.94		180.73
153	Mar-14	180.73	181.60	0.87	180.73		(0.00)
154							

Goal Seek

Set cell: $G$153

To value: 0

By changing cell: $C$153

OK Cancel

Goal Seek Status

Goal Seeking with Cell G153 found a solution.

Target value: 0

Current value: (0.00)

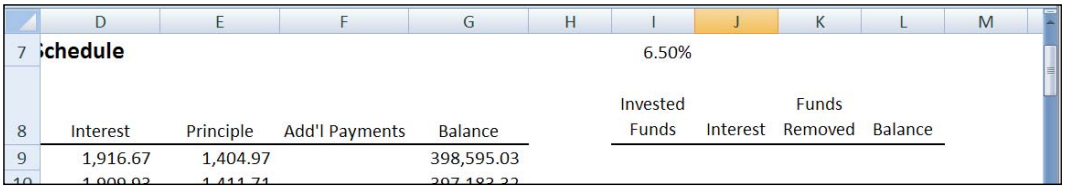
Step Pause OK Cancel

12. Insert SUM formulas under the interest and principle columns, and create another formula to subtract the total interest on Sheet1 by the total interest calculated on Sheet2.

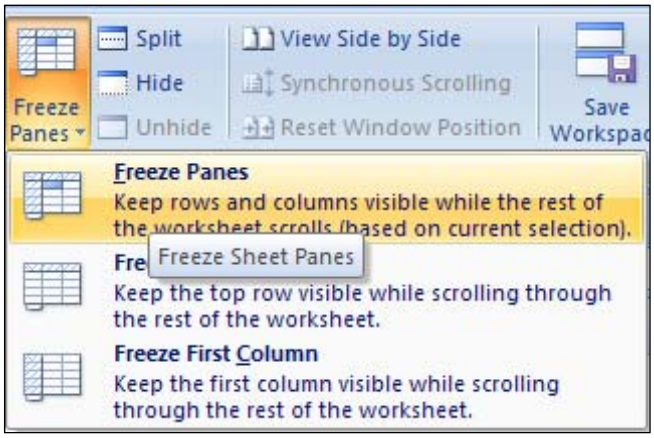
151	Jan-14	6,774.85	3,321.64	32.46	3,289.18		3,485.67
152	Feb-14	3,485.67	3,321.64	16.70	3,304.94		180.73
153	Mar-14	180.73	181.60	0.87	180.73		(0.00)
154	Totals			153,497.81	325,000.00	75,000.00	
155							
156	Total Interest Savings			44,397.45			

Under the original terms of the loan, the entire loan would be paid off in February 2017 with a total amount of interest of $197,895.26. Under the revised plan that Tina proposes, the loan would be paid off 3 years early on March 2014, thereby saving $44,397.45 in interest expense.

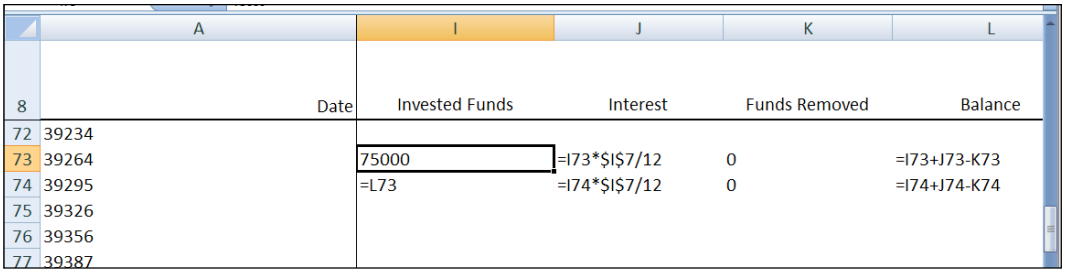
13. Create a copy of Sheet2 on Sheet3. Paste the Column Widths as well. Erase the $75,000 principle payment. Add columns to the right to accommodate the mutual fund investment.



14. Place your cursor underneath the headings, and to the right of the date column. Next, fix the headings by selecting “Freeze Panes, Freeze Sheet Panes” from the View Ribbon’s Widow chunk as shown below. This will enable you to scroll the data and still see the row and column headings even when scrolling the data.



15. Beginning in July 2007, enter the amount of invested funds and formulas to calculate the amount of interest earnings and withdrawals of capital as shown in the screens below.



Formulas

	A	E	F	G	H	I	J	K	L
8	Date	Principle	Add'l Payments	Balance		Invested Funds	Interest	Funds Removed	Balance
72	Jun-07	1,898.71		295,061.49					
73	Jul-07	1,907.80		293,153.69		75,000.00	406.25	-	75,406.25
74	Aug-07	1,916.95		291,236.74		75,406.25	408.45	-	75,814.70
75	Sep-07	1,926.13		289,310.61					
76	Oct-07	1,935.36		287,375.25					

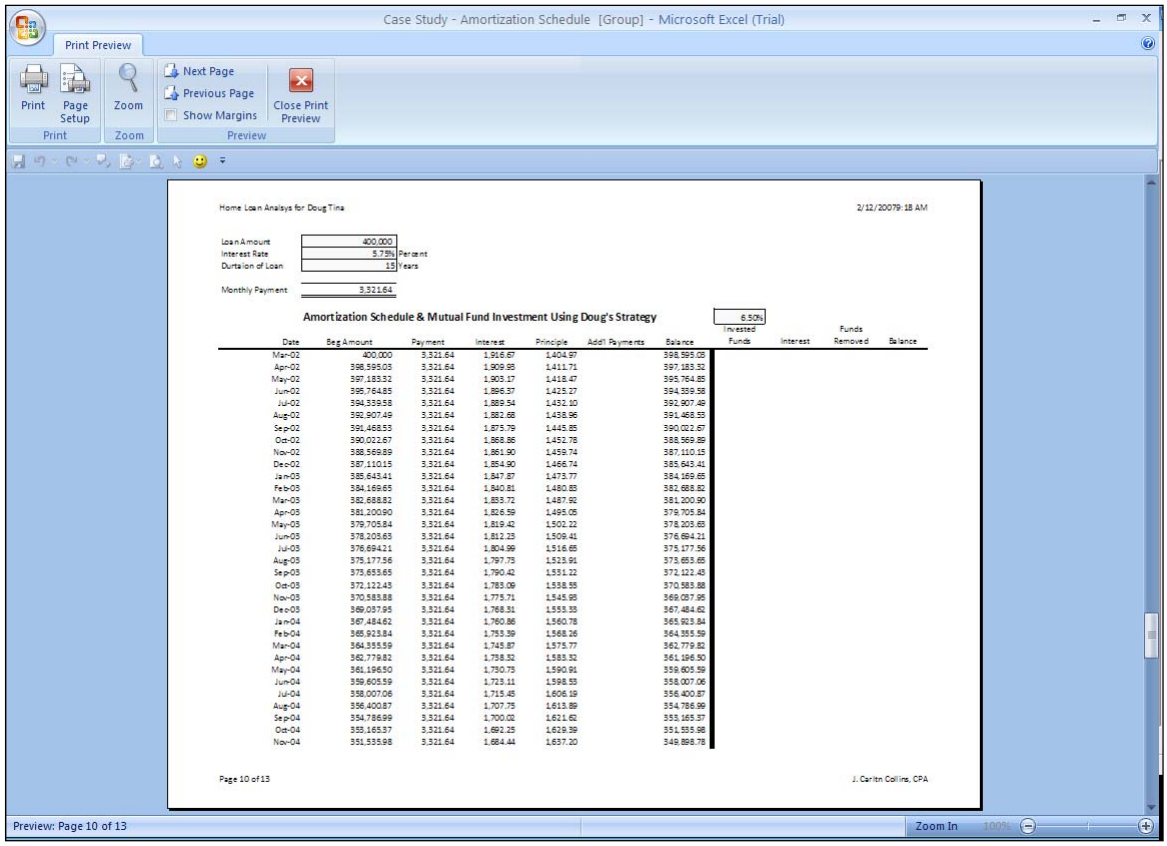
Results

16. Copy the formulas down the page several hundred rows. Fill in the withdrawal of $15,000 each December beginning in 2007 and continuing until the mutual fund is empty. Insert formulas in the amortization schedule section of the worksheet to show that annual withdrawals of $15,000 in mutual funds are used to reduce the loan amount by $15,000 each year. Make the necessary adjustments to the bottom of both the amortization and mutual fund schedules and report the results.

	A	B	C	D	E	F	G	H	I	J	K	L
8	Date	Beg Amount	Payment	Interest	Principle	Add'l Payments	Balance		Invested Funds	Interest	Funds Removed	Balance
146	Aug-13	20,870.18	3,321.64	100.00	3,221.64	-	17,648.54		669.07	3.62		672.69
147	Sep-13	17,648.54	3,321.64	84.57	3,237.07	-	14,411.47		672.69	3.64		676.33
148	Oct-13	14,411.47	3,321.64	69.05	3,252.59	-	11,158.88		676.33	3.66		680.00
149	Nov-13	11,158.88	3,321.64	53.47	3,268.17	-	7,890.71		680.00	3.68		683.68
150	Dec-13	7,890.71	3,321.64	37.81	3,283.83	687.38	3,919.49		683.68	3.70	687.38	-
151		3,919.49	3,321.64	18.78	3,302.86	-	616.64					
152		616.64	619.59	2.95	616.64	-	0.00					
153												
154	Totals			166,301.54	309,312.62	90,687.38				15,687.38		
155												
156	Total Interest Savings			44,397.45								
157												
158	Interest Savings From Doug's Plan Compared to Tina's Plan			2,883.65								

17. Using Doug's strategy, some of the inherited funds would be available in case of an emergency, and if not, Doug's strategy would pay off the home loan 1 month earlier than Tina's plan on February 2014 instead of March 2014, and would produce an additional $2,883.65 in net interest savings (including the interest earned by the mutual fund).

18. Finally, Print Preview all three Sheets displaying the original amortization schedule, the revised schedule using Tina's plan, and the expanded and revised schedule using Doug's plan. Use the "Fit-To" printing options to print Sheet1 in Portrait mode on 4 pages, and Sheets 2 &3 in Landscape mode, 1 page wide. Insert headers and footers as needed.



Conclusion, the decision to use funds in a given manner is a personal preference decision that Doug and Tina will need to make on their own. However, since Tina's primary goal is to pay off the home loan earlier, and Doug's main goal is to keep some liquidity, Doug's plan accomplishes both objectives best. Using Excel you are able to advise your clients accordingly, and back up your recommendations with detailed reports to support your conclusions.

Portfolio Case Study

The Situation - Your individual client (Mr. Slade) has been very successful in his business dealings, and has accumulated $1 million in cash and investments. Previously Mr. Slade has invested these funds rather haphazardly, in a potpourri of investments without much strategy or thought. Presented below is a summary of his funds as they are currently invested:

Cash	275,000
Speculative Stocks	400,000
Mutual Funds	325,000

In speaking with Mr. Slade, with your help he determines that he would like to spread his investments around in a variety of investments in an effort to diversify his portfolio. Together, you come up with the following criteria for Mr. Slade's investment strategy:

1. Mr. Slade wants to spread his investments around, including blue chip stocks, growth stocks, speculation stocks, cash, real estate and mutual funds.
2. Mr. Slade needs between $100,000 and $150,000 in liquid cash.
3. Mr. Slade wants to carry about 25% to 35% of the portfolio in blue chip stocks.
4. Mr. Slade would like to no more than 20% of the portfolio invested in speculative stocks.
5. Mr. Slade wants no more than 20% of his investments in mutual funds.

The next step in this process is to estimate the expected return on investment (ROI) for each of investments. Some of these numbers are easy to come by and some are a little more difficult. For example, it is known that the checking account pays 2.2% interest, and of course there is no growth. Mr. Slade's speculative stock investments have grown at an

average of 12%, with no dividend payments while his mutual funds have grown 7% per year. A little research reveals that blue chip stocks grow on average 6.0% per year, and pay about 4% in dividends annually, and growth stocks grow at about 8% per year. The real estate market has shown steady growth of 12% per year, but there is an annual cost of about 3.5% for taxes, insurance and maintenance.

Mr. Slade wants you to help him figure out which portfolio mix maximizes his earnings, while obeying his stated constraints. Thereafter, Mr. Slade wants you to set up a organized approach for tracking these investments in the future.

The Big Picture - Your Goals Are:

1. Install the Solver tool in Excel.

2. Use Solver to calculate the best mix of investments that also obeys Mr. Slade's stated investment goals and criteria.

3. Set up an Excel worksheet that organizes and tracks these investments.

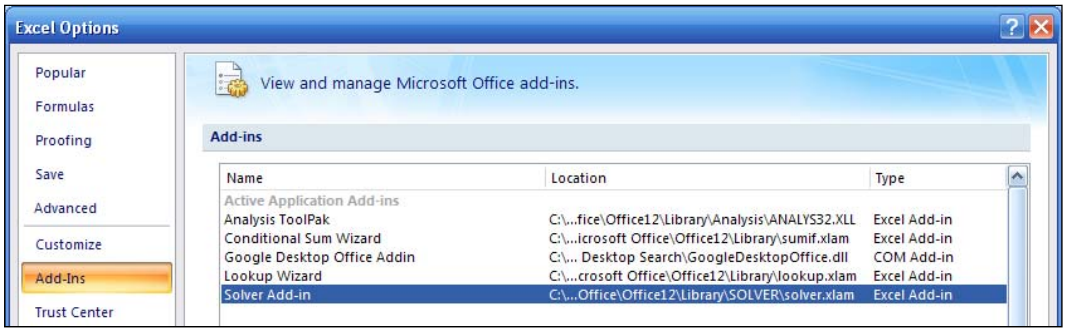
4. Create web queries that will import stock prices and mutual fund information directly into Excel.

This Case Study Covers the following Excel Features and Concepts:

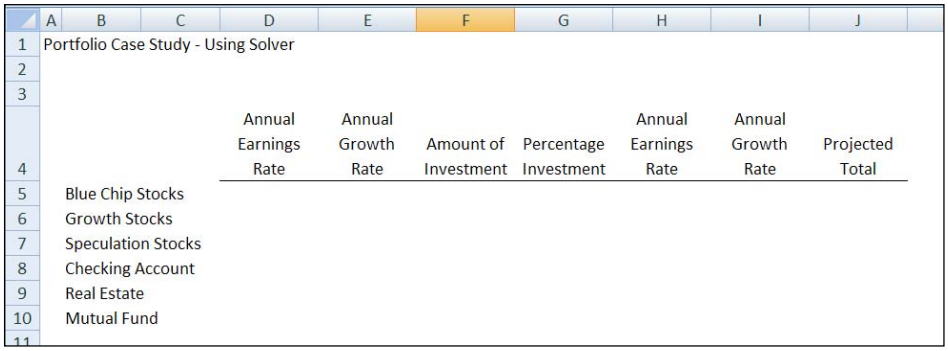
1. Add-ins
2. Solver Overview
3. Solver Worksheet
4. Solver Constraints
5. Solver Targets
6. Solver Reporting
7. Portfolio Design
8. Web Queries
9. Web Query Parameters
10. Editing Web Queries
11. Refreshing Web Queries
12. Subtotaling
13. Outlining
14. Tables
15. PivotTables
16. Format Gallery

Steps:

1. To use the Solver Add-in, you need to load it first. To do this, Click the Microsoft Office Button, and then click Excel Options. Click Add-Ins, and then in the Manage box, select Excel Add-ins. Click Go. In the Add-Ins available box, select the Solver Add-in check box, and then click OK. After you load the Solver Add-in, the Solver command is available in the Analysis group on the Data tab.

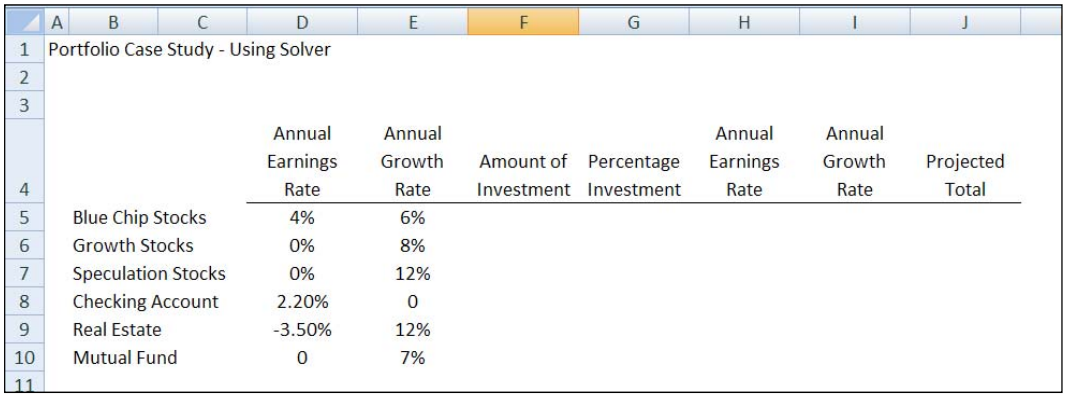


2. Set up the "Investment Mix" worksheet, starting with the row and column labels shown below.



	A	B	C	D	E	F	G	H	I	J
1	Portfolio Case Study - Using Solver									
2										
3										
4				Annual Earnings Rate	Annual Growth Rate	Amount of Investment	Percentage Investment	Annual Earnings Rate	Annual Growth Rate	Projected Total
5		Blue Chip Stocks								
6		Growth Stocks								
7		Speculation Stocks								
8		Checking Account								
9		Real Estate								
10		Mutual Fund								
11										

3. Enter the percentage returns for each investment, including earnings and growth rate. Note that the earnings rate for real estate is a negative number because the owner must pay money annually for taxes, insurance and maintenance.



	A	B	C	D	E	F	G	H	I	J
1	Portfolio Case Study - Using Solver									
2										
3										
4				Annual Earnings Rate	Annual Growth Rate	Amount of Investment	Percentage Investment	Annual Earnings Rate	Annual Growth Rate	Projected Total
5		Blue Chip Stocks		4%	6%					
6		Growth Stocks		0%	8%					
7		Speculation Stocks		0%	12%					
8		Checking Account		2.20%	0					
9		Real Estate		-3.50%	12%					
10		Mutual Fund		0	7%					
11										

4. Enter an amount of funds for each investment, the total of which sums to the $1 million that Mr. Slade owns. **It does not matter which amounts you enter here**; these are the amounts that will eventually be adjusted by Solver. (For example, you could enter $1 for the first five investments and $999,995 for the last investment if you wanted to.)

		Annual Earnings Rate	Annual Growth Rate	Amount of Investment	Percentage Investment	Annual Earnings Rate	Annual Growth Rate	Projected Total
4								
5	Blue Chip Stocks	4%	6%	150000				
6	Growth Stocks	0%	8%	150000				
7	Speculation Stocks	0%	12%	150000				
8	Checking Account	2.20%	0	150000				
9	Real Estate	-3.50%	12%	150000				
10	Mutual Fund	0	7%	250000				
11				1000000				

5. Enter formulas to calculate the percentage of each investment as a percentage to the total investments. This is best accomplished by typing in the top formula, applying absolute references to the denominator, and double clicking the fill handle to copy the formula down.

		Annual Earnings Rate	Annual Growth Rate	Amount of Investment	Percentage Investment	Annual Earnings Rate	Annual Growth Rate	Projected Total
4								
5	Blue Chip Stocks	4%	6%	150000	15%			
6	Growth Stocks	0%	8%	150000	15%			
7	Speculation Stocks	0%	12%	150000	15%			
8	Checking Account	2.20%	0	150000	15%			
9	Real Estate	-3.50%	12%	150000	15%			
10	Mutual Fund	0	7%	250000	25%			
11				1000000	100%			

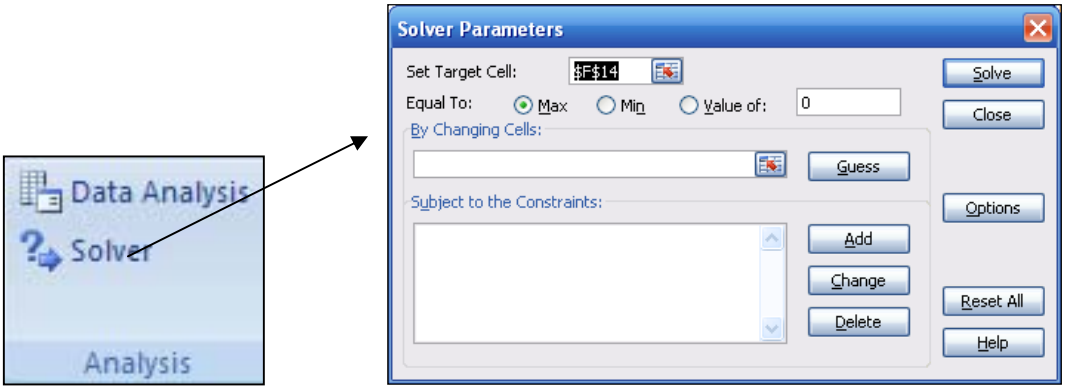
6. Enter the remaining formulas to complete the schedule. These formulas are straight forward and they are best accomplished by typing the formula once, applying the proper absolute column reference to the “Amount of Investment” cell reference, and then copying this formula down and across. The final column simply sums the earnings and growth to derive a total return on investment.

		Annual Earnings Rate	Annual Growth Rate	Amount of Investment	Percentage Investment	Annual Earnings Rate	Annual Growth Rate	Projected Total
4								
5	Blue Chip Stocks	4%	6%	150,000	15%	6,000	9,000	15,000
6	Growth Stocks	0%	8%	150,000	15%	-	12,000	12,000
7	Speculation Stocks	0%	12%	150,000	15%	-	18,000	18,000
8	Checking Account	2.20%	0	150,000	15%	3,300	-	3,300
9	Real Estate	-3.50%	12%	150,000	15%	(5,250)	18,000	12,750
10	Mutual Fund	0	7%	250,000	25%	-	17,500	17,500
11				1,000,000	100%	4,050	74,500	78,550

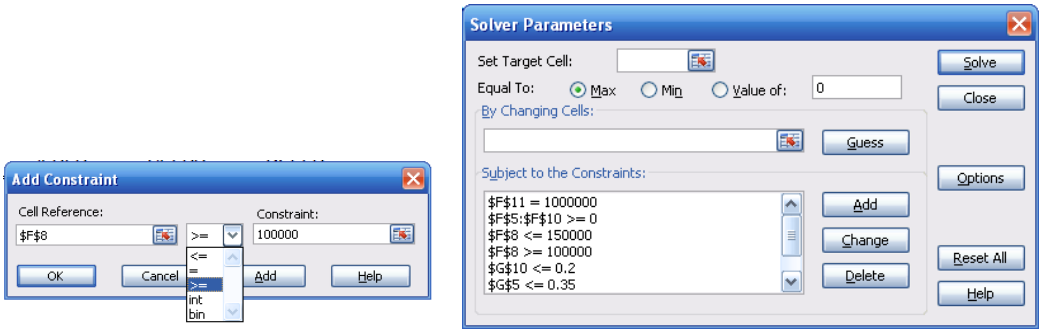
7. Presented below is an auditing view of this schedule with all data and formulas displayed so that you can check your work. This computation represents the Solver Problem which Solver with solve.

		Annual Earnings Rate	Annual Growth Rate	Amount of Investment	Percentage Investment	Annual Earnings Rate	Annual Growth Rate	Projected Total
5	Blue Chip Stocks	0.04	0.06	150000	=F5/$F$11	=D5*$F5	=E5*$F5	=I5+H5
6	Growth Stocks	0	0.08	150000	=F6/$F$11	=D6*$F6	=E6*$F6	=I6+H6
7	Speculation Stocks	0	0.12	150000	=F7/$F$11	=D7*$F7	=E7*$F7	=I7+H7
8	Checking Account	0.022	0	150000	=F8/$F$11	=D8*$F8	=E8*$F8	=I8+H8
9	Real Estate	-0.035	0.12	150000	=F9/$F$11	=D9*$F9	=E9*$F9	=I9+H9
10	Mutual Fund	0	0.07	250000	=F10/$F$11	=D10*$F10	=E10*$F10	=I10+H10
11				=SUM(F5:F10)	=F11/$F$11	=SUM(H5:H10)	=SUM(I5:I10)	=SUM(J5:J10)
12								

8. Now that your investment schedule is complete, you are ready to use solver to determine the optimum investment mix that yields the top return, yet obeys Mr. Slade's stated investment objectives. Launch the Solver tool from the Data menu's Analysis chunk.



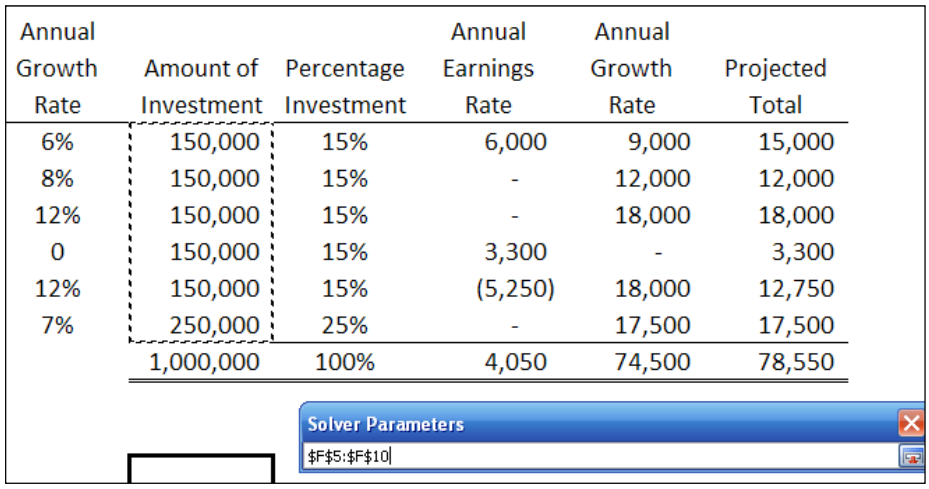
9. Enter the Constraints into the solver Parameters dialog box one at a time. For example, the amount of cash is to be at least $100,000 and at most $150,000. These constraints are expressed as $F$8 >= 100000 and $F$8 <= 150000.



Further, in order to make solver work, you must add two additional constraints as follows. A constraint that tells solver the total amount of available funds must also be added by instructing Solver that total funds are $1,000,000. Another constraint that indicates that no investment shall be less than $0.00 must also be added, otherwise solver will try to maximize earnings by suggesting negative investment

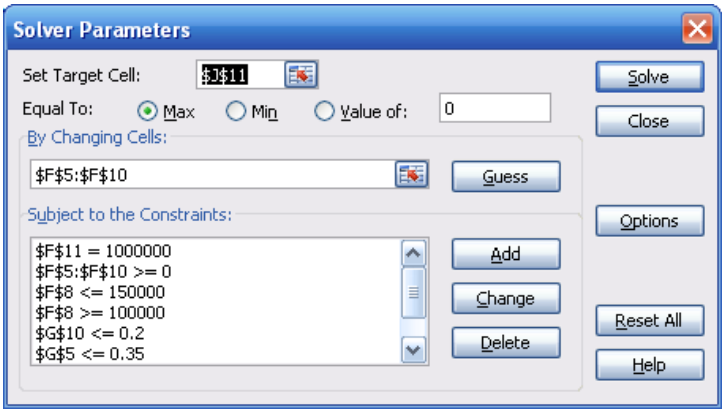
amounts. (Sure, this sounds crazy, but Solver is not a thinking intelligent being, its just a calculation.)

10. Complete the Solver by referencing the cells to be changed and the cell to be maximized in the solution. The cells to be changed are the 6 cells containing the amounts to be invested in each type of investment, as shown in the dotted line box below.



Annual Growth Rate	Amount of Investment	Percentage Investment	Annual Earnings Rate	Annual Growth Rate	Projected Total
6%	150,000	15%	6,000	9,000	15,000
8%	150,000	15%	-	12,000	12,000
12%	150,000	15%	-	18,000	18,000
0	150,000	15%	3,300	-	3,300
12%	150,000	15%	(5,250)	18,000	12,750
7%	250,000	25%	-	17,500	17,500
	1,000,000	100%	4,050	74,500	78,550

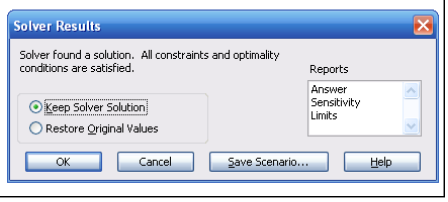
11. The cell to be maximized is the total amount of return on investment, or the total of the "Projected Total" column.



Solver is Ready to Run

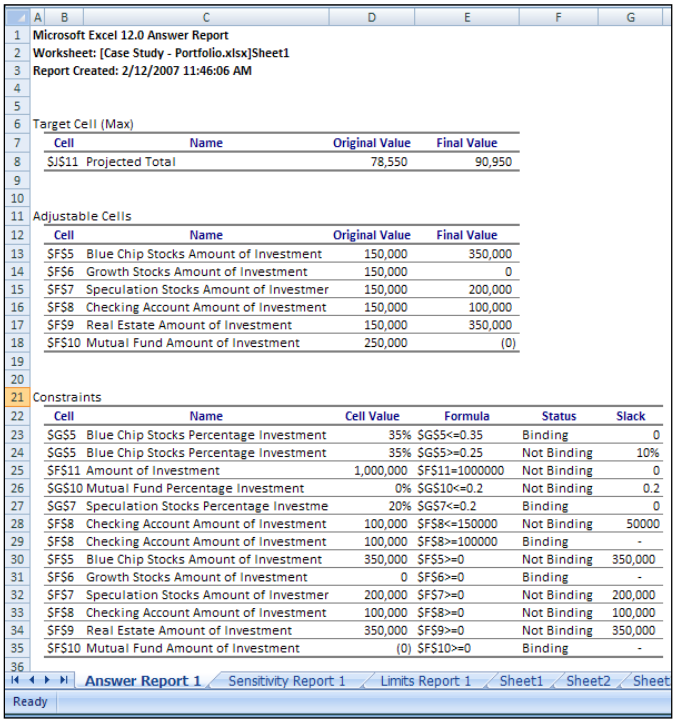
12. With all constraints, changing cells, and maximized cell properly referenced, you are now ready to produce the solution by pressing the Solve button. This action will adjust the portfolio mix schedule to provide those top results which obey the stated investment objectives.

		Annual Earnings Rate	Annual Growth Rate	Amount of Investment	Percentage Investment	Annual Earnings Rate	Annual Growth Rate	Projected Total
4								
5	Blue Chip Stocks	4%	6%	350,000	35%	14,000	21,000	35,000
6	Growth Stocks	0%	8%	0	0%	-	0	0
7	Speculation Stocks	0%	12%	200,000	20%	-	24,000	24,000
8	Checking Account	2.20%	0	100,000	10%	2,200	-	2,200
9	Real Estate	-3.50%	12%	350,000	35%	(12,250)	42,000	29,750
10	Mutual Fund	0	7%	(0)	0%	-	(0)	(0)
11				1,000,000	100%	3,950	87,000	90,950



As you can see by the serene above, solver has adjusted the portfolio investment mix to show that total earnings of $90,950 can be achieved by maximizing the investments in blue chip stocks, avoiding growth stocks, placing the minimum amount of $100,000 in checking, etc. After producing this report, Mr. Slade may decide that additional constraints are needed, and if so, the numbers can be massaged accordingly.

13. Solver now offers a variety of options for reporting the results. The report can be saved as a scenario. Thereafter, Solver will produce various reports to help you understand the results. The first of these reports is the Answers Report shown to the right.



Microsoft Excel 12.0 Answer Report
Worksheet: [Case Study - Portfolio.xlsx]Sheet1
Report Created: 2/12/2007 11:46:06 AM

Target Cell (Max)

Cell	Name	Original Value	Final Value
$J$11	Projected Total	78,550	90,950

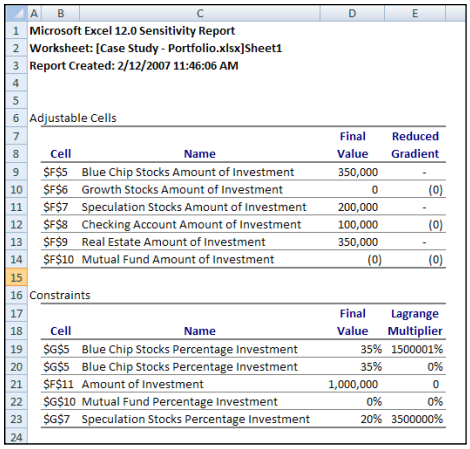
Adjustable Cells

Cell	Name	Original Value	Final Value
$F$5	Blue Chip Stocks Amount of Investment	150,000	350,000
$F$6	Growth Stocks Amount of Investment	150,000	0
$F$7	Speculation Stocks Amount of Investmer	150,000	200,000
$F$8	Checking Account Amount of Investment	150,000	100,000
$F$9	Real Estate Amount of Investment	150,000	350,000
$F$10	Mutual Fund Amount of Investment	250,000	(0)

Constraints

Cell	Name	Cell Value	Formula	Status	Slack
$G$5	Blue Chip Stocks Percentage Investment	35%	$G$5<=0.35	Binding	0
$G$5	Blue Chip Stocks Percentage Investment	35%	$G$5>=0.25	Not Binding	10%
$F$11	Amount of Investment	1,000,000	$F$11=1000000	Not Binding	0
$G$10	Mutual Fund Percentage Investment	0%	$G$10<=0.2	Not Binding	0.2
$G$7	Speculation Stocks Percentage Investme	20%	$G$7<=0.2	Binding	0
$F$8	Checking Account Amount of Investment	100,000	$F$8<=150000	Not Binding	50000
$F$8	Checking Account Amount of Investment	100,000	$F$8>=100000	Binding	-
$F$5	Blue Chip Stocks Amount of Investment	350,000	$F$5>=0	Not Binding	350,000
$F$6	Growth Stocks Amount of Investment	0	$F$6>=0	Binding	-
$F$7	Speculation Stocks Amount of Investmer	200,000	$F$7>=0	Not Binding	200,000
$F$8	Checking Account Amount of Investment	100,000	$F$8>=0	Not Binding	100,000
$F$9	Real Estate Amount of Investment	350,000	$F$9>=0	Not Binding	350,000
$F$10	Mutual Fund Amount of Investment	(0)	$F$10>=0	Binding	-

14. The Sensitivity and Limit Reports provide details into how the final answers were derived.



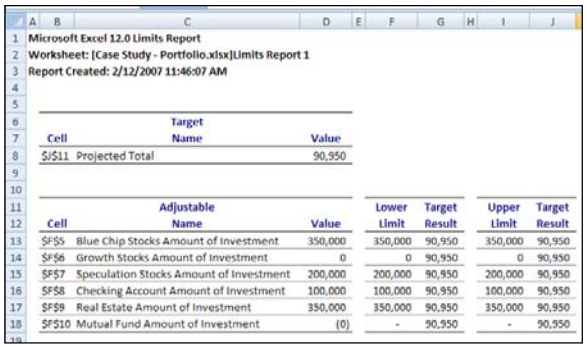
Microsoft Excel 12.0 Sensitivity Report
Worksheet: [Case Study - Portfolio.xlsx]Sheet1
Report Created: 2/12/2007 11:46:06 AM

Adjustable Cells

Cell	Name	Final Value	Reduced Gradient
$F$5	Blue Chip Stocks Amount of Investment	350,000	-
$F$6	Growth Stocks Amount of Investment	0	(0)
$F$7	Speculation Stocks Amount of Investment	200,000	-
$F$8	Checking Account Amount of Investment	100,000	(0)
$F$9	Real Estate Amount of Investment	350,000	-
$F$10	Mutual Fund Amount of Investment	(0)	(0)

Constraints

Cell	Name	Final Value	Lagrange Multiplier
$G$5	Blue Chip Stocks Percentage Investment	35%	1500001%
$G$5	Blue Chip Stocks Percentage Investment	35%	0%
$F$11	Amount of Investment	1,000,000	0
$G$10	Mutual Fund Percentage Investment	0%	0%
$G$7	Speculation Stocks Percentage Investment	20%	3500000%



Microsoft Excel 12.0 Limits Report
Worksheet: [Case Study - Portfolio.xlsx]Limits Report 1
Report Created: 2/12/2007 11:46:07 AM

Cell	Target Name	Value
$J$11	Projected Total	90,950

Cell	Adjustable Name	Value	Lower Limit	Target Result	Upper Limit	Target Result
$F$5	Blue Chip Stocks Amount of Investment	350,000	350,000	90,950	350,000	90,950
$F$6	Growth Stocks Amount of Investment	0	0	90,950	0	90,950
$F$7	Speculation Stocks Amount of Investment	200,000	200,000	90,950	200,000	90,950
$F$8	Checking Account Amount of Investment	100,000	100,000	90,950	100,000	90,950
$F$9	Real Estate Amount of Investment	350,000	350,000	90,950	350,000	90,950
$F$10	Mutual Fund Amount of Investment	(0)	-	90,950	-	90,950

15. Now that the Portfolio Investment Mix and Solver worksheets have both been created, they can be rerun as frequently as desired in just a few seconds. For example, assume that the checking account interest rate changes, blue chip returns fall, and Mr. Slade's objectives change. This is no problem as you can open the worksheets and make these adjustments in only a few seconds. Specifically, assume that Mr. Slade decides that at least 10% of the investments should be invested in Mutual funds. Simply add this new constraint to Solver and recomputed the results.

	Annual Earnings Rate	Annual Growth Rate	Amount of Investment	Percentage Investment	Annual Earnings Rate	Annual Growth Rate	Projected Total
Blue Chip Stocks	4%	6%	350,000	35%	14,000	21,000	35,000
Growth Stocks	0%	8%	0	0%	-	0	0
Speculation Stocks	0%	12%	200,000	20%	-	24,000	24,000
Checking Account	2.20%	0	100,000	10%	2,200	-	2,200
Real Estate	-3.50%	12%	250,000	25%	(8,750)	30,000	21,250
Mutual Fund	0	7%	100,000	10%	-	7,000	7,000
			1,000,000	100%	7,450	82,000	89,450

As market conditions change, the Investment Mix Schedule assumptions can be updated and Solver can be re-run to produce new results. Thereafter, Mr. Slade needs only to track investments and move them around as the amounts grow to match his desired investment goals.

16. The next step is to assist Mr. Slade in selecting investments from each category, and then creating a worksheet to track those investments. While the selection of each individual investment is complex, strategic and personal (and hence beyond the scope of this case study), let us assume that Mr. Slade has decided upon the following specific investments:

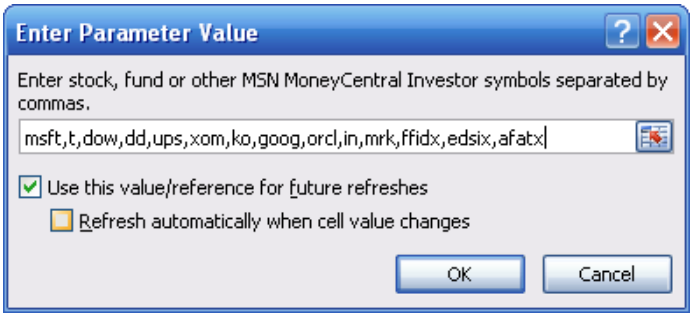
Category	Symbol	Company Name	Intial Amount
Blue Chip Stocks	MSFT	Microsoft	50,000
Blue Chip Stocks	T	AT&T Inc.	50,000
Blue Chip Stocks	DOW	Dow Chemical	50,000
Blue Chip Stocks	DD	Du Pont	50,000
Blue Chip Stocks	UPS	UPS	50,000
Blue Chip Stocks	XOM	Exon Mobil	50,000
Blue Chip Stocks	KO	Coca Cola	50,000
Speculation Stocks	GOOG	Google	50,000
Speculation Stocks	ORCL	Oracle	50,000
Speculation Stocks	IN	Intermec	50,000
Speculation Stocks	MRK	Merck	50,000
Checking Account			100,000
Real Estate		Undeveloped Land	70,000
		Townhome	180,000
Mutual Fund	FFIDX	Fidelity Fund	50,000
Mutual Fund	EDSIX	Evergreen Disciplined Value Fund	25,000
Mutual Fund	AFATX	Afba 5Star Science & Technology	25,000
			1,000,000

17. Set up an initial Portfolio that list these investments and the initial amounts that Mr. Slade has decided to place in each investment. Include a column for share price and the total number of shares as shown below.

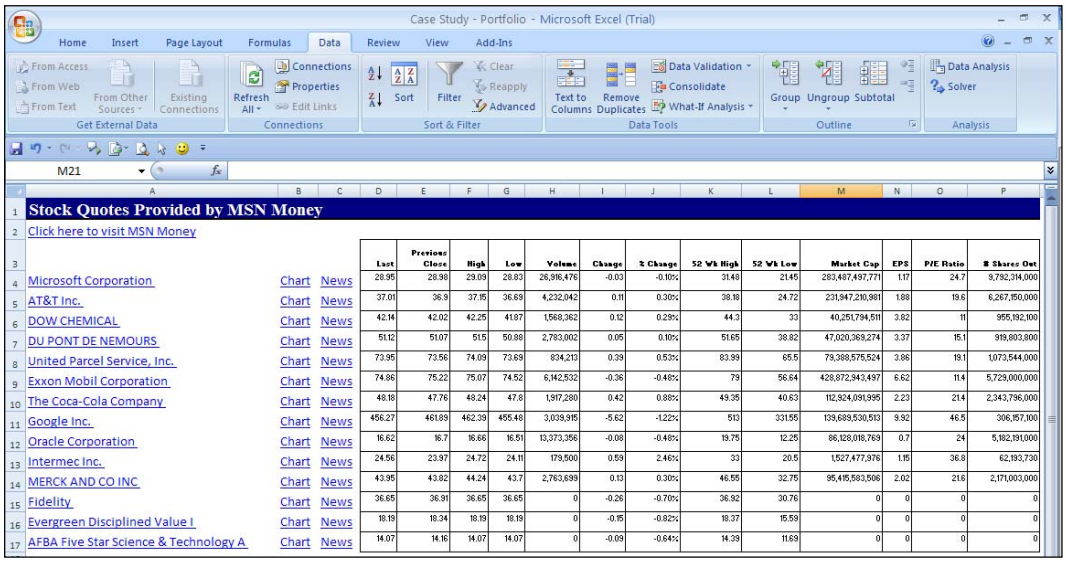
	A	B	C	D	E	F	G	H
15								
16		Category		Symbol	Company Name	Intial Amount	Share Price	Shares
17		Blue Chip Stocks		MSFT	Microsoft	50,000		
18		Blue Chip Stocks		T	AT&T Inc.	50,000		
19		Blue Chip Stocks		DOW	Dow Chemical	50,000		
20		Blue Chip Stocks		DD	Du Pont	50,000		
21		Blue Chip Stocks		UPS	UPS	50,000		
22		Blue Chip Stocks		XOM	Exon Mobil	50,000		
23		Blue Chip Stocks		KO	Coca Cola	50,000		
24								
25		Speculation Stocks		GOOG	Google	50,000		
26		Speculation Stocks		ORCL	Oracle	50,000		
27		Speculation Stocks		IN	Intermec	50,000		
28		Speculation Stocks		MRK	Merck	50,000		
29								
30		Checking Account				100,000		
31								
32		Real Estate			Undeveloped Land	70,000		
33					Townhome	180,000		
34								
35		Mutual Fund		FFIDX	Fidelity Fund	50,000		
36		Mutual Fund		EDSIX	Evergreen Disciplined Value Fund	25,000		
37		Mutual Fund		AFATX	Afba 5Star Science & Technology	25,000		
38								
39						1,000,000		

18. On a separate sheet, insert a Web Query to retrieve these stock and mutual fund prices using the ticker symbols provided. To do this, select “Existing Connections from the Data Ribbon’s “Get External Data” Chunk, and select “Stock Quotes”. Enter

the ticker symbols in the “Enter Parameter Value” dialog box shown below. Be sure to check the checkbox titled “Use this value/reference for future refreshes”.



19. This action will cause Excel to reach out to a stock portfolio database on the Internet and create the following summary report:



			Last	Previous Close	High	Low	Volume	Change	% Change	52 Wk High	52 Wk Low	Market Cap	EPS	P/E Ratio	# Shares Out
Microsoft Corporation	Chart	News	28.95	28.98	29.09	28.83	26,916,476	-0.03	-0.10%	31.48	21.45	283,487,497,771	1.17	24.7	9,792,314,000
AT&T Inc.	Chart	News	37.01	36.9	37.15	36.69	4,232,042	0.11	0.30%	38.18	24.72	231,947,210,981	1.88	19.6	6,267,150,000
DOW CHEMICAL	Chart	News	42.14	42.02	42.25	41.87	1,568,362	0.12	0.29%	44.3	33	40,251,794,511	3.82	11	955,192,100
DU PONT DE NEMOURS	Chart	News	51.12	51.07	51.5	50.88	2,783,002	0.05	0.10%	51.65	38.82	47,020,368,274	3.37	15.1	919,803,800
United Parcel Service, Inc.	Chart	News	73.95	73.56	74.09	73.69	834,213	0.39	0.53%	83.99	65.5	79,388,575,524	3.86	19.1	1,073,544,000
Exxon Mobil Corporation	Chart	News	74.86	75.22	75.07	74.52	6,142,532	-0.36	-0.48%	79	56.64	428,872,943,497	6.62	11.4	5,729,000,000
The Coca-Cola Company	Chart	News	48.18	47.76	48.24	47.8	1,917,280	0.42	0.88%	49.35	40.63	112,924,091,995	2.23	21.4	2,343,796,000
Google Inc.	Chart	News	456.27	461.89	462.39	455.48	3,039,915	-5.62	-1.22%	513	331.55	139,689,530,513	9.92	46.5	306,157,100
Oracle Corporation	Chart	News	16.62	16.7	16.66	16.51	13,373,356	-0.08	-0.48%	19.75	12.25	86,128,018,769	0.7	24	5,182,191,000
Intermec Inc.	Chart	News	24.56	23.97	24.72	24.11	179,500	0.59	2.46%	33	20.5	1,527,477,376	1.15	36.8	62,193,730
MERCK AND CO INC	Chart	News	43.95	43.82	44.24	43.7	2,763,699	0.13	0.30%	46.55	32.75	95,415,583,506	2.02	21.6	2,171,003,000
Fidelity	Chart	News	36.65	36.91	36.65	36.65	0	-0.26	-0.70%	36.92	30.76	0	0	0	0
Evergreen Disciplined Value I	Chart	News	18.19	18.34	18.19	18.19	0	-0.15	-0.82%	18.37	15.59	0	0	0	0
AFBA Five Star Science & Technology A	Chart	News	14.07	14.16	14.07	14.07	0	-0.09	-0.64%	14.39	11.69	0	0	0	0

20. Return to the Portfolio and insert formulas to pull stock price data from the web query into the Portfolio as shown below.

Category	Symbol	Company Name	Intial Amount	Share Price	Shares
Blue Chip Stocks	MSFT	Microsoft	50,000	=Sheet3!D4	
Blue Chip Stocks	T	AT&T Inc.	50,000	37.01	
Blue Chip Stocks	DOW	Dow Chemical	50,000	42.14	
Blue Chip Stocks	DD	Du Pont	50,000	51.12	
Blue Chip Stocks	UPS	UPS	50,000	73.95	
Blue Chip Stocks	XOM	Exon Mobil	50,000	74.86	
Blue Chip Stocks	KO	Coca Cola	50,000	48.18	
Speculation Stocks	GOOG	Google	50,000	456.27	
Speculation Stocks	ORCL	Oracle	50,000	16.62	
Speculation Stocks	IN	Intermec	50,000	24.56	
Speculation Stocks	MRK	Merck	50,000	43.95	

21. Add formulas in the shares column by dividing the amount of each investment by the share price in order to determine the appropriate number of shares of each investment Mr. Slade should purchase to meet his investment goals. Be sure to use the round function and round to the nearest tenth.

	Category	Symbol	Company Name	Intial Amount	Share Price	Shares
17	Blue Chip Stocks	MSFT	Microsoft	50,000	28.95	=ROUND(F17
18	Blue Chip Stocks	T	AT&T Inc.	50,000	37.01	1,350
19	Blue Chip Stocks	DOW	Dow Chemical	50,000	42.14	1,190
20	Blue Chip Stocks	DD	Du Pont	50,000	51.12	980
21	Blue Chip Stocks	UPS	UPS	50,000	73.95	680
22	Blue Chip Stocks	XOM	Exon Mobil	50,000	74.86	670
23	Blue Chip Stocks	KO	Coca Cola	50,000	48.18	1,040
24						
25	Speculation Stocks	GOOG	Google	50,000	456.27	110
26	Speculation Stocks	ORCL	Oracle	50,000	16.62	3,010
27	Speculation Stocks	IN	Intermec	50,000	24.56	2,040
28	Speculation Stocks	MRK	Merck	50,000	43.95	1,140

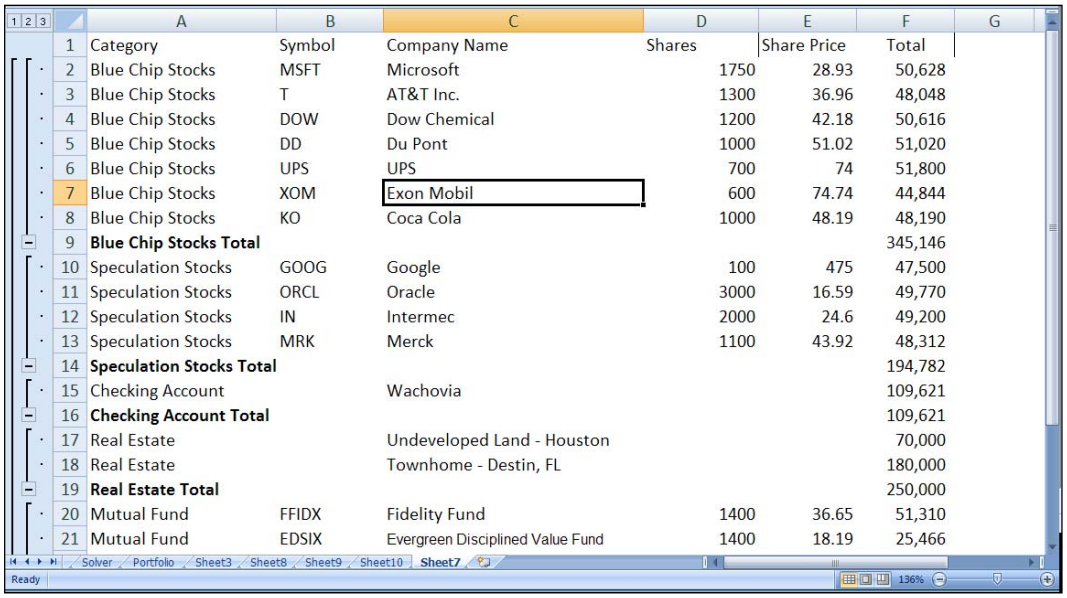
22. Once Mr. Slade has made all of the necessary investments, recreate the portfolio on a new sheet, and make the necessary adjustments to reflect the actual results of these transactions. Due to the requirements of purchasing bocks of shares, Mr. Slade will not be able to purchase the exact number of shares indicated above at the exact same price indicated above. Therefore there will be slight discrepancies. Once those transactions are completed, Mr. Slade will need a worksheet that documents the beginning point in which Mr. Slade begins to track his investments. For example, the resulting Portfolio might look like this:

	A	B	C	D	E	F	G
1	Category		Symbol	Company Name	Shares	Share Price	Shares
2	Blue Chip Stocks		MSFT	Microsoft	1750	28.95	50,663
3	Blue Chip Stocks		T	AT&T Inc.	1300	37.01	48,113
4	Blue Chip Stocks		DOW	Dow Chemical	1200	42.14	50,568
5	Blue Chip Stocks		DD	Du Pont	1000	51.12	51,120
6	Blue Chip Stocks		UPS	UPS	700	73.95	51,765
7	Blue Chip Stocks		XOM	Exon Mobil	600	74.86	44,916
8	Blue Chip Stocks		KO	Coca Cola	1000	48.18	48,180
9	Speculation Stocks		GOOG	Google	100	456.27	45,627
10	Speculation Stocks		ORCL	Oracle	3000	16.62	49,860
11	Speculation Stocks		IN	Intermec	2000	24.56	49,120
12	Speculation Stocks		MRK	Merck	1100	43.95	48,345
13	Checking Account			Wachovia			109,621
14	Real Estate			Undeveloped Land - Houston			70,000
15	Real Estate			Townhome - Destin, FL			180,000
16	Mutual Fund		FFIDX	Fidelity Fund	1400	36.65	51,310
17	Mutual Fund		EDSIX	Evergreen Disciplined Value Fund	1400	18.19	25,466
18	Mutual Fund		AFATX	Afba 5Star Science & Technology	1800	14.07	25,326
19							
20							1,000,000

23. Once created, the portfolio can be updated at any time by pressing the "Refresh Data" button. As an example, just moments after completing this portfolio, Mr. Slade's investments had grown by $1,651, as shown below. Of course changes in the real estate holdings and checking account balance will need to be input manually on a periodic basis such as every 6 months or each year.

24. Next, practice converting this data to both a table, and a PivotTable. Therefore select the top cell referencing the share price, and press F2 and then F$ to toggle on the absolute references. Use the down arrow and repeat this until all share formulas have an absolute reference. Copy the Portfolio to a new sheet, and again to yet another new sheet.

25. Select one of the portfolio examples and apply Subtotals to the Portfolio using the "Subtotal" tool from the Data Ribbon's "Outline" Chunk. This action will automatically subtotal the Portfolio by category as shown below.

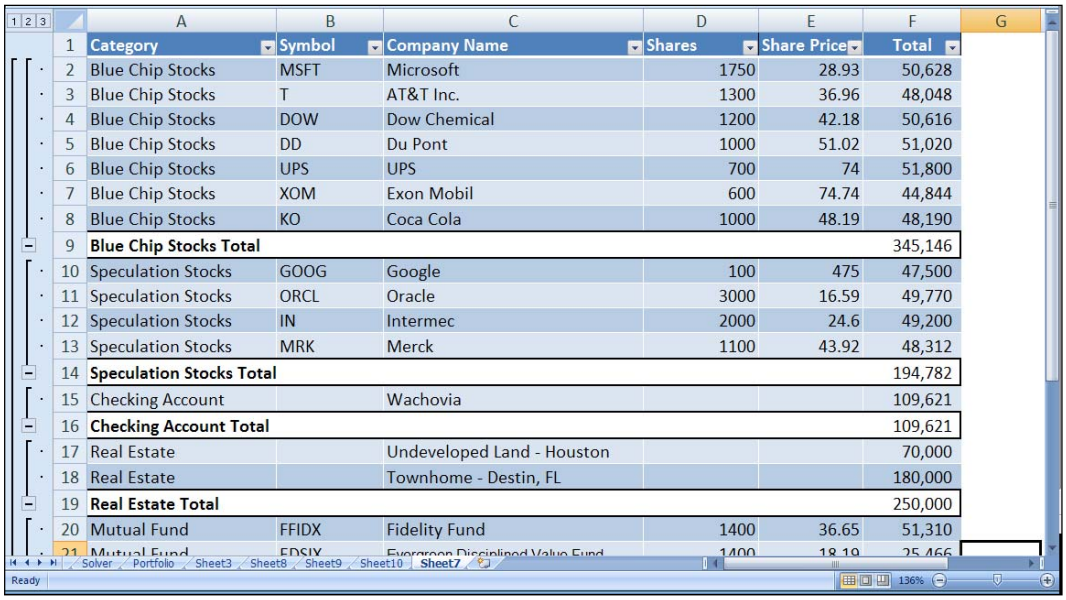


	A	B	C	D	E	F	G
1	Category	Symbol	Company Name	Shares	Share Price	Total	
2	Blue Chip Stocks	MSFT	Microsoft	1750	28.93	50,628	
3	Blue Chip Stocks	T	AT&T Inc.	1300	36.96	48,048	
4	Blue Chip Stocks	DOW	Dow Chemical	1200	42.18	50,616	
5	Blue Chip Stocks	DD	Du Pont	1000	51.02	51,020	
6	Blue Chip Stocks	UPS	UPS	700	74	51,800	
7	Blue Chip Stocks	XOM	Exon Mobil	600	74.74	44,844	
8	Blue Chip Stocks	KO	Coca Cola	1000	48.19	48,190	
9	**Blue Chip Stocks Total**					345,146	
10	Speculation Stocks	GOOG	Google	100	475	47,500	
11	Speculation Stocks	ORCL	Oracle	3000	16.59	49,770	
12	Speculation Stocks	IN	Intermec	2000	24.6	49,200	
13	Speculation Stocks	MRK	Merck	1100	43.92	48,312	
14	**Speculation Stocks Total**					194,782	
15	Checking Account		Wachovia			109,621	
16	**Checking Account Total**					109,621	
17	Real Estate		Undeveloped Land - Houston			70,000	
18	Real Estate		Townhome - Destin, FL			180,000	
19	**Real Estate Total**					250,000	
20	Mutual Fund	FFIDX	Fidelity Fund	1400	36.65	51,310	
21	Mutual Fund	EDSIX	Evergreen Disciplined Value Fund	1400	18.19	25,466	

Solver Portfolio Sheet3 Sheet8 Sheet9 Sheet10 Sheet7

Ready 136%

26. Convert the portfolio to a table using the "Table" tool from the Insert Ribbon's "Tables" Chunk. This will automatically apply formatting and drop down filters to the Portfolio. Yu change the formatting using the gallery or by applying new formats to individual rows or columns.

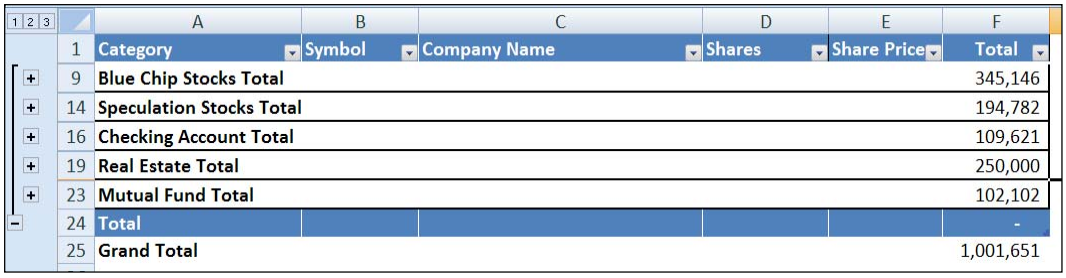


	A	B	C	D	E	F	G
1	Category	Symbol	Company Name	Shares	Share Price	Total	
2	Blue Chip Stocks	MSFT	Microsoft	1750	28.93	50,628	
3	Blue Chip Stocks	T	AT&T Inc.	1300	36.96	48,048	
4	Blue Chip Stocks	DOW	Dow Chemical	1200	42.18	50,616	
5	Blue Chip Stocks	DD	Du Pont	1000	51.02	51,020	
6	Blue Chip Stocks	UPS	UPS	700	74	51,800	
7	Blue Chip Stocks	XOM	Exon Mobil	600	74.74	44,844	
8	Blue Chip Stocks	KO	Coca Cola	1000	48.19	48,190	
9	**Blue Chip Stocks Total**					345,146	
10	Speculation Stocks	GOOG	Google	100	475	47,500	
11	Speculation Stocks	ORCL	Oracle	3000	16.59	49,770	
12	Speculation Stocks	IN	Intermec	2000	24.6	49,200	
13	Speculation Stocks	MRK	Merck	1100	43.92	48,312	
14	**Speculation Stocks Total**					194,782	
15	Checking Account		Wachovia			109,621	
16	**Checking Account Total**					109,621	
17	Real Estate		Undeveloped Land - Houston			70,000	
18	Real Estate		Townhome - Destin, FL			180,000	
19	**Real Estate Total**					250,000	
20	Mutual Fund	FFIDX	Fidelity Fund	1400	36.65	51,310	
21	Mutual Fund	FDSIX	Evergreen Disciplined Value Fund	1400	18.19	25,466	

Solver | Portfolio | Sheet3 | Sheet8 | Sheet9 | Sheet10 | Sheet7

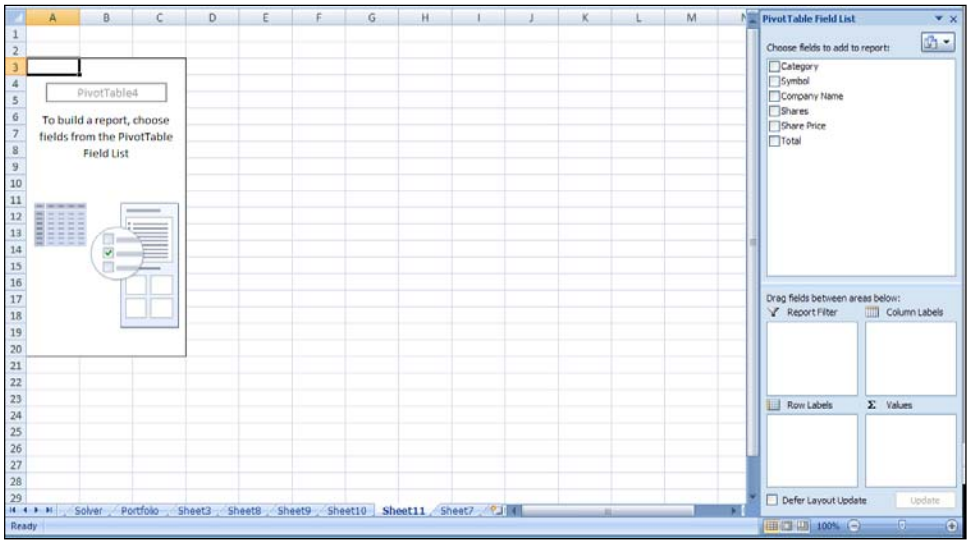
Ready 136%

27. Next click the “Outline” selection number 2 to display the collapsed version of the data, displaying subtotals and grand totals only.

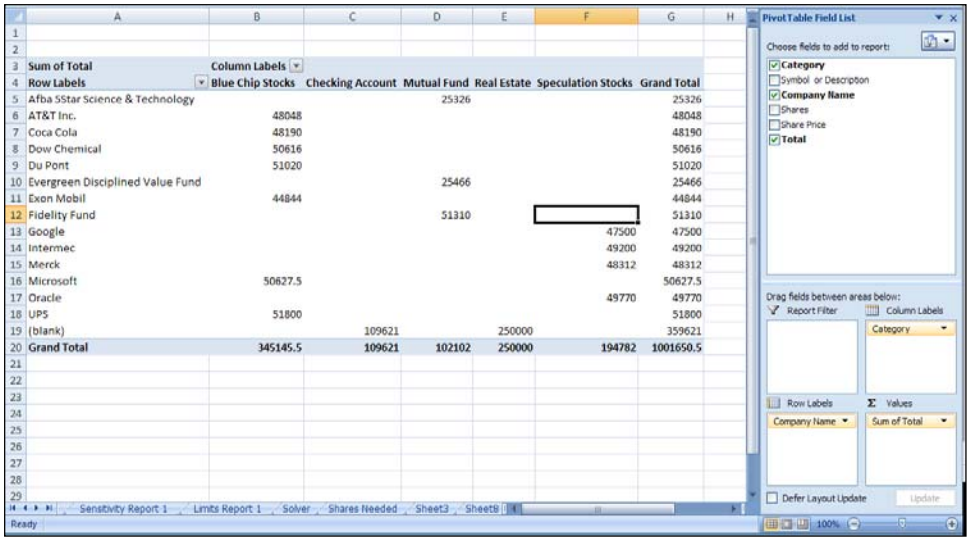


	A	B	C	D	E	F
1	Category	Symbol	Company Name	Shares	Share Price	Total
9	**Blue Chip Stocks Total**					345,146
14	**Speculation Stocks Total**					194,782
16	**Checking Account Total**					109,621
19	**Real Estate Total**					250,000
23	**Mutual Fund Total**					102,102
24	**Total**					-
25	**Grand Total**					1,001,651

28. Now select the second copy of the Portfolio, and with your cursor positioned on any cell in the table, select the “PivotTable” tool from the Insert Ribbon’s PivotTable Chunk. This action will produce a new Sheet with a Blank Pivot Pallet displayed as shown below.



29. In the Pivot Table Field List dialog box, check the “Category”, “Company Name” and “Total” column. Next drag the Category field from the Row Labels box and drop it in the Column labels box. The resulting pivot report should appear as follows:



Sum of Total	Column Labels					
Row Labels	Blue Chip Stocks	Checking Account	Mutual Fund	Real Estate	Speculation Stocks	Grand Total
Afba 5Star Science & Technology			25326			25326
AT&T Inc.	48048					48048
Coca Cola	48190					48190
Dow Chemical	50616					50616
Du Pont	51020					51020
Evergreen Disciplined Value Fund			25466			25466
Exon Mobil	44844					44844
Fidelity Fund			51310			51310
Google					47500	47500
Intermec					49200	49200
Merck					48312	48312
Microsoft	50627.5					50627.5
Oracle					49770	49770
UPS	51800					51800
(blank)		109621		250000		359621
Grand Total	345145.5	109621	102102	250000	194782	1001650.5

30. Finish by formatting the table with a “Dark” design from the “Format as Table” tool on the Home Ribbon’s Styles chunk. Also apply comma formatting.

Sum of Total	Column Labels					
Row Labels	Blue Chip Stocks	Checking Account	Mutual Fund	Real Estate	Speculation Stocks	Grand Total
Afba 5Star Science & Technology			25,326			25,326
AT&T Inc.	48,048					48,048
Coca Cola	48,190					48,190
Dow Chemical	50,616					50,616
Du Pont	51,020					51,020
Evergreen Disciplined Value Fund			25,466			25,466
Exon Mobil	44,844					44,844
Fidelity Fund			51,310			51,310
Google					47,500	47,500
Intermec					49,200	49,200
Merck					48,312	48,312
Microsoft	50,628					50,628
Oracle					49,770	49,770
UPS	51,800					51,800
(blank)		109,621		250,000		359,621
Grand Total	**345,146**	**109,621**	**102,102**	**250,000**	**194,782**	**1,001,651**

In conclusion, you have assisted Mr. Slade in planning an investment strategy which diversifies his holdings, yet maximizes earnings. Additionally, you have created a worksheet that tracks these investments. As all of the factors change, Mr. Slade can easily determine which monies, if any, need to be moved around to maintain his desired diversity. For example, assume that Mr. Slade makes an additional $200,000 in 2007, and his checking account increases accordingly. He need only insert the new checking account balance into solver, along with any other known adjustments such as changes in earnings, and rerun solver to obtain a new mix, which can be compared to the current investment mix to determine which investments need to be adjusted.

Financial Statements Projections with Tax Calculations

The Situation - Your Company (PaperCut, Inc.) is in the process of preparing projections for the coming year, however the current projections do not include estimated tax payments. Your job is to incorporate tax projections into the current projections.

The Big Picture - Your Goals Are:

1. Edit PaperCut's projections to include tax estimates.

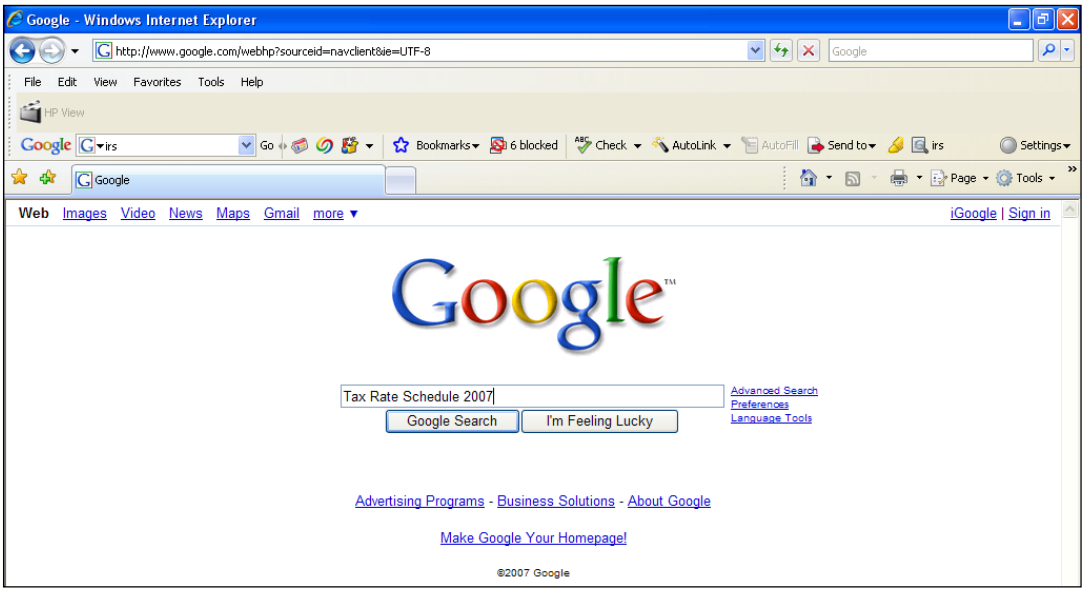
This Case Study Covers the following Excel Features and Concepts:

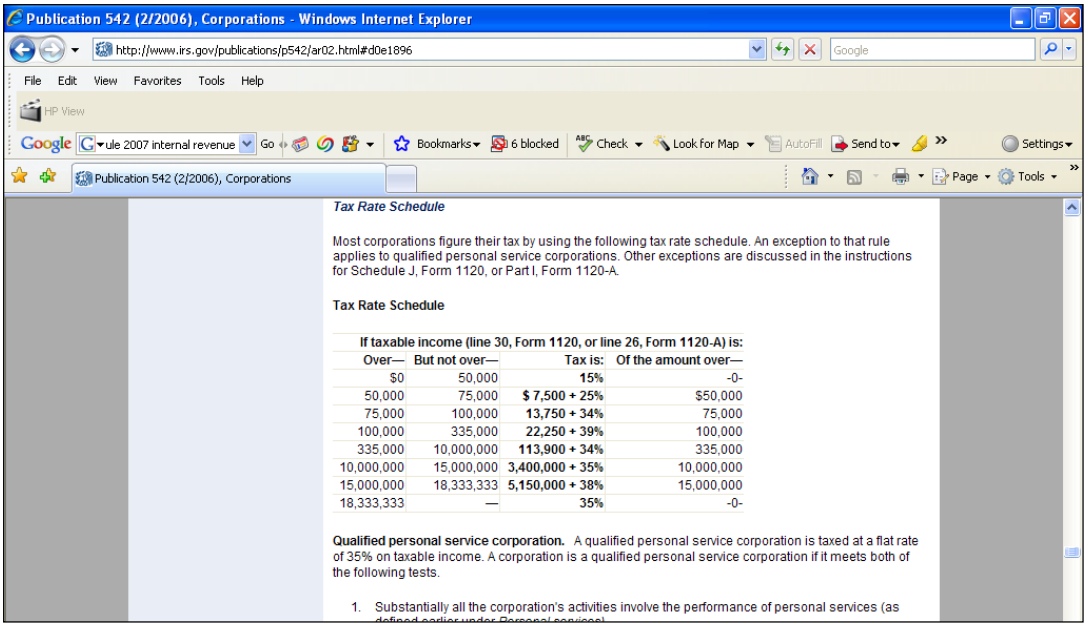
1. Copying Web Data to Excel
2. Parsing Data
3. =FIND
4. =MID
5. =VALUE
6. =VLOOKUP
7. Absolute vs Relative References
8. Worksheet Design
9. 3-D Worksheets

The =HLOOKUP & =VLOOKUP Functions

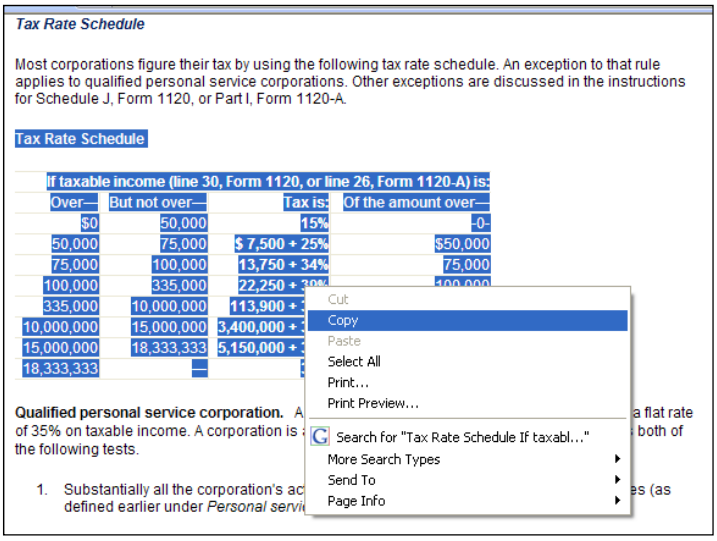
HLOOKUP and VLOOKUP refer to looking up data in a table horizontally or vertically. For example you perform such a lookup whenever you refer to an IRS tax rate schedule. CPAs and tax practitioners frequently find the need to reference tax rate schedules in their spreadsheets, but they don't know exactly how to do that. The first step is to obtain a rate schedule and type that rate schedule into your spreadsheet as shown in the left side of the spreadsheet below. Our case study begins by looking up the necessary tax rate schedule on the IRS web site.

1. Search the Internet for the IRS corporate rate schedule.

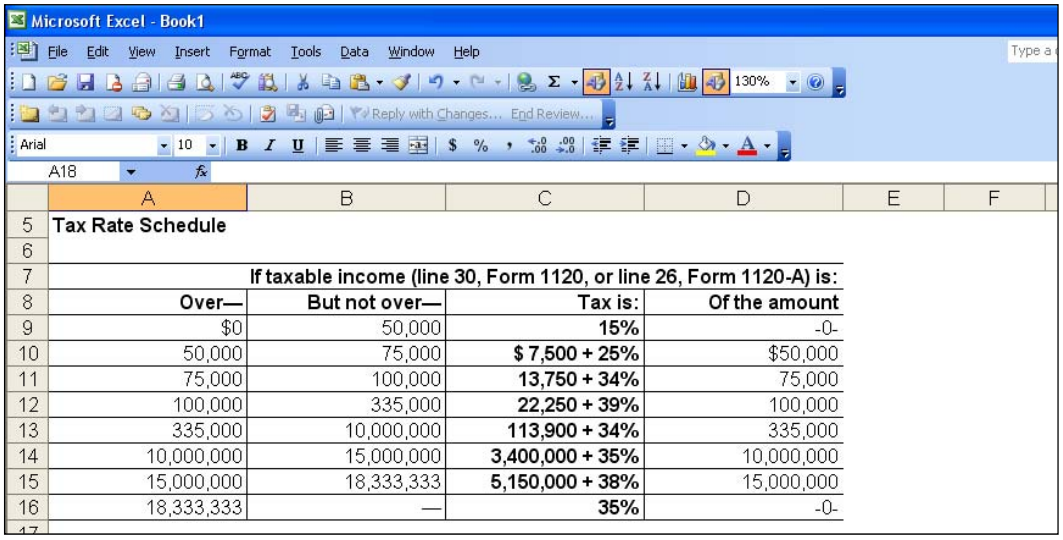




2. Copy the tax rate schedule from the IRS web site.

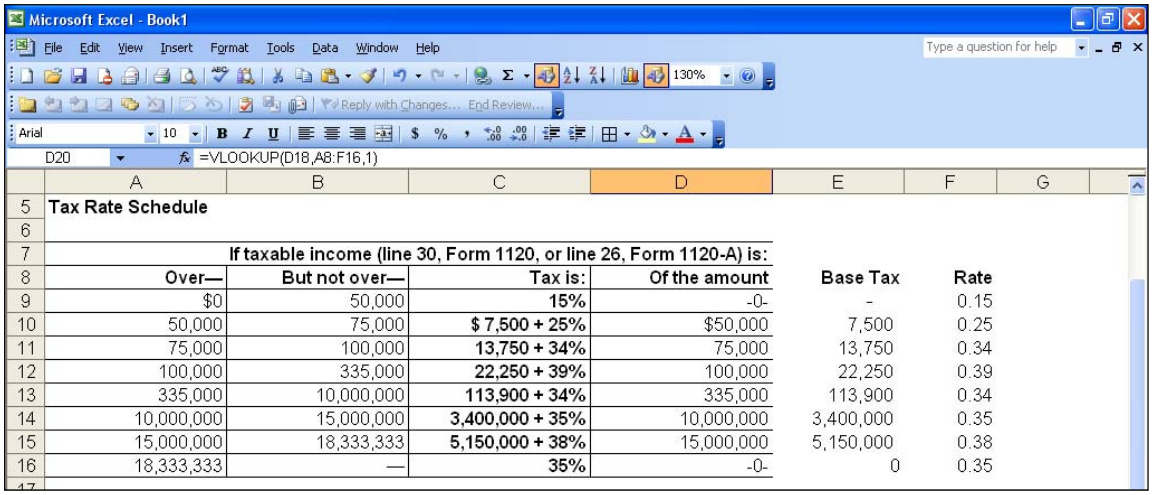


3. Paste the results into Excel.



	A	B	C	D	E	F
5	**Tax Rate Schedule**					
6						
7			**If taxable income (line 30, Form 1120, or line 26, Form 1120-A) is:**			
8	**Over—**	**But not over—**	**Tax is:**	**Of the amount**		
9	$0	50,000	**15%**	-0-		
10	50,000	75,000	**$ 7,500 + 25%**	$50,000		
11	75,000	100,000	**13,750 + 34%**	75,000		
12	100,000	335,000	**22,250 + 39%**	100,000		
13	335,000	10,000,000	**113,900 + 34%**	335,000		
14	10,000,000	15,000,000	**3,400,000 + 35%**	10,000,000		
15	15,000,000	18,333,333	**5,150,000 + 38%**	15,000,000		
16	18,333,333	—	**35%**	-0-		

4. Create two new columns and enter the income threshold and tax rate information from column 3 as values in these new columns. Given the amount of line items, you can simply retype these numbers, or if you prefer use formulas to convert these numbers.

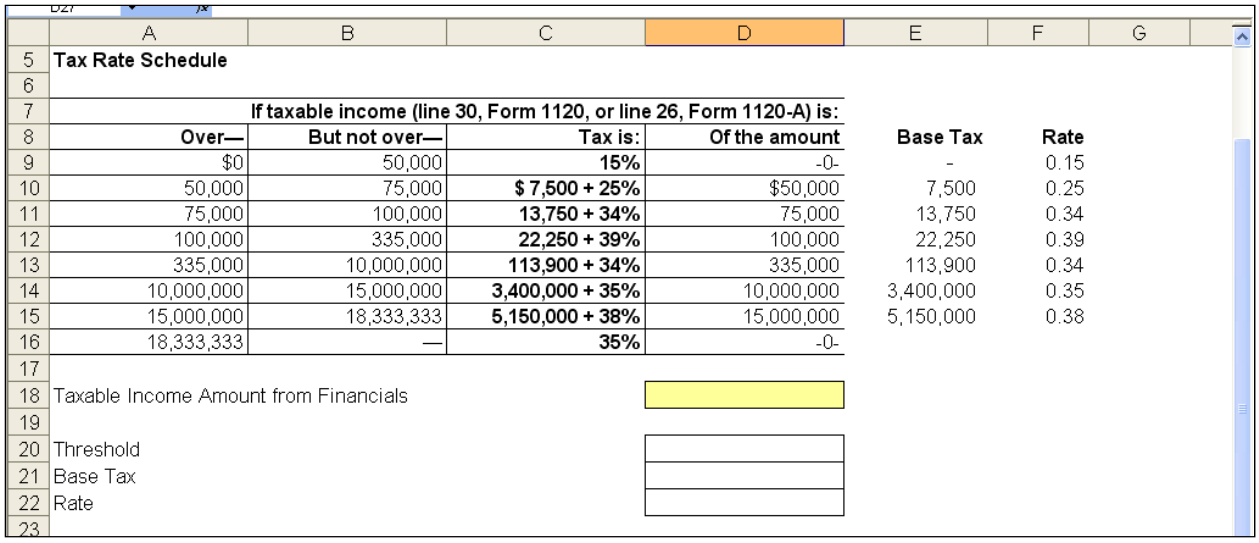


	A	B	C	D	E	F	G
5	**Tax Rate Schedule**						
6							
7			**If taxable income (line 30, Form 1120, or line 26, Form 1120-A) is:**				
8	**Over—**	**But not over—**	**Tax is:**	**Of the amount**	**Base Tax**	**Rate**	
9	$0	50,000	**15%**	-0-	-	0.15	
10	50,000	75,000	**$ 7,500 + 25%**	$50,000	7,500	0.25	
11	75,000	100,000	**13,750 + 34%**	75,000	13,750	0.34	
12	100,000	335,000	**22,250 + 39%**	100,000	22,250	0.39	
13	335,000	10,000,000	**113,900 + 34%**	335,000	113,900	0.34	
14	10,000,000	15,000,000	**3,400,000 + 35%**	10,000,000	3,400,000	0.35	
15	15,000,000	18,333,333	**5,150,000 + 38%**	15,000,000	5,150,000	0.38	
16	18,333,333	—	**35%**	-0-	0	0.35	

The following screen shows the formulas used to convert the text in column 3 into values in columns 5 and 6.

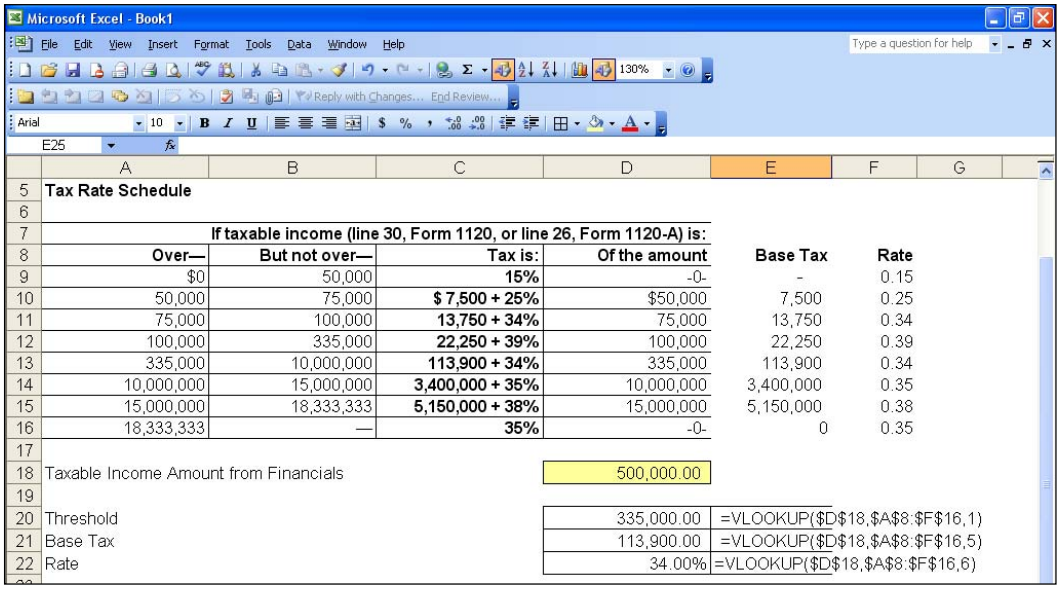
), Form 1120, or line 26, Form 1120-A) is:			
Of the amount over—		**Base Tax**	**Rate**
-0-	0		=VALUE(C9)
000	=VALUE(MID(C10,2,7))		=VALUE(MID(C10,FIND("+",C10)+2,3))
000	=VALUE(MID(C11,1,7))		=VALUE(MID(C11,FIND("+",C11)+2,3))
0000	=VALUE(MID(C12,1,7))		=VALUE(MID(C12,FIND("+",C12)+2,3))
5000	=VALUE(MID(C13,1,7))		=VALUE(MID(C13,FIND("+",C13)+2,3))
000000	=VALUE(MID(C14,1,10))		=VALUE(MID(C14,FIND("+",C14)+2,3))
000000	=VALUE(MID(C15,1,10))		=VALUE(MID(C15,FIND("+",C15)+2,3))
-0-	0		0.35

5. Add cell labels and use borders to layout the remainder of the worksheet.



	A	B	C	D	E	F	G
5	**Tax Rate Schedule**						
6							
7			**If taxable income (line 30, Form 1120, or line 26, Form 1120-A) is:**				
8	**Over—**	**But not over—**	**Tax is:**	**Of the amount**	**Base Tax**	**Rate**	
9	$0	50,000	**15%**	-0-	-	0.15	
10	50,000	75,000	**$ 7,500 + 25%**	$50,000	7,500	0.25	
11	75,000	100,000	**13,750 + 34%**	75,000	13,750	0.34	
12	100,000	335,000	**22,250 + 39%**	100,000	22,250	0.39	
13	335,000	10,000,000	**113,900 + 34%**	335,000	113,900	0.34	
14	10,000,000	15,000,000	**3,400,000 + 35%**	10,000,000	3,400,000	0.35	
15	15,000,000	18,333,333	**5,150,000 + 38%**	15,000,000	5,150,000	0.38	
16	18,333,333	—	**35%**	-0-			
17							
18	Taxable Income Amount from Financials						
19							
20	Threshold						
21	Base Tax						
22	Rate						
23							

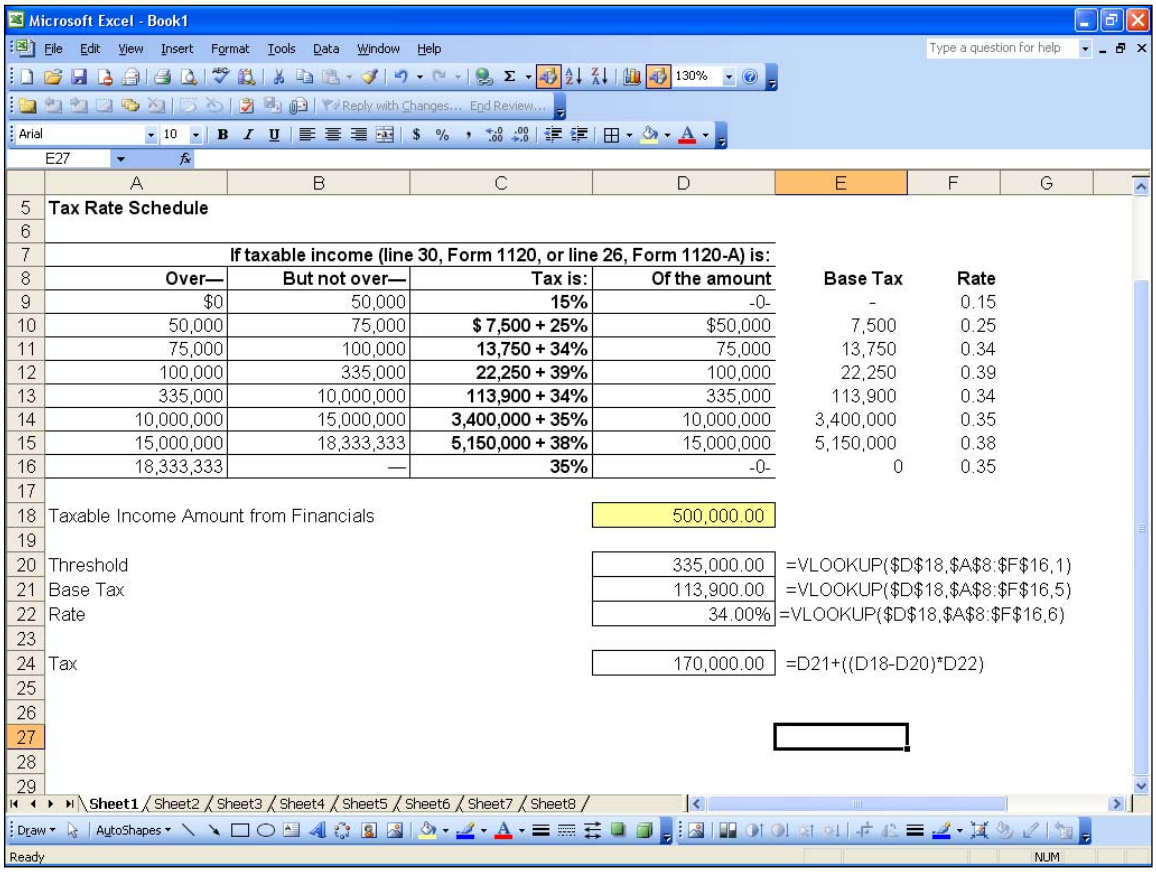
6. Add VLOOKUP functions to extract the necessary information from the tax rate schedule.

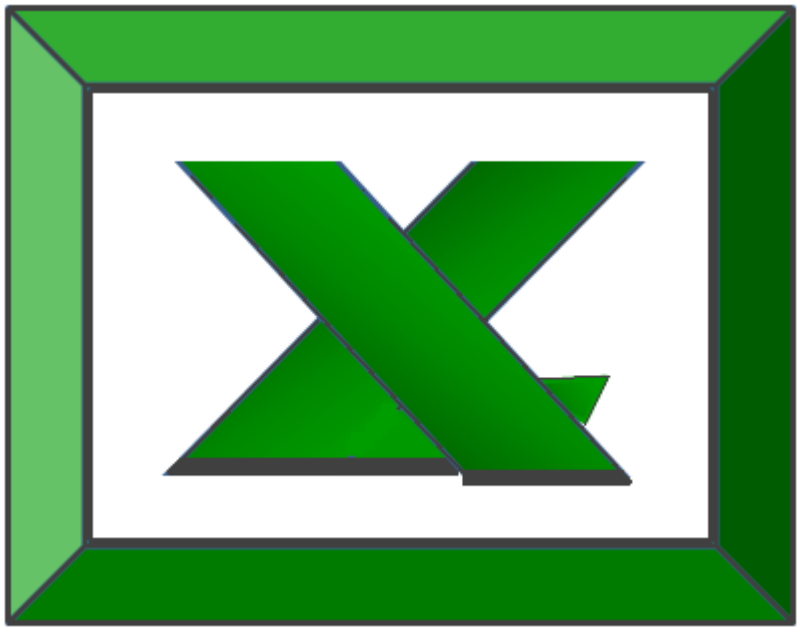


Microsoft Excel - Book1

	A	B	C	D	E	F	G
5	**Tax Rate Schedule**						
6							
7			**If taxable income (line 30, Form 1120, or line 26, Form 1120-A) is:**				
8	**Over—**	**But not over—**	**Tax is:**	**Of the amount**	**Base Tax**	**Rate**	
9	$0	50,000	**15%**	-0-	-	0.15	
10	50,000	75,000	**$ 7,500 + 25%**	$50,000	7,500	0.25	
11	75,000	100,000	**13,750 + 34%**	75,000	13,750	0.34	
12	100,000	335,000	**22,250 + 39%**	100,000	22,250	0.39	
13	335,000	10,000,000	**113,900 + 34%**	335,000	113,900	0.34	
14	10,000,000	15,000,000	**3,400,000 + 35%**	10,000,000	3,400,000	0.35	
15	15,000,000	18,333,333	**5,150,000 + 38%**	15,000,000	5,150,000	0.38	
16	18,333,333	—	**35%**	-0-	0	0.35	
17							
18	Taxable Income Amount from Financials			500,000.00			
19							
20	Threshold			335,000.00	=VLOOKUP($D$18,$A$8:$F$16,1)		
21	Base Tax			113,900.00	=VLOOKUP($D$18,$A$8:$F$16,5)		
22	Rate			34.00%	=VLOOKUP($D$18,$A$8:$F$16,6)		

7. Complete the worksheet. Reference the resulting tax amount to the appropriate place in your financial projections.


Microsoft Excel - Book1
File Edit View Insert Format Tools Data Window Help
Type a question for help
130%
Reply with Changes... End Review...
Arial 10
E27
Tax Rate Schedule
If taxable income (line 30, Form 1120, or line 26, Form 1120-A) is:
Over— But not over— Tax is: Of the amount Base Tax Rate
$0 50,000 15% -0- - 0.15
50,000 75,000 $ 7,500 + 25% $50,000 7,500 0.25
75,000 100,000 13,750 + 34% 75,000 13,750 0.34
100,000 335,000 22,250 + 39% 100,000 22,250 0.39
335,000 10,000,000 113,900 + 34% 335,000 113,900 0.34
10,000,000 15,000,000 3,400,000 + 35% 10,000,000 3,400,000 0.35
15,000,000 18,333,333 5,150,000 + 38% 15,000,000 5,150,000 0.38
18,333,333 — 35% -0- 0 0.35
Taxable Income Amount from Financials 500,000.00
Threshold 335,000.00 =VLOOKUP($D$18,$A$8:$F$16,1)
Base Tax 113,900.00 =VLOOKUP($D$18,$A$8:$F$16,5)
Rate 34.00% =VLOOKUP($D$18,$A$8:$F$16,6)
Tax 170,000.00 =D21+((D18-D20)*D22)
Sheet1 Sheet2 Sheet3 Sheet4 Sheet5 Sheet6 Sheet7 Sheet8
Draw AutoShapes
Ready
NUM



Chapter 11

Excel Fundamentals

Excel Formulas – Quick Review

Writing formulas is the cornerstone of Excel, however there are many facets to writing, copying and editing formulas – and to make sure that you are up to speed, here is a very quick review of the key points to writing formulas in Excel.

1. Don't confuse formulas with functions – functions will be covered after formulas.
2. Simple Formulas - adding, subtracting, multiplying, and dividing numbers.
3. Simple Formulas - adding, subtracting, multiplying, and dividing cell references.
4. Writing Formulas – always start with an equals sign.
5. Writing Formulas by typing cell references.
6. Writing Formulas by using "mouse point and click" to refer to cell references.
7. Writing Formulas by pointing to cells on other worksheets.
8. Writing Formulas by pointing to cells in other Excel workbooks (File linking).
9. Embedded assumptions versus organizing assumptions.
10. Copying Formulas – copying & pasting one cell, multiple cells, a column, or a row
11. Copying Formulas Relatively – As a default, formula references change relative to the row or column to which they are copied.
12. Copying Formulas Absolutely – by using $'s embedded in formula cell references, formulas can be copied absolutely.
13. Copying Formulas with Mixed References – by using some $'s embedded in formula cell references, formulas can be copied with mixed relative and absolute results.
14. Inserting absolute references in formulas using the F4 key.
15. Referring to a named range in a formula.
16. Editing Formulas – "Formula Bar" editing versus "In-Cell" editing.
17. Range Finder – Color coded cell references displayed when editing formulas.
18. Formula Auditing using the "CTRL ~" option or click "Show Formulas".
19. Formula Error - ### - indicates a column width problem.
20. Formula Error - #REF - indicates a cell reference problem.
21. Formula Error - #NAME indicates a formula spelling or syntax problem.
22. Formula Error - #DIV/0 indicates a divide by zero problem.
23. Formula Error – You can locate errors by selecting GoTo (F5 key), Special and tick the Formulas, Errors checkbox.
24. Replace a formula with the result - Press "F2" (to edit), "F9" (to calc), and "ENTER").
25. Evaluating a formula.

Download an example Excel worksheet from the web which demonstrates each of these formula concepts at the following web site address:
www.exceladvisor.net/formulas.htm

Excel Functions

Functions are basically prewritten formulas, but you must follow the proper syntax to use them. There are a total of 348 Functions built into Excel, categorized as follows:

	Function Categories	Number of Functions Per Category	Carlton's List of Best Functions for CPAs
1	Add-in	5	1
2	Cube	7	4
3	Database	12	7
4	Date and time	20	8
5	Engineering	39	0
6	Financial	53	8
7	Information	7	3
8	IS	11	2
9	Logical	7	6
10	Lookup/Reference	17	7
11	Math/Trig	60	8
12	Statistical	83	8
13	Text	27	15
	Total Functions	348	77

Many of these functions represent powerful tools for the CPA while others represent tools that have limited CPA application. For example most CPAs have little applications for CPAs for trigonometry functions that calculate logarithms, seines, or cosines, and perhaps even less opportunities to use engineering functions such as gammas, hypergeometric distribution, or coefficients of complex numbers. Based on my years of using Excel in a CPA environment, I find that the following 77 functions are most applicable to CPAs:

Add-in:	
=GETPIVOTDATA	Returns data stored in a PivotTable report
Database:	
=DCOUNT	Counts the cells that contain numbers in a database
=DCOUNTA	Counts nonblank cells in a database
=DGET	Extracts a single database record that matches the specified criteria
=DSUM	Adds numbers in the database that match the criteria
Date and time:	
=DATE	Returns the serial number of a particular date
=DATEVALUE	Converts a date in the form of text to a serial number
=DAY	Converts a serial number to a day of the month
=TODAY	Returns the serial number of today's date
=WEEKDAY	Converts a serial number to a day of the week
=WEEKNUM	Converts a serial number to week number 1 thru 52
=YEAR	Converts a serial number to a year
Financial:	

=FV	Returns the future value of an investment
=INTRATE	Returns the interest rate for a fully invested security
=IPMT	Returns the interest payment for an investment for a given period
=IRR	Returns the internal rate of return for a series of cash flows
=NPV	Returns the net present value of an investment based on a series of periodic cash flows and a discount rate
=PMT	Returns the periodic payment for an annuity
=PV	Returns the present value of an investment
=RATE	Returns the interest rate per period of an annuity
Information:	
=CELL	Returns information about the formatting, location, or contents of a cell
=INFO	Returns information about the current operating environment
IS :	
=ISBLANK	Returns TRUE if the value is blank
=ISERR	Returns TRUE if the value is any error value except #N/A
Logical:	
=AND	Returns TRUE if all of its arguments are TRUE
=FALSE	Returns the logical value FALSE
=IF	Specifies a logical test to perform
=IFERROR	Returns a value you specify if error; otherwise, returns the result
=NOT	Reverses the logic of its argument
=OR	Returns TRUE if any argument is TRUE
Lookup/Reference	
=ADDRESS	Returns a reference as text to a single cell in a worksheet
=CHOOSE	Chooses a value from a list of values
=HLOOKUP	Looks in the top row of an array and returns the value of the indicated cell
=HYPERLINK	Creates link to open a document stored on your computer or the Internet
=LOOKUP	Looks up values in a vector or array
=TRANSPOSE	Returns the transpose of an array
=VLOOKUP	Looks in the first column of an array and moves across the row to return the value of a cell
Math/Trigonometry	
=RAND	Returns a random number between 0 and 1
=RANDBETWEEN	Returns a random number between the numbers you specify
=ROUND	Rounds a number to a specified number of digits
=ROUNDDOWN	Rounds a number down, toward zero
=ROUNDUP	Rounds a number up, away from zero
=SUBTOTAL	Returns a subtotal in a list or database
=SUM	Adds its arguments
=SUMIF	Adds the cells specified by a given criteria
Text:	
=CLEAN	Removes all nonprintable characters from text
=CONCATENATE	Joins several text items into one text item

=FIND,	Finds one text value within another (case-sensitive)
=LEFT,	Returns the leftmost characters from a text value
=LEN,	Returns the number of characters in a text string
=LOWER	Converts text to lowercase
=MID,	Returns specific characters from a text string starting where you specify
=PROPER	Capitalizes the first letter in each word of a text value
=REPLACE,	Replaces characters within text
=RIGHT,	Returns the rightmost characters from a text value
=SUBSTITUTE	Substitutes new text for old text in a text string
=TEXT	Formats a number and converts it to text
=TRIM	Removes spaces from text
=UPPER	Converts text to uppercase
=VALUE	Converts a text argument to a number
Statistical:	
=AVERAGE	Returns the average of its arguments
=COUNT	Counts how many numbers are in the list of arguments
=COUNTA	Counts how many values are in the list of arguments
=COUNTBLANK	Counts the number of blank cells within a range
=COUNTIF	Counts the number of cells within a range that meet the given criteria
=MAX	Returns the maximum value in a list of arguments
=MEDIAN	Returns the median of the given numbers
=MIN	Returns the minimum value in a list of arguments

Functions can save time and promote accuracy. Best of all, they eliminate the need for CPAs to create complex formulas because these functions do most of the work for you. To fully utilize functions in Excel, a user should study the various functions listed above and be aware of the following facets regarding functions:

1. The Insert Function Tool
2. Formula AutoComplete, Syntax Reminder, Insert Function options
3. Insert Function – Help
4. The AutoSum Function Tool
5. Demonstration of the following selected functions:

Financial	Logical	Text	Date/Time	Lookup	Math	More
=PMT	=IF	=LEFT	=TODAY	=VLOOKUP	=ROUND	=COUNT
	=AND	=MID	=NOW	=HLOOKUP	=SUBTOTAL	=CELL
	=OR	=RIGHT	=MONTH	=CHOOSE	=SUMIF	=INFO
		=FIND	=YEAR		=RAND	
		=LEN	=DAY		=RANDBETWEEN	
		=SUBSTITUTE	=WEEKDAY			
		=CONCANTENATE				
		=VALUE				

Download an example Excel worksheet from the web which demonstrates each of these function concepts at the following web site address:

www.exceladvisor.net/functions.htm

Formatting:

Formulas and Functions represent the power Excel has to offer, but your final product must be neat, readable, and well-organized. Excel's built-in formatting tools are designed to help you produce financial reports and data that are of presentation quality. The key formatting concepts that CPA's should be aware of are as follows:

1. Number Formats – Controlling commas, decimals, currency symbols, and negatives.
2. Date Formats – Controlling days, months, years, seconds, hours and minute.
3. Alignment - Left, Middle, Right, Top, Middle, & Bottom.
4. Alignment – Text Wrapping.
5. Alignment – Text Orientation.
6. Alignment – Text Shrink to Fit.
7. Alignment – Text Direction.
8. Fonts - Font Size, Bold, Italics, Color.
9. Fonts – Strikethroughs, Superscripts & Subscripts.
10. Fonts – In-Cell Formatting Character-by-Character.
11. Fonts – Underlines & Double Underlines.
12. Cells – Borders, Colors & Line Styles.
13. Cells – Fill Colors & Fill Effects.
14. Cells – Merging Cells.
15. Cells - Fill Color, Pattern, Effect.
16. Conditional Formatting – Highlighting with Colors.
17. Conditional Formatting – Top & Bottom Formatting.
18. Conditional Formatting – Data Bars.
19. Conditional Formatting – Traffic Lights.
20. Column Width and Row Height – Changing one row or column.
21. Column Width and Row Height – Changing multiple rows or columns.
22. Column Width and Row Height – Auto adjusting row height and columns widths.
23. Styles – Using Excel's Default Styles.
24. Styles – Creating Custom Styles.
25. Tables – Table Formatting.

Download an example Excel worksheet from the web which demonstrates each of these formatting concepts at the following web site address:
www.exceladvisor.net/formetting.htm

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J. Carlton Collins, CPA is a Certified Public Accountant with experience in technology, tax, auditing, accounting systems, financial reporting, and bond financing. He is an author, lecturer, and technology & accounting systems consultant. He has published more than two dozen books, two hundred articles, and thousands of web pages. As a public speaker, Mr. Collins has delivered more than 2,000 lectures in 44 states and 5 countries addressing more than 500,000 business professionals, including numerous keynote lectures at national and international conferences. Key awards include: "AICPA Lifetime Achievement Award", "Tom Radcliffe Outstanding Discussion Leader Award", "GSCPA Outstanding Discussion Leader Award", and "Accounting Technologies' Top Ten CPA Technologists Award". As a consultant, Mr. Collins has assisted 275+ large and small companies with the selection and implementation of accounting systems. Mr. Collins has a Bachelors degree in Accounting from the University of Georgia, is a 26 year member of the AICPA and the Georgia Society of CPAs, and is also a licensed realtor.

At the University of Georgia Mr. Collins was elected President of the Phi Eta Sigma Honor Society, was initiated into the BIFTAD Honor Society, was a member of Alpha Tau Omega fraternity, and served three years in the Judicial Defender/Advocate program. At Glynn Academy High School Mr. Collins was Senior Class President, Class Valedictorian, and received a principle nomination to Annapolis Naval Academy. Mr. Collins has been married for 25 years and has two children. He devotes his leisure time to family, travel, tennis, fishing, snow skiing, and riding motorcycles (dirt and street). Mr. Collins is president of his home owners association, participates in the Gwinnett Clean and Beautiful program, and volunteers for Cooperative Ministries food drive.

Selected Positions, Awards & Accomplishments:

1. 2008 and 2009 Chairman of the Southeast Accounting Show - the south's largest CPA event.
2. Recipient of the 2008 Tom Radcliff Outstanding Discussion Leader Award.
3. Named “Top Ten CPA Technologists” by Accounting Technologies Magazine; Named “Top 100 Most Influential CPAs ” by Accounting Technologies Magazine in multiple years.
4. Has personally delivered over 1,500 technology lectures around the world.
5. Has published 80+ pages of accounting software articles in the Journal of Accountancy.
6. Recipient of the AICPA Lifetime Technical Contribution to the CPA Profession Award.
7. Recipient of the Outstanding Discussion Leader Award from the Georgia Society of CPAs.
8. Lead author for PPC's Guide to Installing Microcomputer Accounting Systems.
9. Has installed accounting systems for more than 200 companies.
10. Past Chairperson of the AICPA Technology Conference.
11. Has delivered keynote and session lectures at dozens of accounting software conferences including seven Microsoft Partner Conferences, five Sage Conferences, and multiple conferences for Epicor, Open Systems, Exact Software, Sage ACCPAC ERP, Dynamics.NAV, Dynamics. AX, SouthWare, Axapta .
12. Has provided consulting services to many computer companies (including Compaq, IBM, Microsoft, Apple, Novell, Peachtree, Epicor, Sage Software, Exact, ACCPAC, Intuit, Peachtree, Great Plains, and others).

As an auditor Mr. Collins has audited businesses in the areas of health care, construction, distribution, automobile dealerships, insurance, manufacturing, and general business. Mr. Collins' tax experience includes corporate, individual, partnership, fiduciary, and estate tax planning work. In the area of finance, Mr. Collins has prepared feasibility studies and financial forecasts for nearly 300 projects seeking more than $3 billion in startup capital, including field work for 80 of those projects. Mr. Collins is familiar with bond issues, Medicare and Medicaid reimbursement, and conventional financing matters. As a consultant, Mr. Collins worked with the entire Microsoft Excel development team contributing more than 500 pages of design improvements - many of which are found in Excel today.

CPE Course Evaluation Form

(In accordance with State Board guidelines, this form is retained as a permenant record of your attendance)

COURSE TITLE: _____ DATE: _____

NAME: _____

COMPANY: _____

ADDRESS : _____

CITY, STATE, ZIP: _____

TELEPHONE: _____ E-MAIL: _____

Instructor's Name: **J. Carlton Collins**

	Excellent= 5	Very Good=4	Average=3	Fair=2	Poor=1
1. The Discussion Leader's knowledge of the subject matter was:	⑤	④	③	②	①
2. The Discussion Leader's presentation skills were:	⑤	④	③	②	①
3. The learning objectives were met	⑤	④	③	②	①
4. The course materials were valuable and contributed to learning	⑤	④	③	②	①
5. The course content was relevant	⑤	④	③	②	①
6. Time allocations were appropriate	⑤	④	③	②	①
7. Please rate the quality of the facilities	⑤	④	③	②	①
8. Were prerequisite requirements appropriate	⑤	④	③	②	①
9. Please rate the effectiveness of the audio / visual systems	⑤	④	③	②	①

COMMENTS

My Area is:
- ☐ Public Practice
- ☐ Industry
- ☐ Government
- ☐ Education
- ☐ Other:

My Work Experience is:
- ☐ None
- ☐ 0-5 years
- ☐ 6-10 years
- ☐ 11-20 years
- ☐ More than 20 years

My Industry is:
- ☐ Finance
- ☐ Manufacturing
- ☐ Retail
- ☐ Services
- ☐ Other:

The Size of my Company is:
- ☐ 5 or less employees
- ☐ 6 to 25 employees
- ☐ 26 to 100 employees
- ☐ 101 to 500 employees
- ☐ 501 or more employees

My Position is:
- ☐ Owner or Partner
- ☐ Manager/CFO
- ☐ Supervisor
- ☐ Senior or Staff
- ☐ Administrative
- ☐ Other

My Reason for Attending:
- ☐ Course Reputation
- ☐ Instructor
- ☐ Location
- ☐ Price
- ☐ Subject
- ☐ Other:

I heard about this course:
- ☐ Course Brochure
- ☐ Newsletter Ad
- ☐ Telemarketing Call
- ☐ Web Site
- ☐ Word of mouth
- ☐ Other:

My Computer Experience is:
- ☐ None
- ☐ Very Little
- ☐ Moderate
- ☐ Substantial
- ☐ Excellent

I Use the Internet:
- ☐ Never
- ☐ A Little Bit
- ☐ Moderately
- ☐ Daily
- ☐ All the Time
- ☐ Other :

My Primary Computer is:
- ☐ New
- ☐ 1 year old
- ☐ 2 years old
- ☐ 3 years old
- ☐ 4 years old
- ☐ 5 years old

My Opinion of Computers:
- ☐ Can't live without them
- ☐ They are very useful
- ☐ Somewhat useful
- ☐ Occasionally useful
- ☐ More trouble than worth
- ☐ I hate them

I get my CPE from:
- ☐ CPA Society Seminars
- ☐ Other Seminars
- ☐ Self Study Courses
- ☐ Online CPE web sites
- ☐ Conferences
- ☐ Other:

