ASA Research

Microsoft Excel Hands On

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Excel Hands On

Course Information

Learning Objectives	To increase the productivity of accountants and CPAs using Excel's best functions & commands hands on
Course Level	Intermediate
Pre-Requisites	Good Familiarity with Microsoft Excel, must bring laptop computer pre-loaded with Excel
Advanced Preparation	None
Presentation Method	Live lecture using full color projection systems with hands on practice & course materials
Recommended CPE Credit	8 hours
Handouts	Templates, checklists, web examples, manual
Instructors	J. Carlton Collins, CPA

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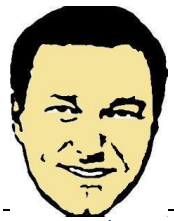

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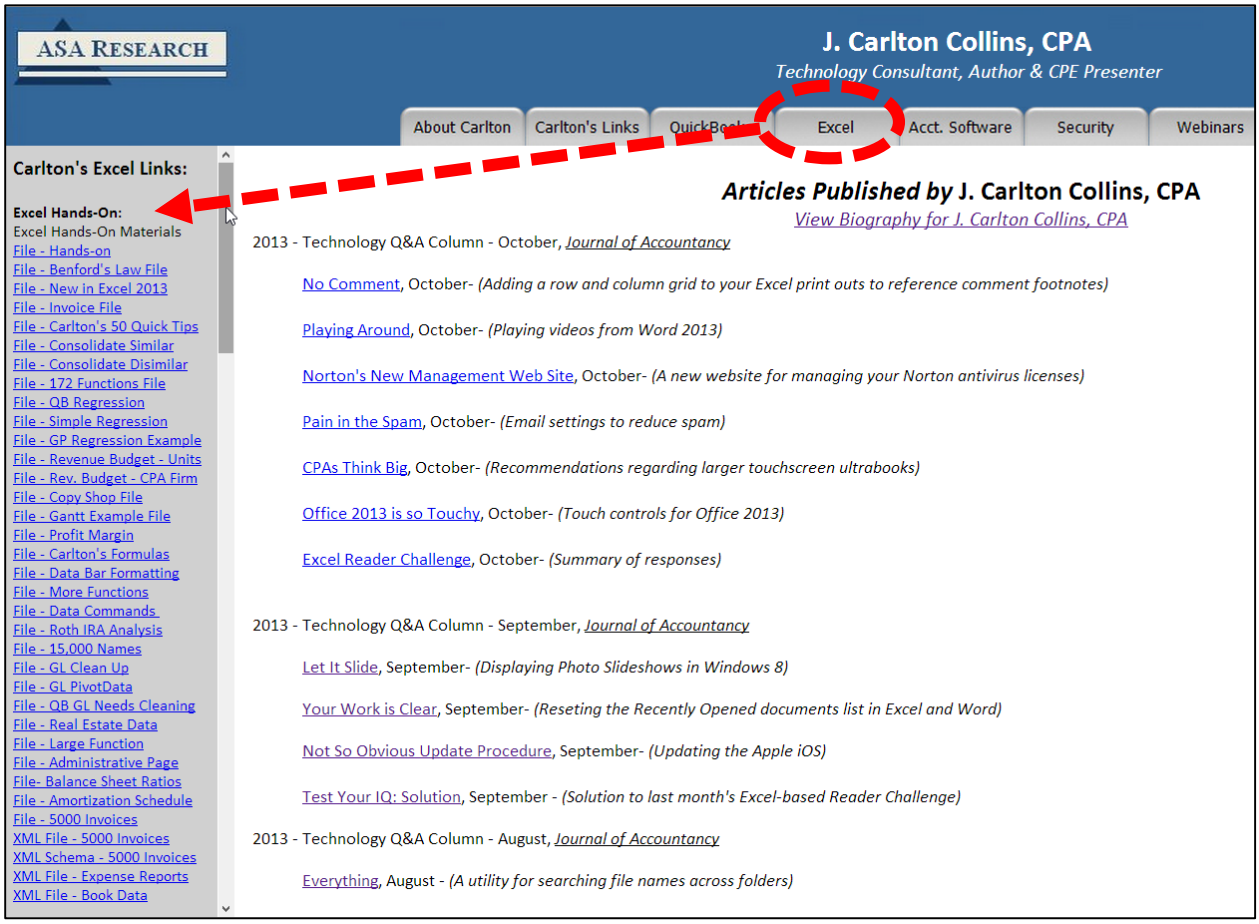
Files used in this Course

The files used in today's course are available for download at www.carltoncollins.com, and then click the Excel tab as pictured below.



These files are all saved in the .XLSX format, if you are using Excel 2003, then try to open one of the files, and when the error message appears, click the link to install the free excel conversion tool. Thereafter you will be able to open all of these files, even in Excel 2003.

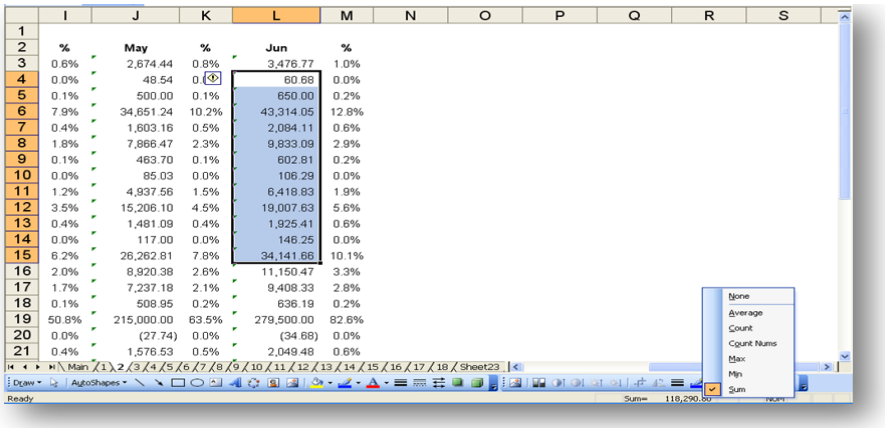
Chapter 1

Excel Essentials for CPAs
Hands On Practice

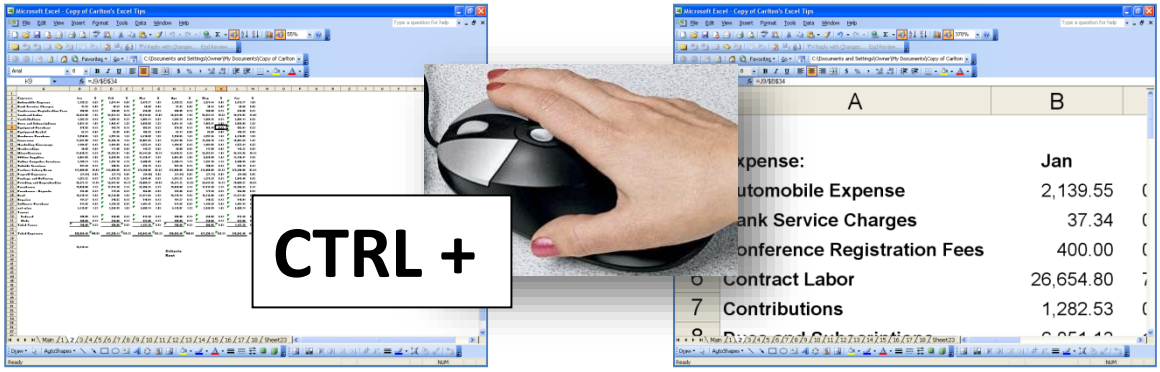
Hands on Practice – Using Excel

These materials are intended to be used in conjunction with the Excel data files that are supplied with this course. These files can also be downloaded from the following web site address: www.CarltonCollins.com – click the Excel Tab.

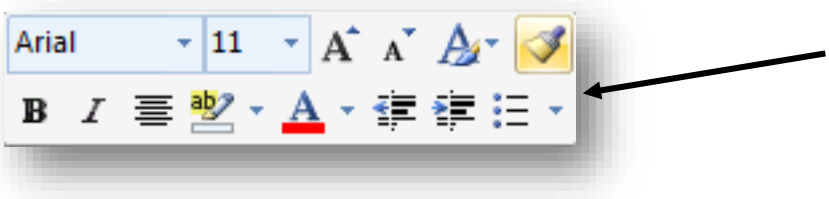
1. **Right Click Status Bar** - *(View sums, averages, mins, maxes immediately)* – Sometimes you just want to make a quick check of the data you've entered to make sure that the amounts enter foot properly or that the proper number of entries were made. This status bar information helps you achieve this goal.



2. **CTRL + Mouse Scroll** - *(Zoom in & out with your mouse)*

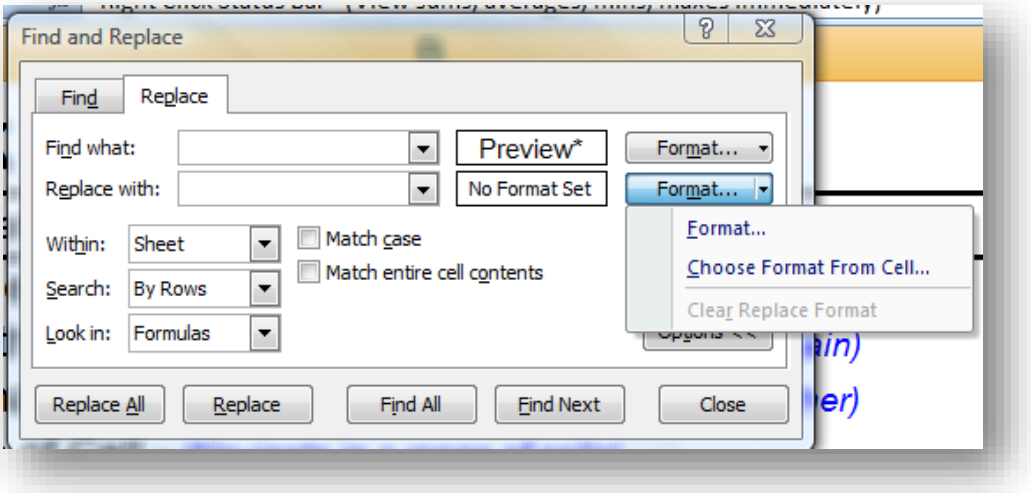


3. **Double Click the Format Painter** - *(Tool sticks until clicked again)* - The format painter tool is a great tool for applying the format from one cell to other cells. However, a little known secret is that you can double click the Format painter Tool, and the tool will "stick" allowing you to apply the format to multiple cells, rows, columns, or worksheets. The tool sticks until you press the ESC key or click the format Painter tool again. Go ahead, give it a try.

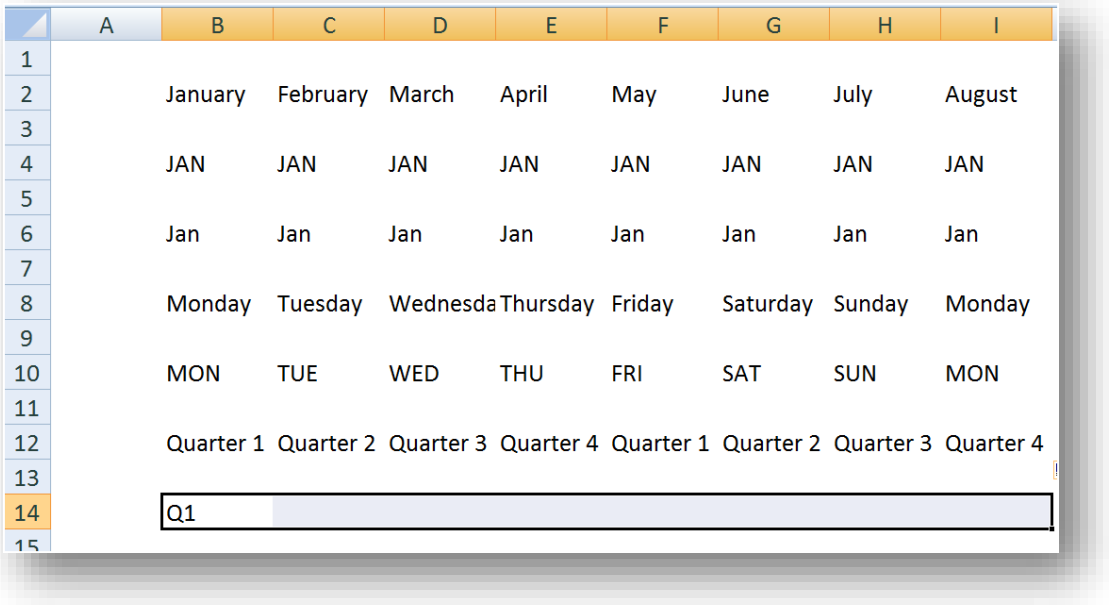


4. **Replace Formatting** - *(Find and replace one formatting with another)-* The search and replace command is a great command, but it contains a powerful little option that enables you to search for a particular format and replace it with another format . More to the point, this options allows you to select a format that already exists in your worksheet and enables you to replace it with a different format that already exists in your worksheet.

   For example, assume that you have created a gigantic worksheet that contains thousands of percentage calculations scattered throughout the worksheet that shows each percentage to 1 decimal place. After a partner review, you have been asked to change the format of all percentages to 2 decimals places, because the fractional round could have a material impact. In this case, use the Search and replace command, Options Button to select a format to be replaced, and designate the new format. This action can update all of the percentages throughout the worksheet to display 2 decimal places in a matter of seconds.

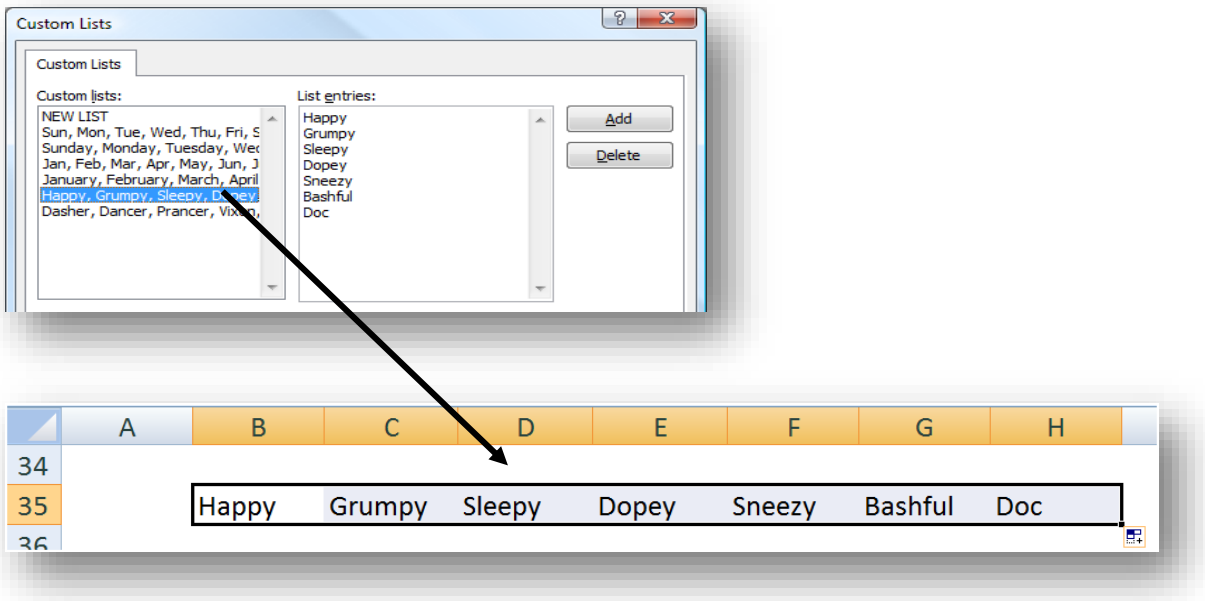


5. **AutoFill – January, Monday, Quarter** – By grabbing the "Fill Handle" on the bottom right corner of a cell, you can drag a series of text or data out to the right, or down. Excel is fairly smart and will fill in the range for you.

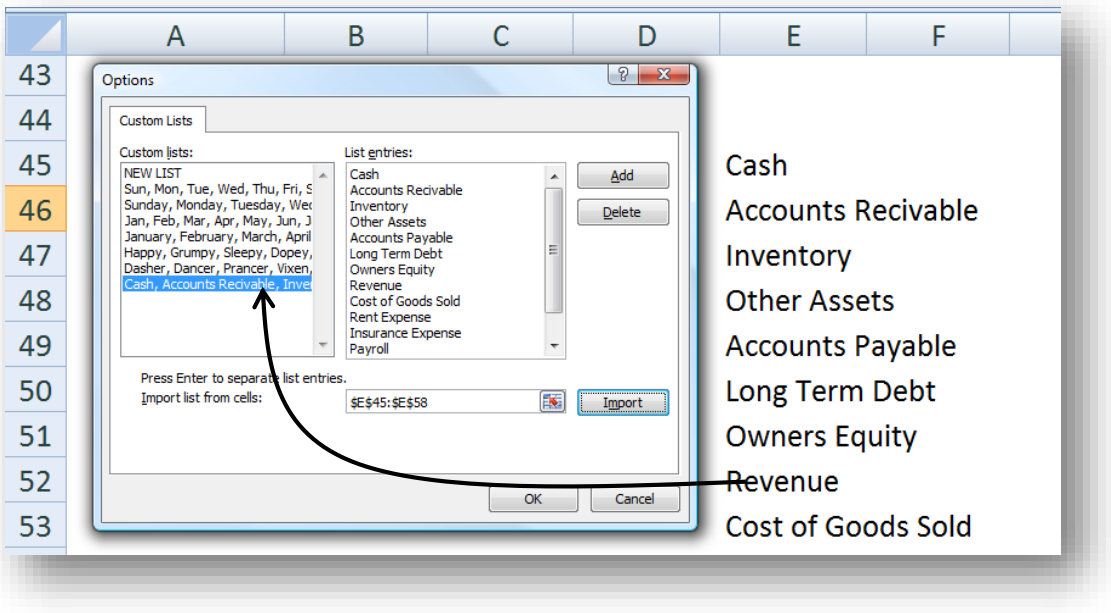


	A	B	C	D	E	F	G	H	I
1									
2		January	February	March	April	May	June	July	August
3									
4		JAN	JAN	JAN	JAN	JAN	JAN	JAN	JAN
5									
6		Jan	Jan	Jan	Jan	Jan	Jan	Jan	Jan
7									
8		Monday	Tuesday	Wednesda	Thursday	Friday	Saturday	Sunday	Monday
9									
10		MON	TUE	WED	THU	FRI	SAT	SUN	MON
11									
12		Quarter 1	Quarter 2	Quarter 3	Quarter 4	Quarter 1	Quarter 2	Quarter 3	Quarter 4
13									
14		Q1							
15									

6. **Custom Fill -** You can also create your own custom fill lists with the Tool, Options, Custom Lists tab in Excel 2003. In Excel 2007, Click the Microsoft Office Button, and then click Excel Options. Click **Popular**, and then under **Top options for working with Excel**, click **Edit Custom Lists**.



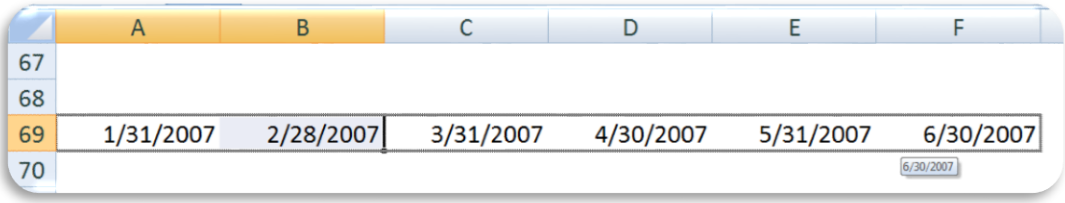
7. **Custom Lists -** The Custom Lists dialog box can save time and effort when entering labels that you frequently use such as department titles in your business. Excel comes with a few of the most common lists pre-programmed. However, if you have a list of titles, headings, people names, places, etc. that you find yourself inputting over and over again you can add these labels to the pre defined custom lists.



The Custom Lists Dialog Box

Notice that you can enter your list in the right frame and add it to your lists. Or, you can highlight a range you have already entered in Excel, select Tools/Options/Custom List and then import the highlighted range directly into your lists. Lists can be deleted when no longer needed. Once you create a custom list you can use auto fill 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.

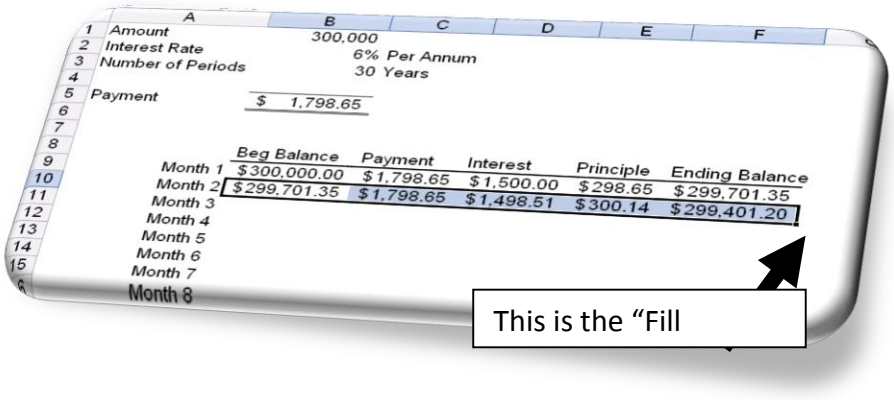
8. **Using AutoFill Trends** – A more advanced application of AutoFill is achieved when you provide Excel a trend from which to generate the fill range. For example, type in the month end as a true date and drag the cell to the right. This result will yield incremental days. However, to produce month end results, you will need to give Excel an example of the trend you are looking for by typing the end of two consecutive months (as shown in cells A69 and B69 in the screen below). Next highlight both dates and drag to the right to fill in the following month end dates in true date form. This approach is better for writing formulas that refer to column headings, for example to age outstanding receivables.



9. **Use Scroll Tips to Figure out Where to Stop –** Also note in the screen above that "Scroll Tips" are pop up indicators that display the value that AutoFill will insert in each cell. This makes it easier to paint a fill range of appropriate size.

10. **Temporarily Disable AutoFill -** Press the "Control Key" when using "AutoFill" to temporarily disable the "AutoFill" affect.

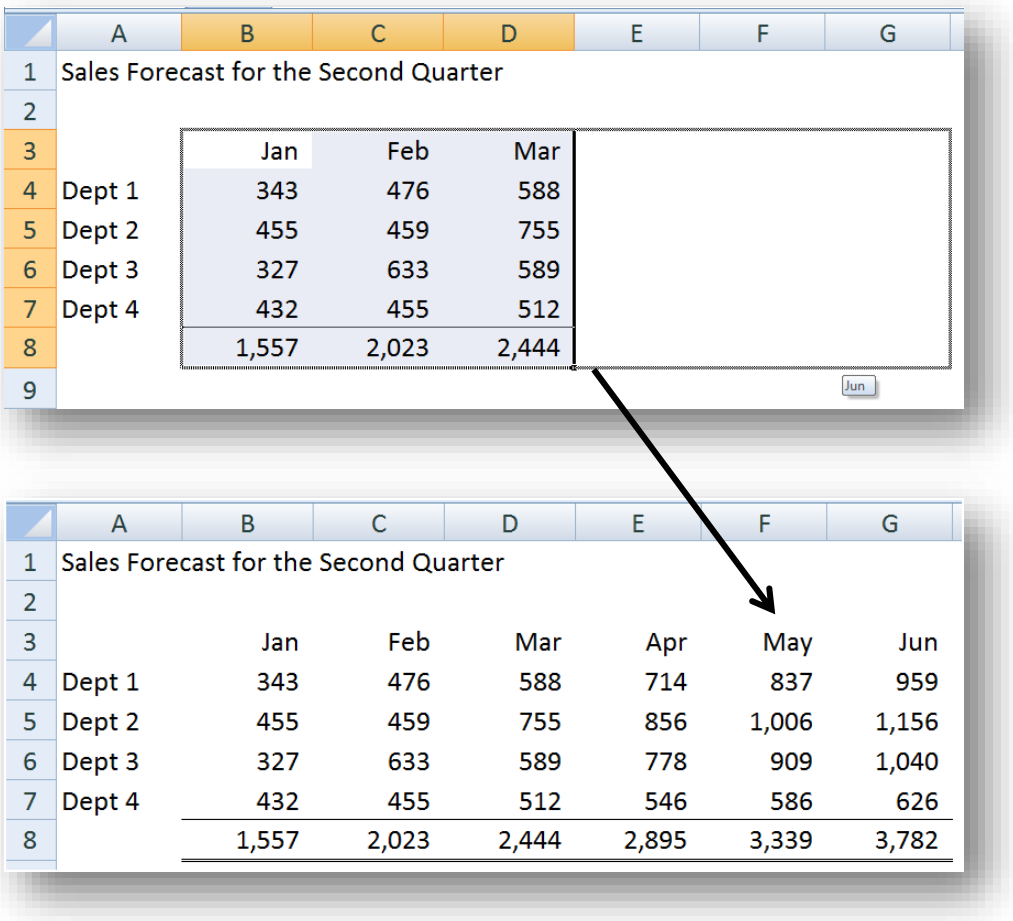
11. **Double Click the Fill Handle to Fill an Entire Column -** In financial worksheets such as loan amortization schedules you are often faced with the task of building a formula and copying it down dozens or even hundreds of cells. In these situations there is frequently an adjacent column that goes down as far as you would like to copy the new formula. In these cases simply double click on the fill handle in the cell to fill the entire column with the formula all the way down as far as the adjacent cell has data.



Fill Entire Columns with One Double Click

12. **Using AutoFill To Erase Cells with Formatting** – I like to erase data by using AutoFill 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, colors and borders as well.

13. **Using AutoFill's Regression Analysis** – When using AutoFill with more than two cells, AutoFill will automatically use Linear Regression Analysis (the least squares method) to generate the additional data. Presented below is a simple example:

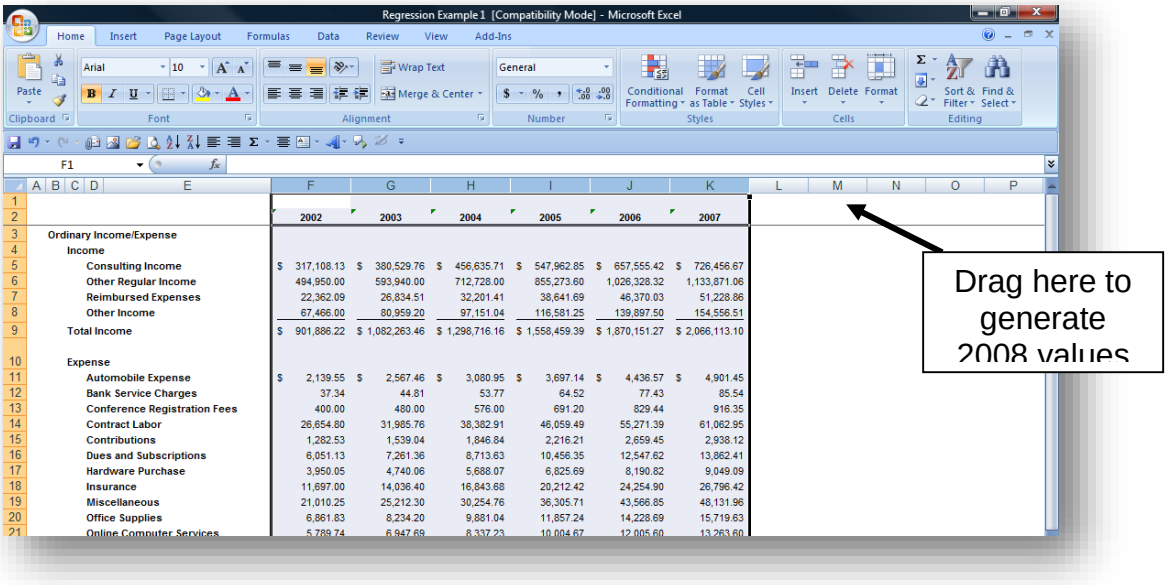


	A	B	C	D	E	F	G
1	Sales Forecast for the Second Quarter						
2							
3		Jan	Feb	Mar			
4	Dept 1	343	476	588			
5	Dept 2	455	459	755			
6	Dept 3	327	633	589			
7	Dept 4	432	455	512			
8		1,557	2,023	2,444			
9							

Jun

	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

14. **More Detailed Regression Example** - As an example, CPAs could use this to highlight actual revenue and expenses for 2002 through 2007 as show below, and use AutoFill's Regression Analysis to predict 2008 values.



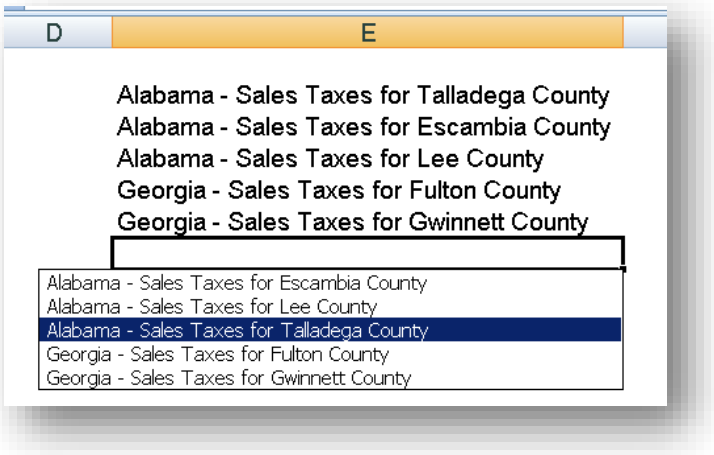
15. **Click on Edge of Cell** - *(Navigate in a range of cells) –* You can navigate a range of cells by double clicking on the edge of the cell where the cursor resides. For example, double clicking on the bottom moves the cursor to the bottom of a range.

16. **Control Tilde (CTRL + ~)** - *(View underlying formulas)*You can view all formulas in a worksheet simply pressing the CTRL+Tilde buttons. Not only does this display underlying formulas, it also displays the formula auditing toolbar.

	D	E	F	G	H	I
1						
2	**Feb**	**%**	**Mar**	**%**	**Apr**	**%**
3	=B3/0.8	=D3/$B$34	=D3*1.3	=F3/$B$34	2139.55	=H3/$B$34
4	=B4*1.3	=D4/$B$34	=D4/0.8	=F4/$B$34	37.34	=H4/$B$34
5	=B5/0.8	=D5/$B$34	=D5*1.3	=F5/$B$34	400	=H5/$B$34
6	=B6*1.3	=D6/$B$34	=D6/0.8	=F6/$B$34	26654.8	=H6/$B$34
7	=B7/0.8	=D7/$B$34	=D7*1.3	=F7/$B$34	1282.53	=H7/$B$34
8	=B8*1.3	=D8/$B$34	=D8/0.8	=F8/$B$34	6051.13	=H8/$B$34
9	=B9/0.8	=D9/$B$34	=D9*1.3	=F9/$B$34	370.96	=H9/$B$34
10	=B10*1.3	=D10/$B$34	=D10/0.8	=F10/$B$34	65.41	=H10/$B$34
11	=B11/0.8	=D11/$B$34	=D11*1.3	=F11/$B$34	3950.05	=H11/$B$34
12	=B12*1.3	=D12/$B$34	=D12/0.8	=F12/$B$34	11697	=H12/$B$34
13	=B13/0.8	=D13/$B$34	=D13*1.3	=F13/$B$34	1184.87	=H13/$B$34

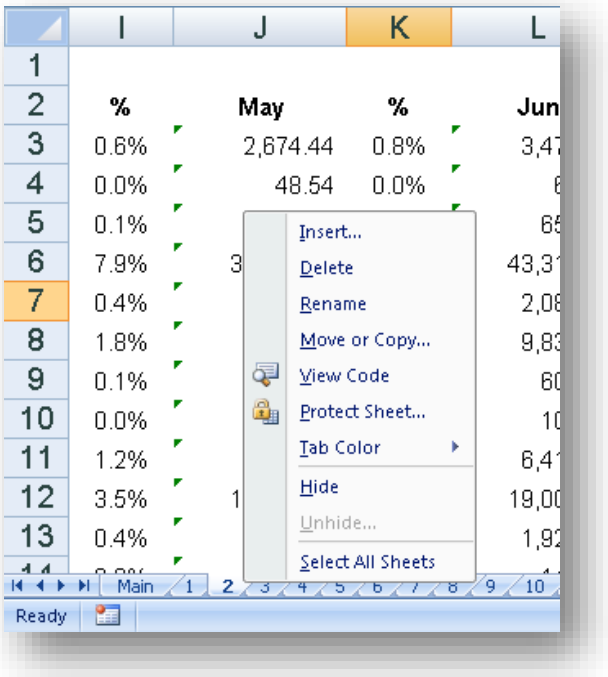
17. **Indent Icon** - *(Indent cells or columns instantly) -* The indent icon can be used to indent text instantly. As an option, you could hold down the control key and select different ranges of cells, and then indent them all together with one simple command.

18. **Drop Down List -** ALT + Down Arrow (or Shift-F10) - *(Pick from a drop down list) –* When typing information in a list which is repetitive with some of the entries from above, pressing the ALT+ Down Arrow keys will pop up a list of unique values from which you can choose.

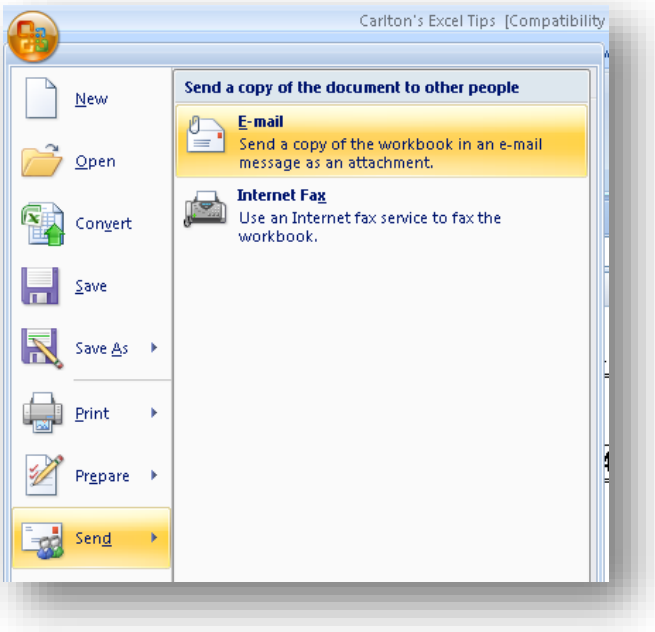


19. **Repeat the Last Command using F4** - *(Repeat the last command such as insert rows or change row height, or inserting new worksheets)*

20. **Right Click Tab, Copy, Create Copy** - *(Insert new sheet with headers, footers, etc)-* A common complaint CPAs make is that of inserting a new worksheet only to have to format the page settings of that worksheet to reflect the desired headers, footers, margins, etc. Using the Create Copy Command, users can make a copy of an existing worksheet including headers, footers, and margins settings. This approach avoids the need to format new worksheets as they are inserted.



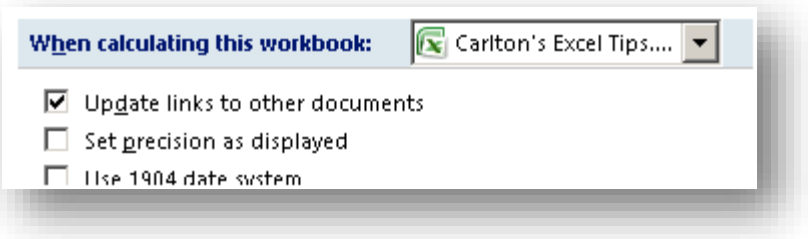
21. **File, Send To, Mail Recipient** - *(E-Mail a worksheet, workbook or chart)* Word, Excel, PowerPoint and other Office applications allow users to e-mail files directly from within that file. For example in Excel, the user can e-mail the current worksheet to a recipient from within Excel. Best of all, the utility that enables users to do this is integrated with outlook so all outlook contacts and groups are available, and sent items are shown in the Outlook Sender's Folder.



22. **Double Click Fill Handle** - *(Copies formula down the relevant range)* – This procedure enables users to copy a cell or highlighted range of cells down to underlying cells adjacent to data already entered in the column immediately to the left. It is a faster way to copy down, especially when copying to a large destination range. However, this feature only works if the column to the immediate left contains values with absolutely no blank cells.

23. **Paste Special, Transpose** - *(Invert a matrix of numbers)* – Sometimes it is useful to transpose a matrix of values or data for data analysis or presentation purposes. Excel can accomplish this procedure very quickly with the paste transpose command.

24. **Tools, Options, Calculation, Precision as Displayed** *(Avoid rounding errors)* – Excel can produce rounding errors when more decimals are involved than displayed. You can avoid rounding errors by turning on the "Precision As Displayed" option. If you use this feature, it might be a good idea to turn it off immediately because leaving this feature on may have unintended consequences in the event that you change the decimal format of a cell later on.

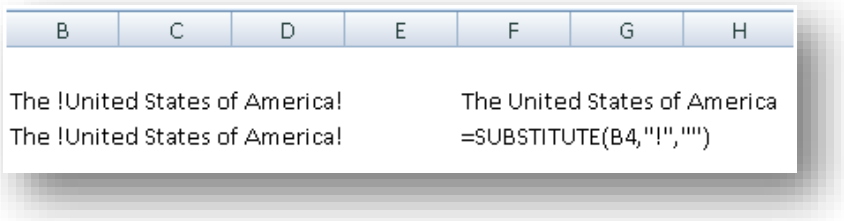


25. **Right Click Toolbar, Options, Uncheck the Option "Show Full Menus"** - *(Show all menu options)* – As a default, Excel has an annoying habit of presenting the most recently used menu options, and the remaining menu options 3 seconds later. The problem is that this approach wastes three seconds every time you want to use a menu option that you have not used in a while, and the menus are constantly presented to you in a resorted order forcing you to often search for the menu option which shows up in different locations in the menu. To avoid these problems, turn the delay feature off.

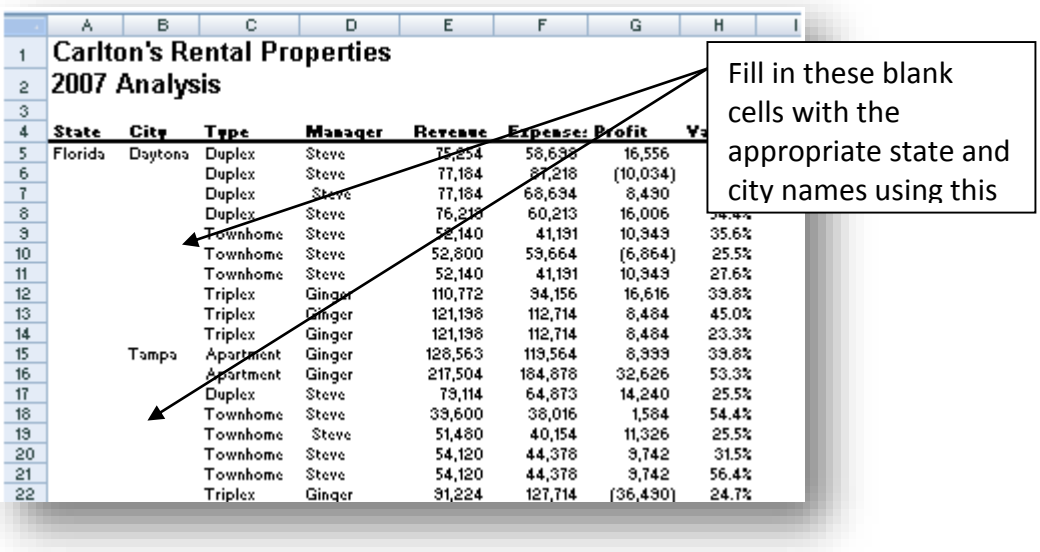
26. **Tools, AutoCorrect, Smart Tags, None** - *(Turn off Smart Tags) –* Smart tags can clutter the screen and hide the full contents of a cell. Use this command to turn off Smart Tags – or Dumb Tags as I call them.

27. **Chart with F11** - *(Produce a quick chart) –* Pressing the F11 key while your cursor is positioned on a range of values will automatically produce a chart. This can be a quick way of looking at your data in a visual form.

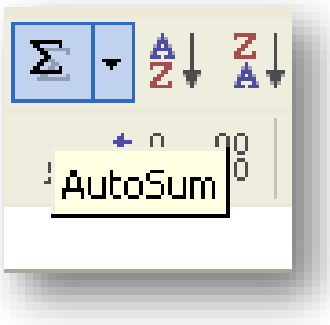
28. **=Substitute** - *(Remove or replace unwanted characters)* – This function can be used to remove unwanted characters. For example, if you have a column of text that contains quotes, extra spaces, or unwanted characters, you can use the substitute command to remove those characters. For example, below the exclamation points have been removed.



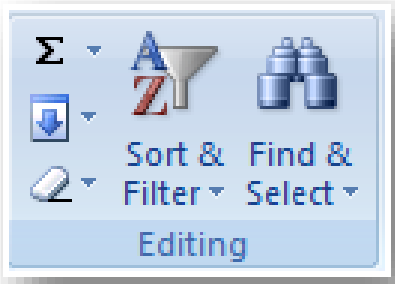
29. **Copy Formula, to Blank Cells** - *(Fill in missing data in a list)* - The F5 key can be used to select blank cells within a range. This can be used to paste data to numerous blank cells scattered throughout a range that contains values, without overwriting the values. For example, in the screen below, the user can fill in the missing state and city information by entering one formula referencing the cell above, and pasting it to all of the blank cells in columns A and B. It is hard to describe this feature in a book, but when you see it in action you can easily understand and appreciate the power of this tip.



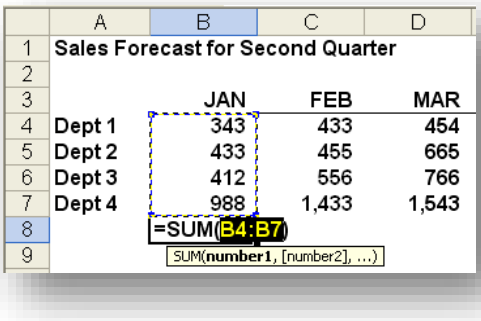
30. AutoSum - The AutoSum tool offers a variety of functionality and methods for inserting totals, averages, and other functions into your worksheet. The screen shots below demonstrate some of this functionality.



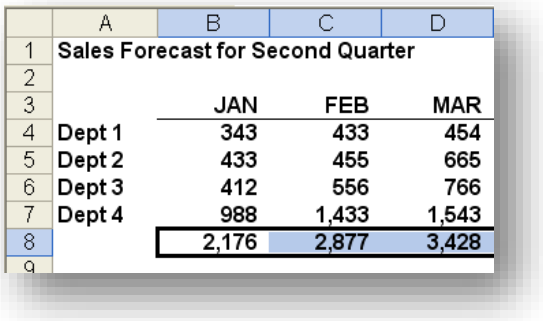
Excel 2003 Screen



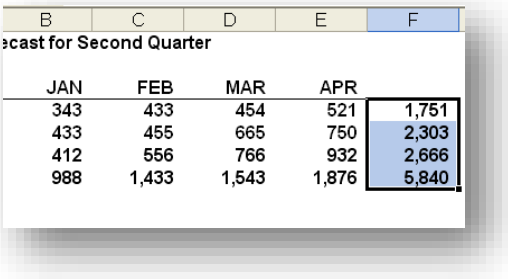
Excel 2007 Screen



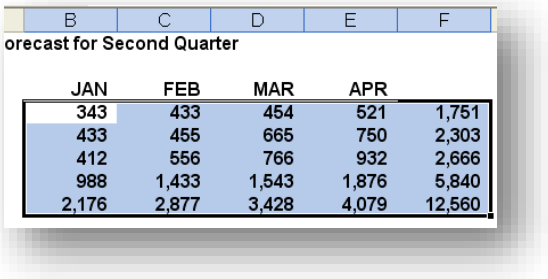
AutoSum – Single Cell



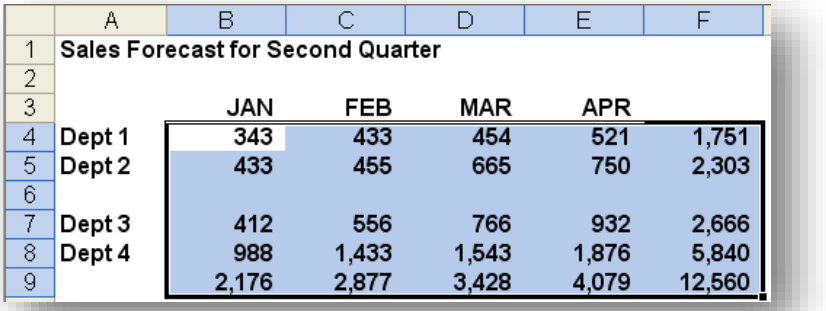
AutoSum – By Row



AutoSum – By Columns

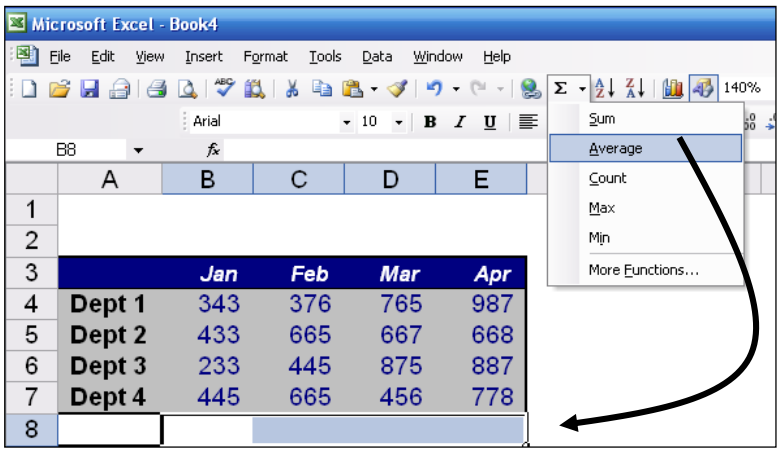


AutoSum Row, Columns, & Cross Footing



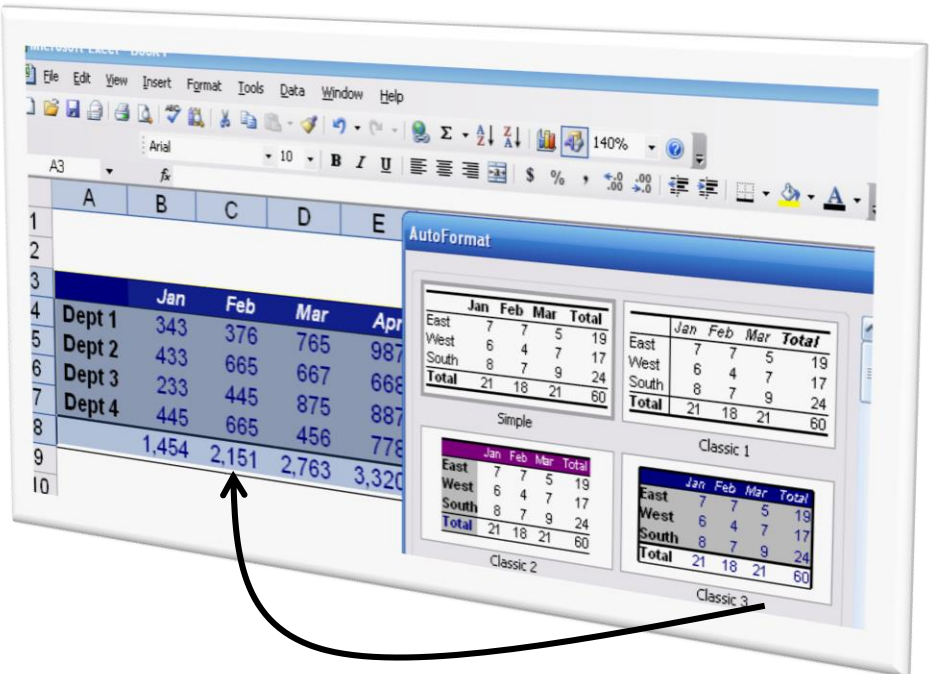
AutoSum – Overcoming Blank Rows

31. AutoSum Drop Down – Averaging, Counting, Minimum, Maximum, Etc.

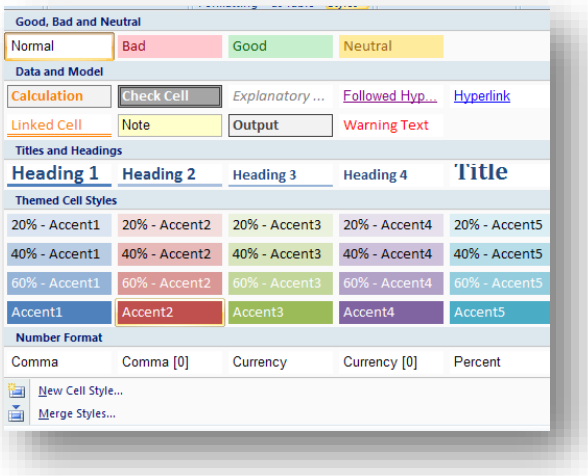


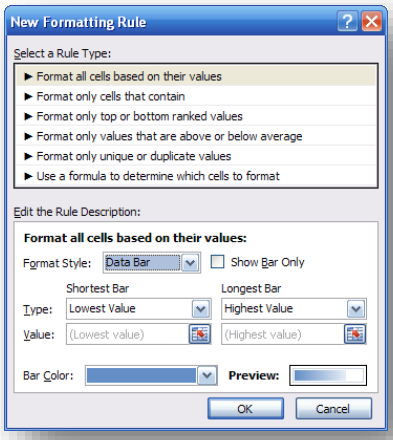
As shown above, the AutoSum function can be used to compute other formulas besides SUM such as Average, Count, Min, Max, and more functions.

32. AutoFormat - In Excel 2003 and earlier versions, Excel offers an AutoFormat feature that applies a format automatically to a range of data. In Excel 2007, this functionality has been improved and expanded to include a large gallery of formats.



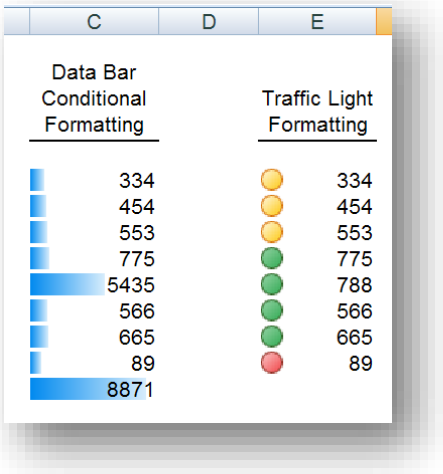
33. Conditional Formatting with Data Bars and Traffic Lights - In Excel 2007, the format features have been expanded to include better styles, table formats, conditional formats, cell formats and more. Styles. enable users to apply a specific style, including font, font size, fill color, font color, 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 "Cell Styles" tool offers users a gallery of predefined styles to choose form, as show in the screen below and to the left, or you can also create your own unique styles.

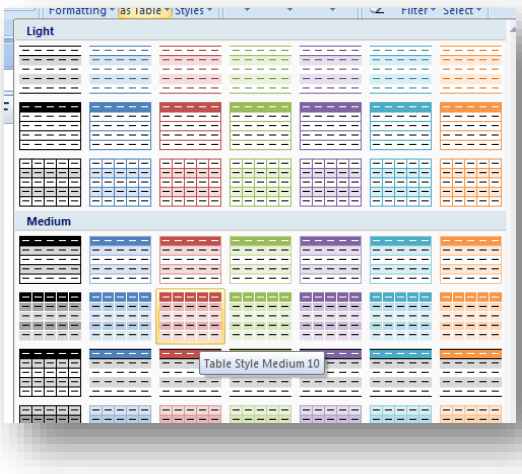




The Conditional Formatting tool is vastly improved with "Data Bar" and "Traffic Light" reporting, as well as an improved menu for applying conditional formats. Presented below

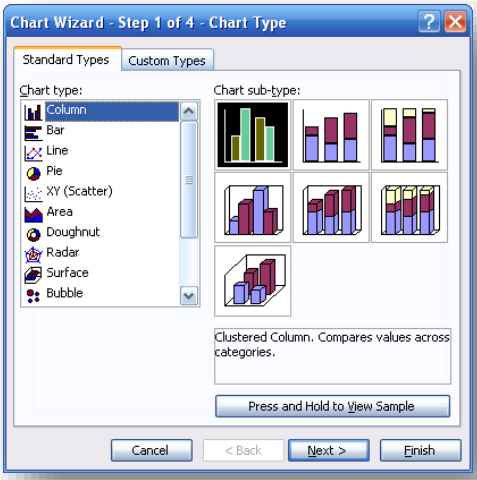
(left) are examples of conditional formats. Below (right) are examples of "Table Styles" that can be applied to data ranges. Excel 2007 also provides tools for creating your own user-defined "Table Styles".





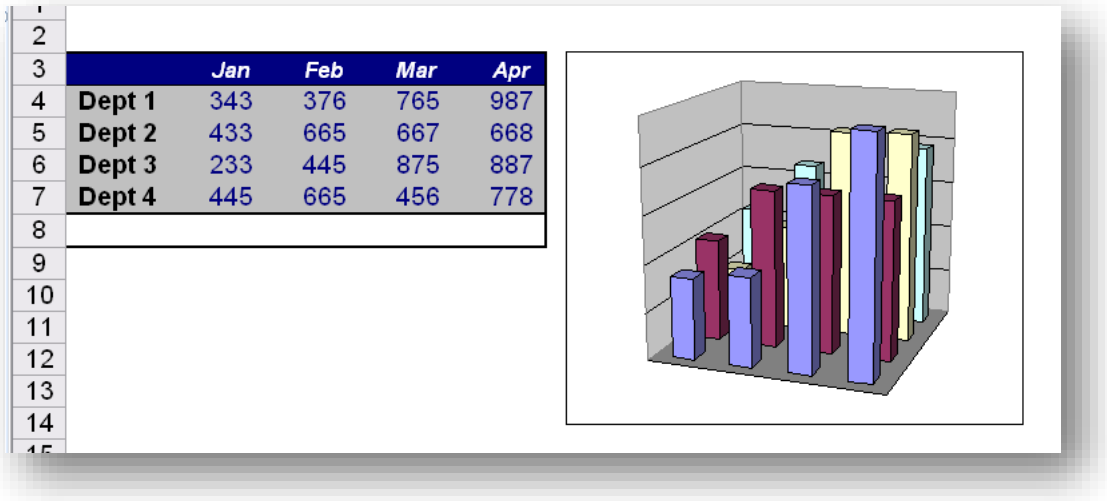
Other enhancements include new "Top/Bottom" tools and rules for displaying the top or bottom values in a range; "Highlight" tools and rules for displaying duplicates, equivalents, conditional dates, and other types of data; and "Color Scale" tools and rules for identifying specific data by color.

34. **The Chart Wizard –** In Excel 2003, to create a quick chart, simply place your cursor in a range of data and press the F11 key. This action will create a quick chart. However, for more control over the results, click the Charting ICON from the standard tool bar. This will walk you through the wizard shown below. In the first screen you can select the type of chart you desire.

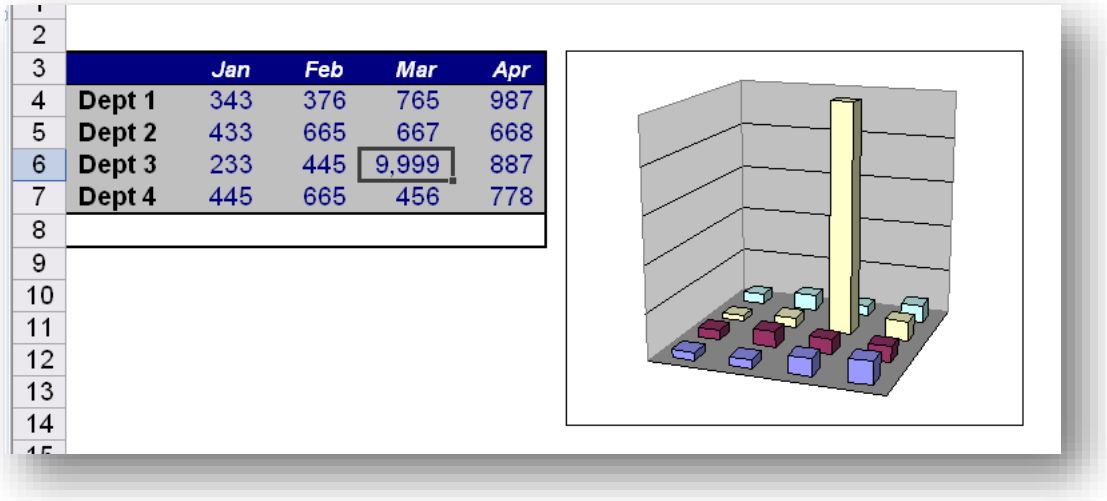


Subsequent dialog boxes enable you to edit the data range, set the chart series by columns or rows, create titles, control the X and Y axes, control gridlines, create the legend, include or exclude data labels, and add a data table. The final step allows the user to indicate the location for the resulting chart.

35. The Resulting Chart is Automatically Linked to Data - Of course charts created from data are automatically linked to that data. As the data changes, so does the chart.



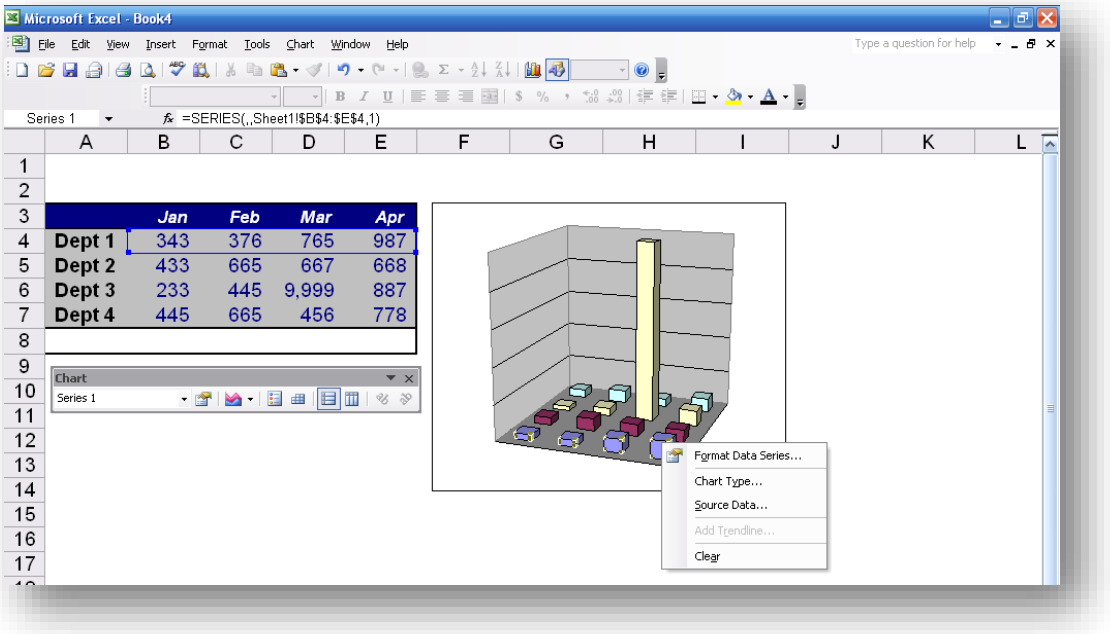
	Jan	Feb	Mar	Apr
Dept 1	343	376	765	987
Dept 2	433	665	667	668
Dept 3	233	445	875	887
Dept 4	445	665	456	778



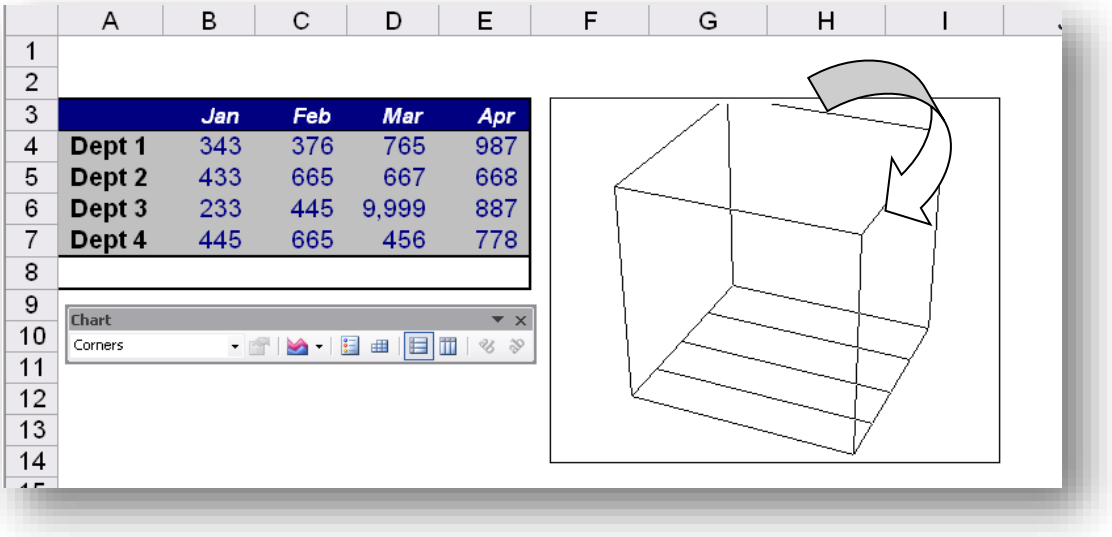
	Jan	Feb	Mar	Apr
Dept 1	343	376	765	987
Dept 2	433	665	667	668
Dept 3	233	445	9,999	887
Dept 4	445	665	456	778

Note that the chart changes as the data changes

36. Chart – Deleting & Adding Data - You can add or delete data from your chart simply by clicking on the chart bars and pressing delete, or by dragging data from your worksheet and dropping it on the chart. As shown below, when you click on a bar in the chart, Excel automatically highlights the relevant data range. Pressing delete eliminates this data range from the chart. Later, highlighting this data range and dragging it onto the chart adds these bars back to the chart. Give it a try.

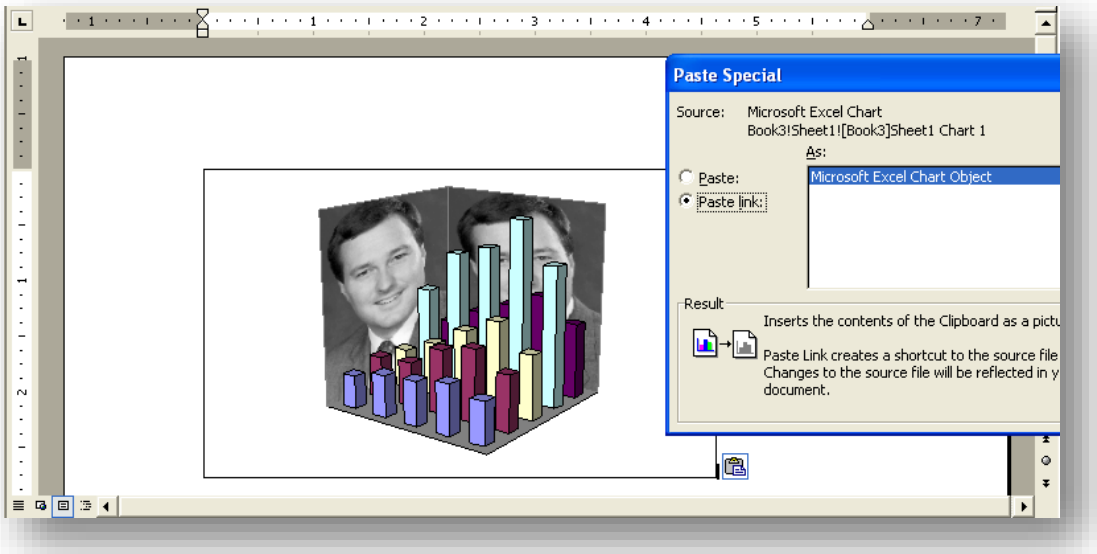


37. Charts – Rotating the Chart - If some of the bars in the chart are difficult to see, you can rotate the chart by clicking on the corner. This action reveals a wire frame which you can then rotate to the desired position, as shown below.



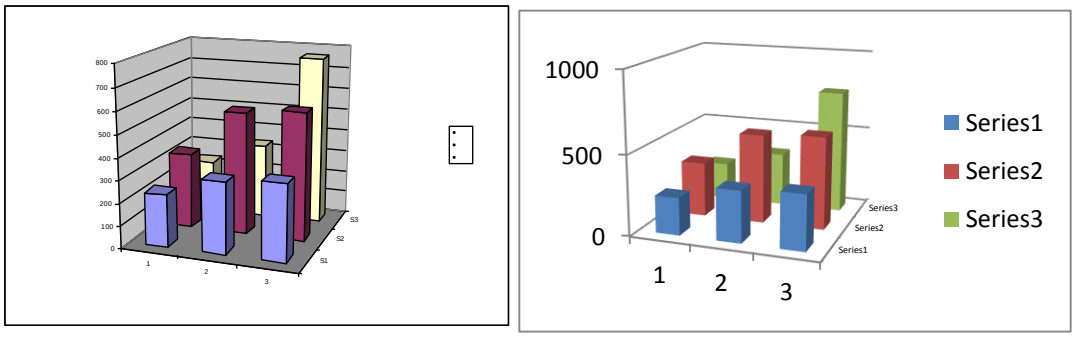
38. Charts – Formatting the walls and bars - The chart can be dressed up a bit by clicking on any part of the chart, and choosing format. This will allow you to apply different colors, patterns, and even pictures to the walls and bars within the chart. You can see below how this chart appears to be much more attractive than the original.

39. Charts – Paste Link to Word - Charts in Excel, can be paste linked into Word (or PowerPoint, Publisher, etc) using the paste special command. Thereafter, as the chart changes in Excel, it is automatically updated in Word.

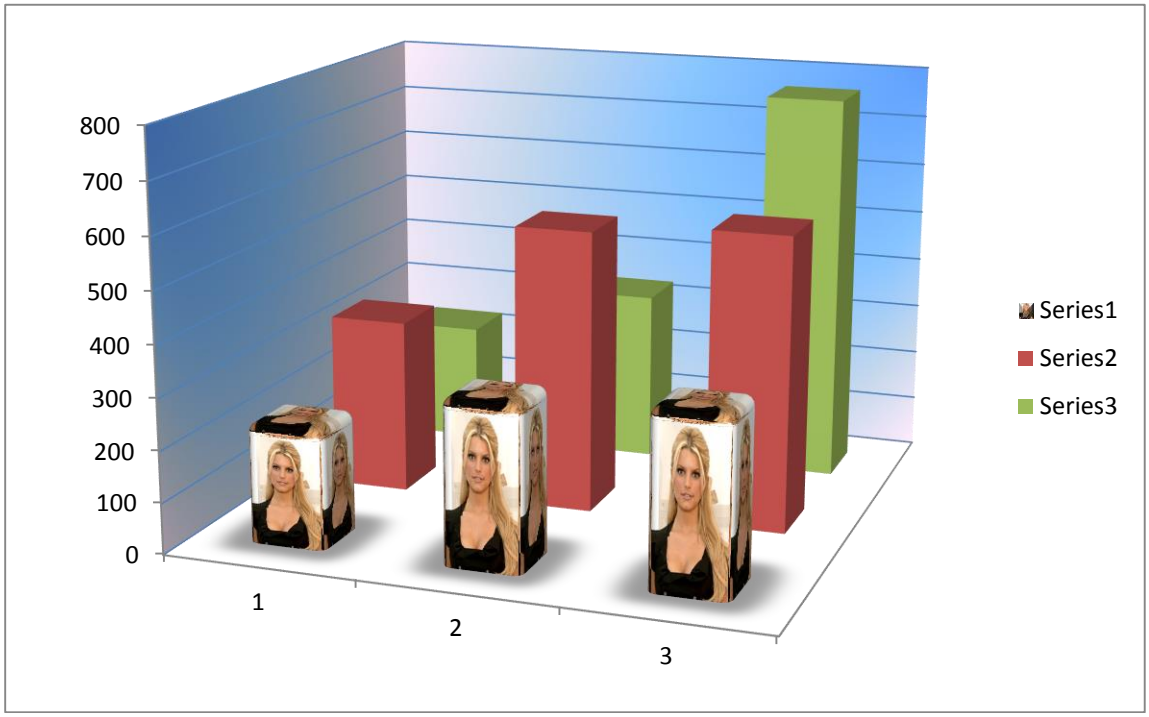


40. Chart Tool Improvements in Excel 2007 - In Excel 2007, the Charts tools provide users with the ability to insert and create the same wide variety of charts that were available in previous versions of Excel. A key difference is that Excel 2007 charts provide a more published appearance with far more professional publishing controls for adjusting shadows, shadow angles, shadow blur, shadow transparency, 3-D effects, bevels, contours, depth, lighting, surface material, gap width, gap depth, solid fills, gradient fills, picture fills, shapes, lines,

borders, colors, and more. The results are a dramatically improved appearance of Excel 2007 charts. A few sample charts are shown below.

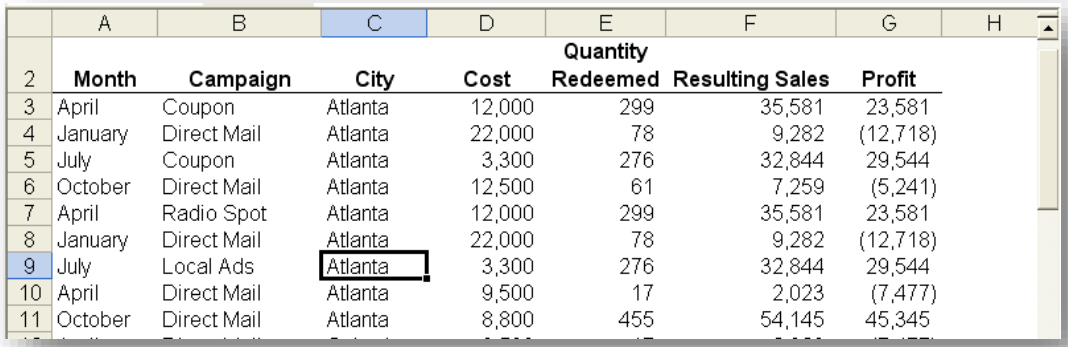


41. **Crisper Charts in 2007 -** The two screens above show the same chart as produced in Excel 2003 (left), and Excel 2007 (right). Notice that the lines in the Excel 2003 chart are jagged and the colors are flat. By contrast, the lines and colors in the Excel 2007 chart are crisp – hence a more professional look is achieved. The screen below shows the above chart after shadows, 3-D bevels, and picture fills are added to the first data series as well as the chart wells.



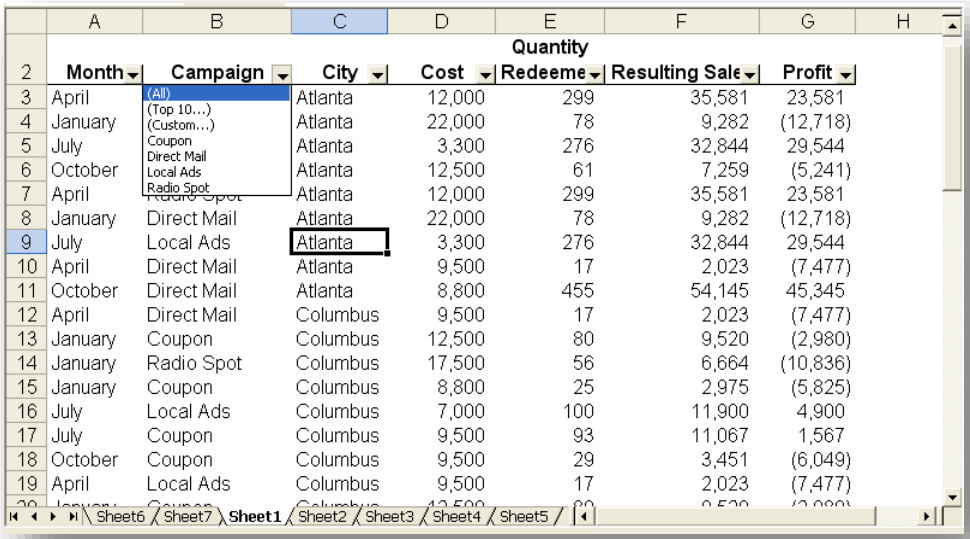
42. **AutoFilter & Advanced AutoFilter** - Have you ever had a list of information you needed to sift through? If so, you probably wanted to filter the data and review or print only specific subsets of the data. With the AutoFilter command, you can! To use this tool, start with any

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!

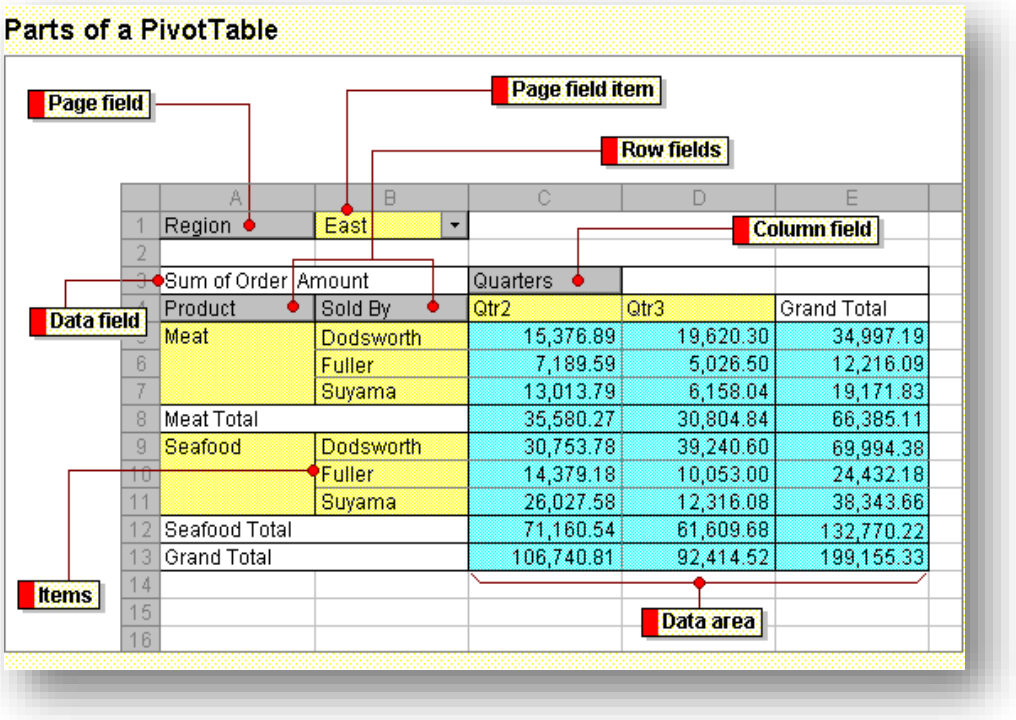


	A	B	C	D	E	F	G	H
2	Month	Campaign	City	Cost	Quantity Redeeme	Resulting Sale	Profit	
3	April	(All)	Atlanta	12,000	299	35,581	23,581	
4	January	(Top 10...)	Atlanta	22,000	78	9,282	(12,718)	
5	July	(Custom...)	Atlanta	3,300	276	32,844	29,544	
6	October	Coupon	Atlanta	12,500	61	7,259	(5,241)	
7	April	Direct 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)	

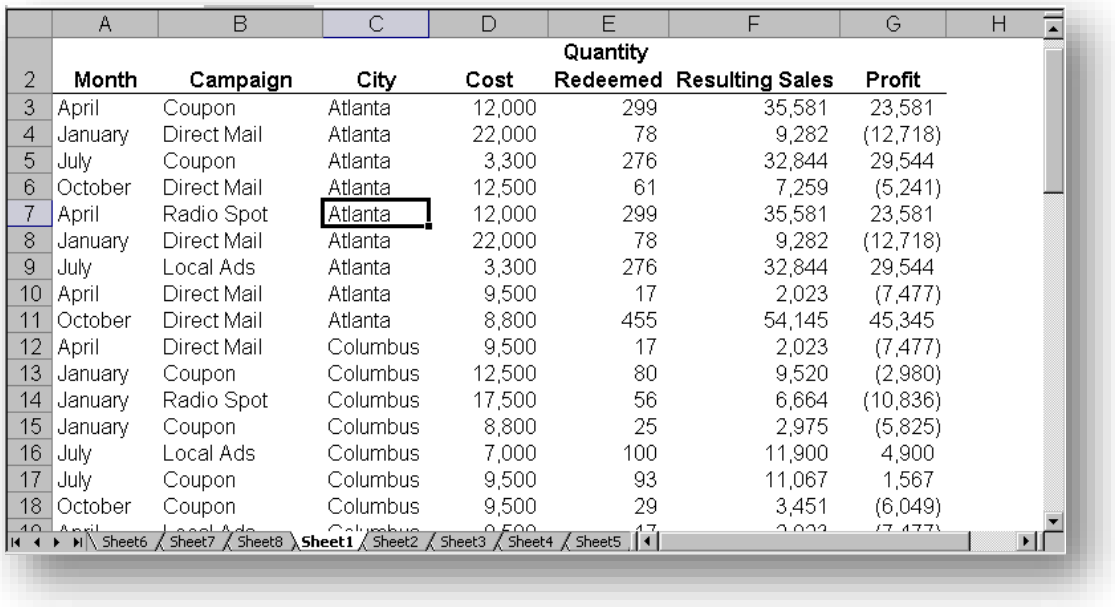
Sheet6 Sheet7 Sheet1 Sheet2 Sheet3 Sheet4 Sheet5

43. PivotTables - PivotTables may be one of the most powerful features of Excel, and yet is one of the least understood and used. PivotTables present multidimensional data views to the user. To re-arrange the worksheet, users are allowed to drag and drop column headings to move data around. PivotTables are a great data analysis tool for management. Don't be

discouraged! Save your information first, and then try working with PivotTables. Take your time and examine each outcome. We think you will really like this new-found power.



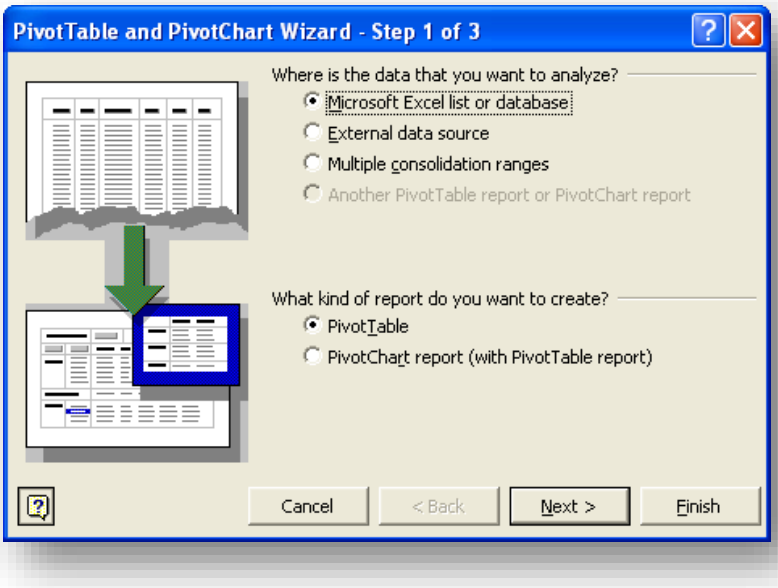
44. The Page, Row and Column fields shown above can be rearranged simply by clicking and dragging the Page, Row and column headings to new positions. This action automatically rearranges your PivotTable to provide the newly revised view. To create a PivotTable, start with an Excel spreadsheet data that contains several data headings. Select the PivotTable option from the Data menu to start the PivotTable Wizard. As an example, 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	
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	
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)	

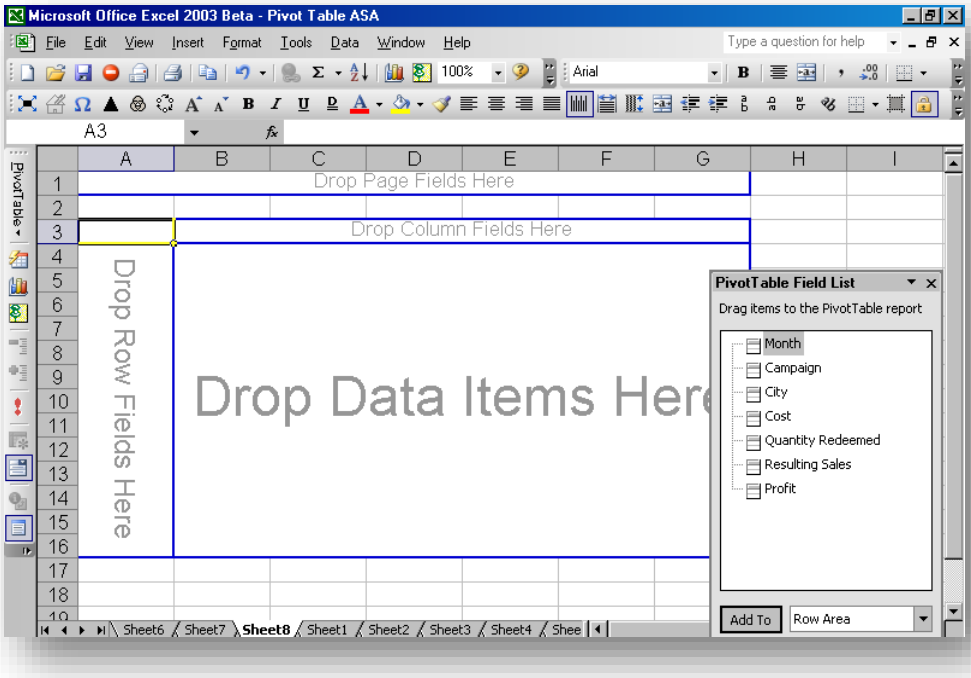
Sheet6 Sheet7 Sheet8 Sheet1 Sheet2 Sheet3 Sheet4 Sheet5

Start the PivotTable process by running the PivotTable wizard as shown below:

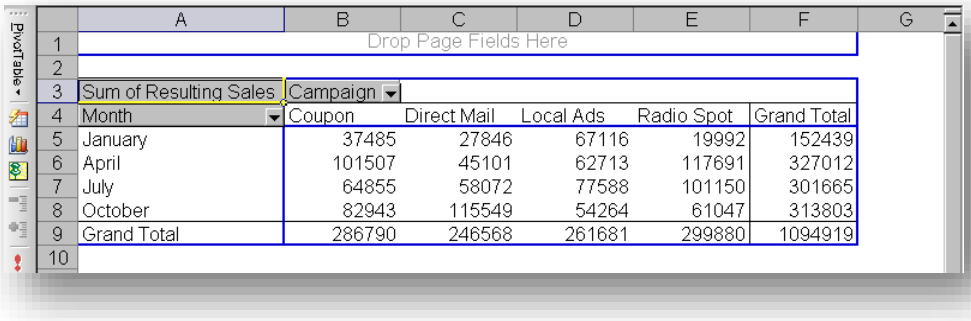


The PivotTable Wizard will walk you though the process of creating your initial PivotTable. The PivotTable can be easily changed as the PivotTable Wizard can be recalled instantly to modify the PivotTable changes.

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.

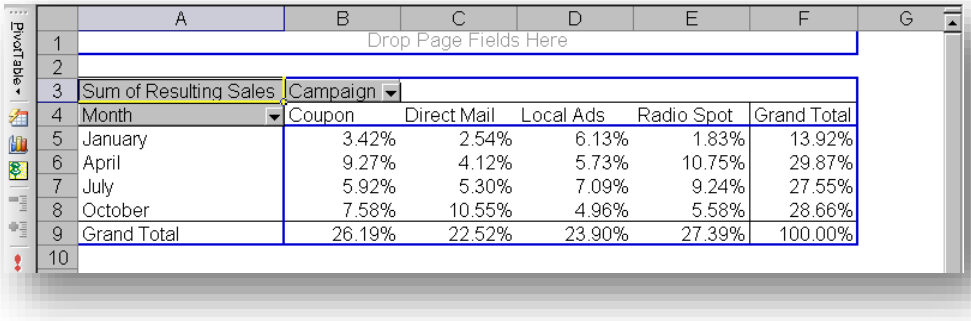


45. Presented below are but a few examples of hundreds of possible reports that could be viewed with this data through the PivotTable format.



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

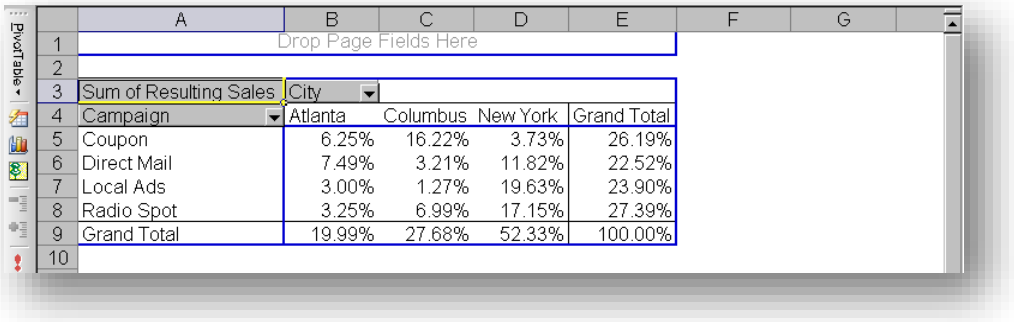
This report shown above shows the total resulting sales for each marketing campaign for each of the 4 months marketing campaigns were conducted.



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%

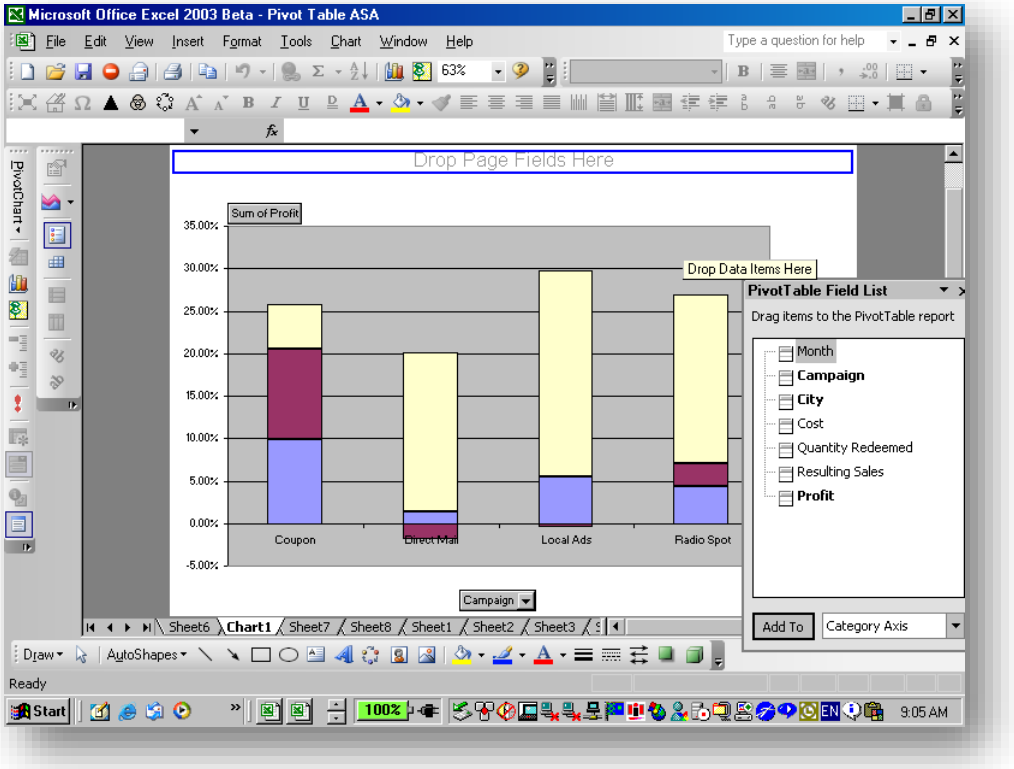
In this screen we see the same information is shown as a percentage of the total. A few observations include the fact that overall Radio Spots are the most profitable type of

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.

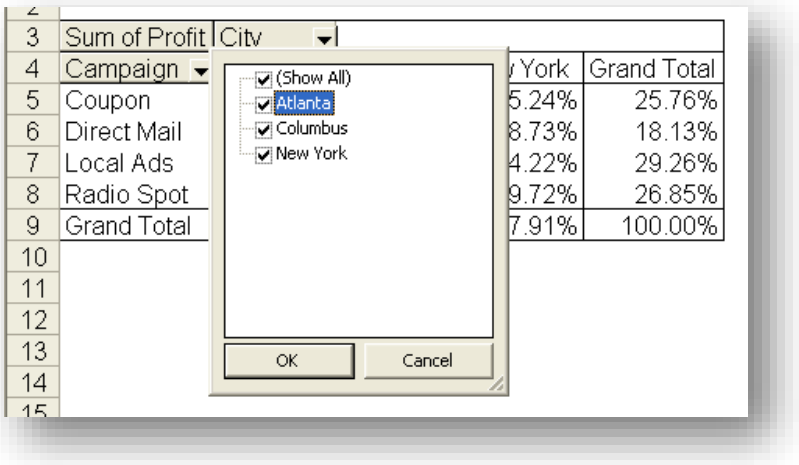


	A	B	C	D	E	F	G
1	Drop Page Fields Here						
2							
3	Sum of Resulting Sales	City					
4	Campaign	Atlanta	Columbus	New York	Grand Total		
5	Coupon	6.25%	16.22%	3.73%	26.19%		
6	Direct Mail	7.49%	3.21%	11.82%	22.52%		
7	Local Ads	3.00%	1.27%	19.63%	23.90%		
8	Radio Spot	3.25%	6.99%	17.15%	27.39%		
9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

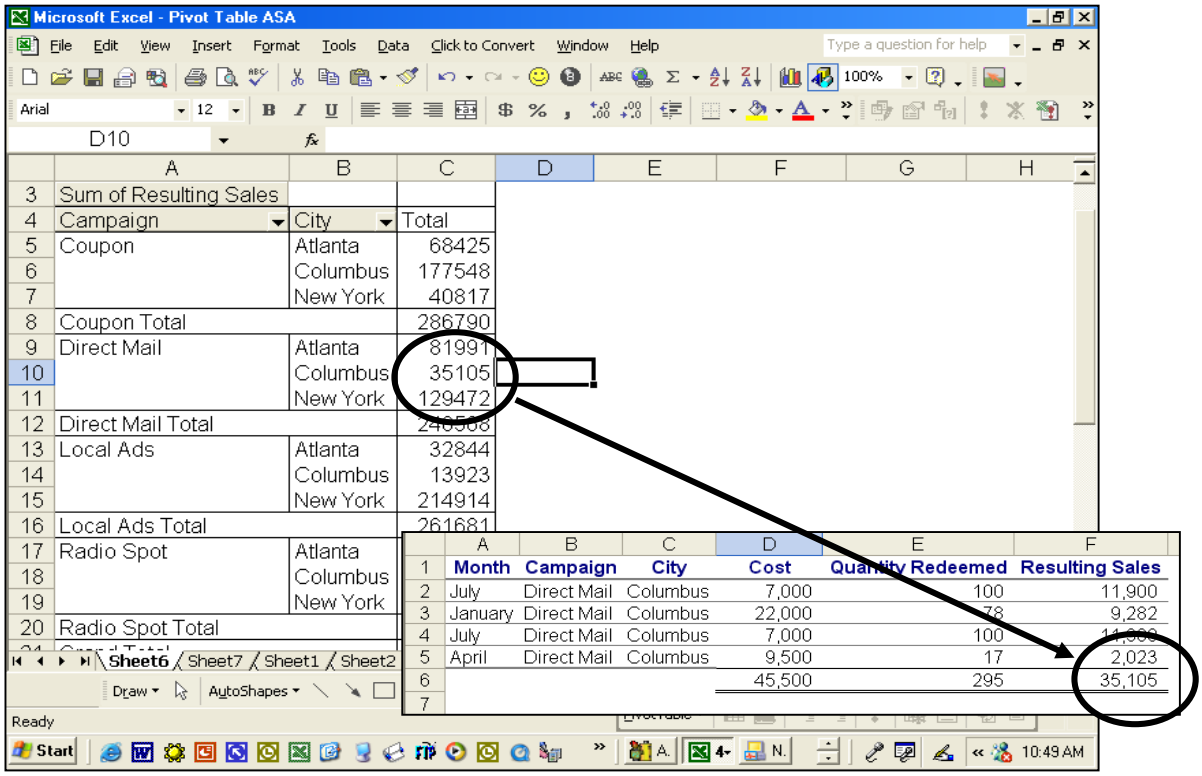


46. Filtering Pivot Tables - If you take a close look at your resulting pivot tables, you will notice that Excel automatically inserts a filter button on each field list as shown by the drop down arrows in the screen below:

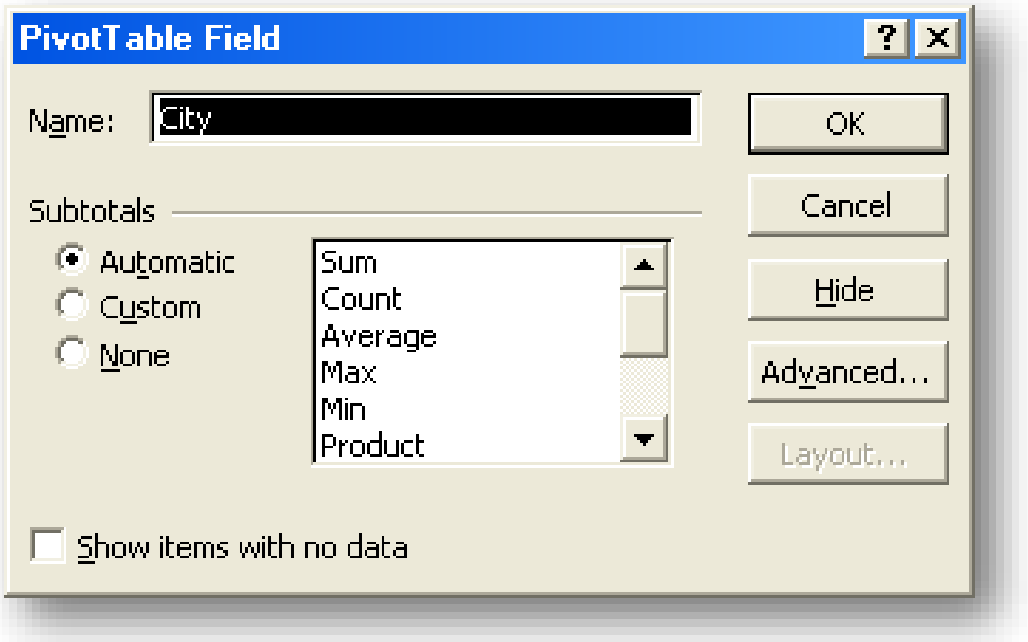


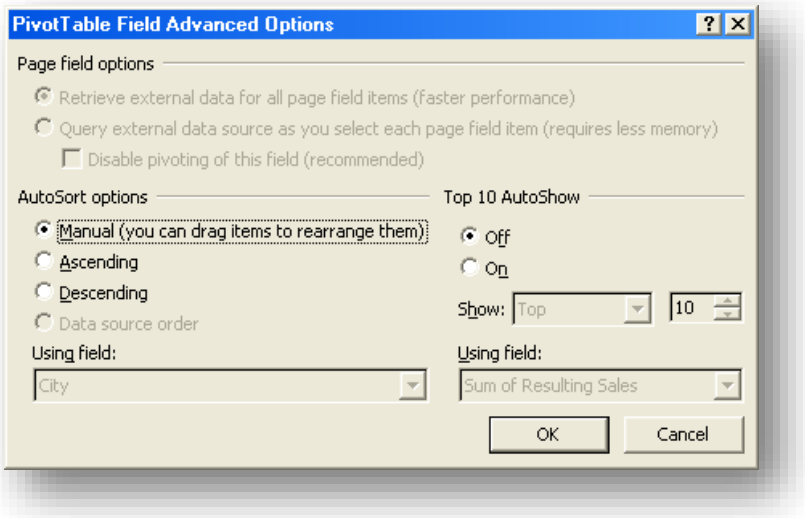
This drop down filter list makes it easy to refine your report to include just the data you want.

47. **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:

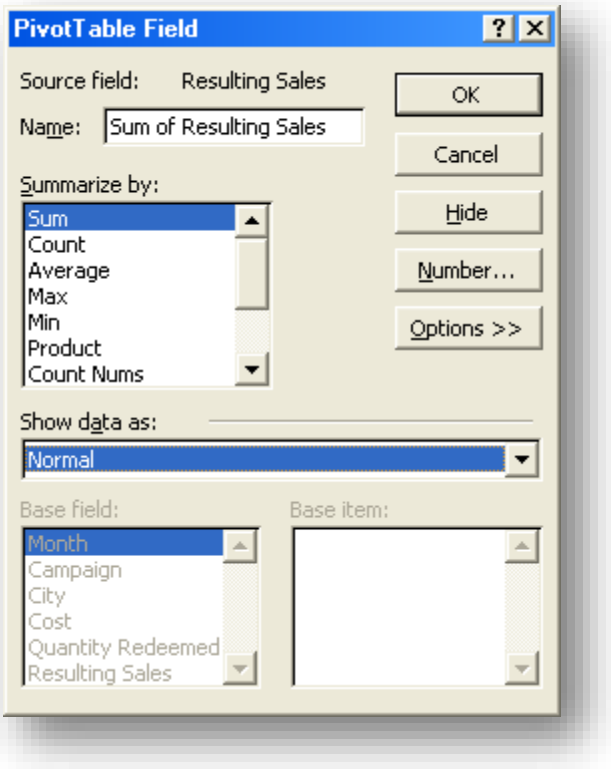


48. Pivot Table Options - By right mouse clicking on your pivot table you will reveal several option settings boxes as shown below:





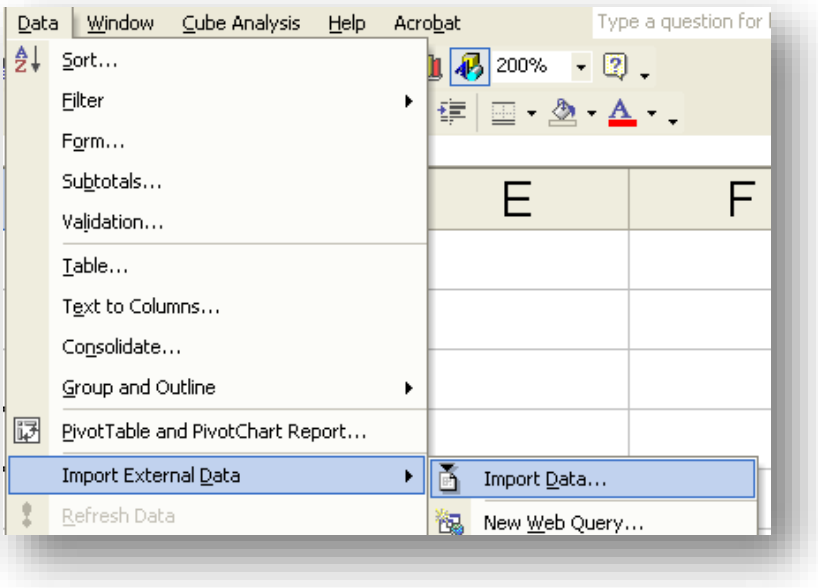
For example, these options boxes control the types of subtotals produced in your pivot reports.



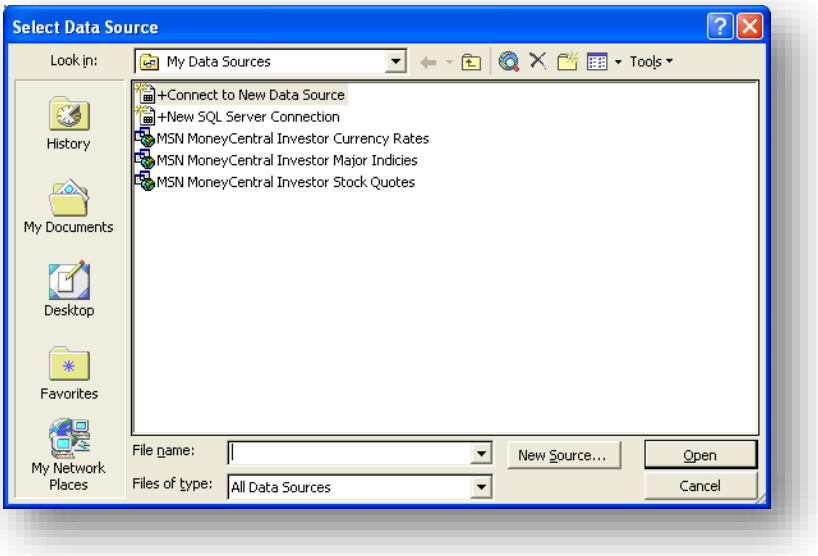
Excel also offers a pivot table options box as well as a layout wizard that makes producing pivot tables a little easier.

49. **Web Queries** - Excel includes pre-designed "queries" that can create extensive stock portfolios in less than 10 seconds. 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 seconds, a complete up-to-date portfolio is automatically displayed and is synchronized to the stock market's changing stock prices. With each click of the "Refresh" button, the stock prices change before

your eyes. Just add columns for the number of shares you own, and the total value of those shares – and this beats picking numbers out of the newspaper.



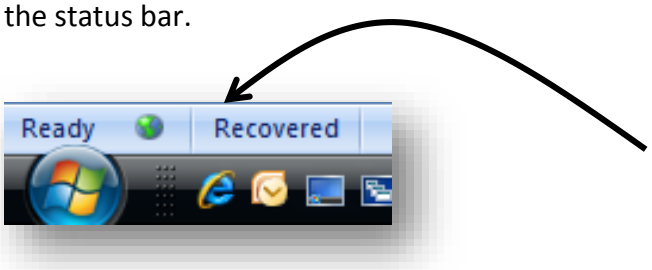
Excel 2003's **"Import External Data, Import Data"** menu option is shown above. The screen below shows several web query options that are included in Excel.



Choosing the **"Stock Quotes"** option allows you to input up to 20 ticker symbols for the stock prices you would like to down load, and then resulting query returns the desired data either in your current worksheet, or in a new worksheet – dependent upon your choice. The resulting stock data as retrieved from the Internet is shown:

	A	B	C	D	E	F	G
1	**Stock Quotes Provided by MSN Money**						
2	Click here to visit MSN Money						
3				Last	Previous Close	High	
4	Microsoft Corporation	Chart	News	25.11	24.91	25.17	
5	Home Depot, Inc.	Chart	News	27.24	26.65	27.25	
6	Southern Company	Chart	News	28.65	28.56	28.67	
7	Coca-Cola Company	Chart	News	40.11	39.9	40.33	
8	United Parcel Service, Inc.	Chart	News	58.14	57.73	58.23	
9	AT&T Corp.	Chart	News	13.98	13.66	14.01	
10	PC Connection, Inc.	Chart	News	5.45	5.3	5.76	

You can tell when the query is running and actively extracting data because Excel displays the spinning icon of the world on the status bar.



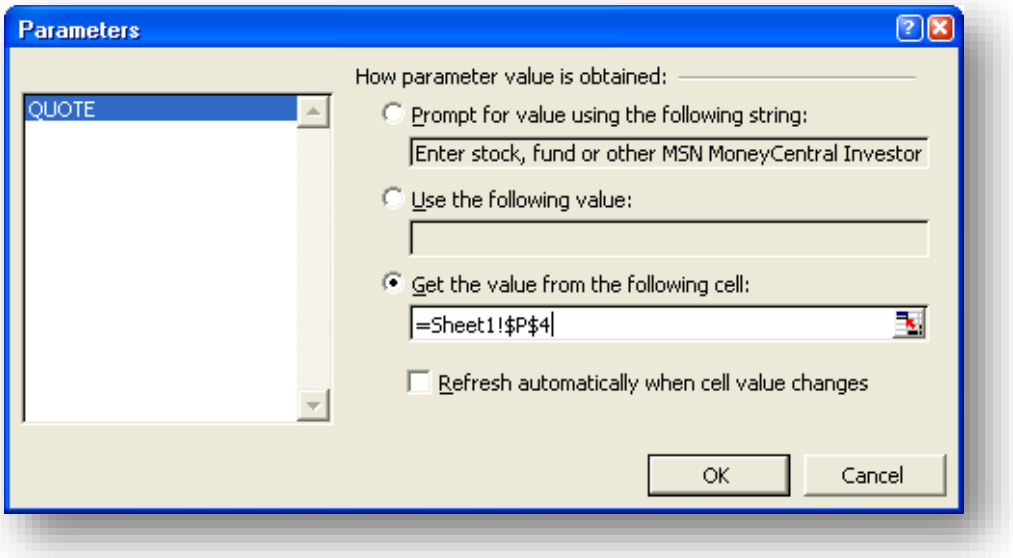
50. Completing the Stock Portfolio - Next add a column containing the number of shares owned, as wells as an additional column to computer the total value based on shares owned, as shown below.

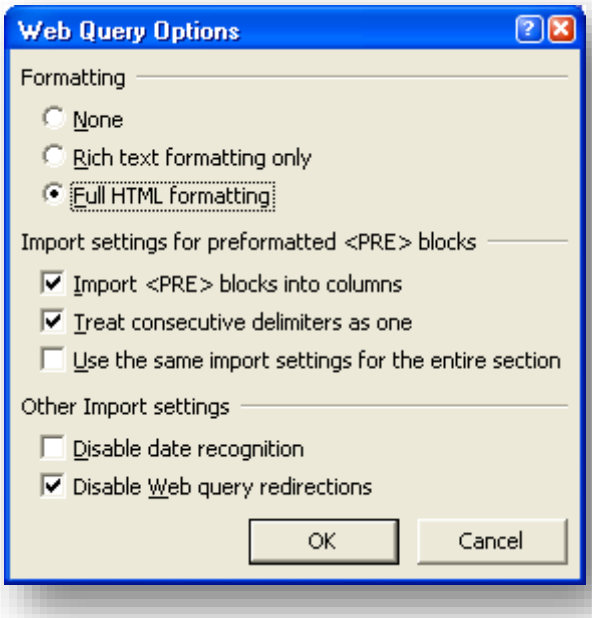
S4 =R4*D4

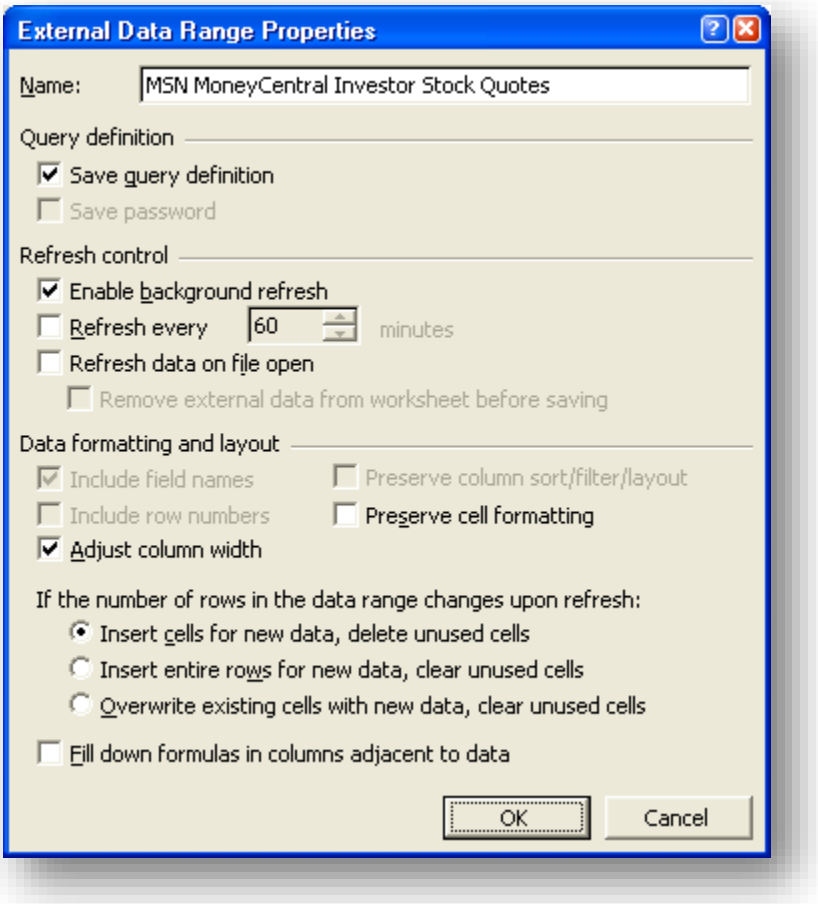
	P	Q	R	S	T
1					
2					
3	# Shares Out		Shares owned	Extended Value	
4	10,701,000,000		4,000	100,760	
5	2,326,000,000		4,000	110,040	
6	716,000,000		4,000	114,160	
7	2,470,979,000		4,000	160,200	
8	1,123,852,000		4,000	230,520	
9	784,732,000		4,000	55,880	
10	24,660,000		4,000	22,800	
11				794,360	
12					

51. Refreshing the Stock Prices - Once you have created your portfolio, simply click the Refresh Data button on the **External Data** Toolbar shown below to see the current value of your Portfolio.

52. Query Parameters - There are numerous options to help you extract exactly the data you want they way you want. As examples, the Parameters Box, Web Query Options box and External Data Properties Box (all three of which are shown below) displays these options.

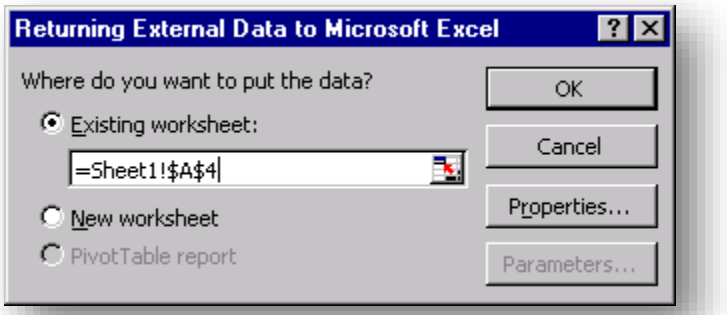


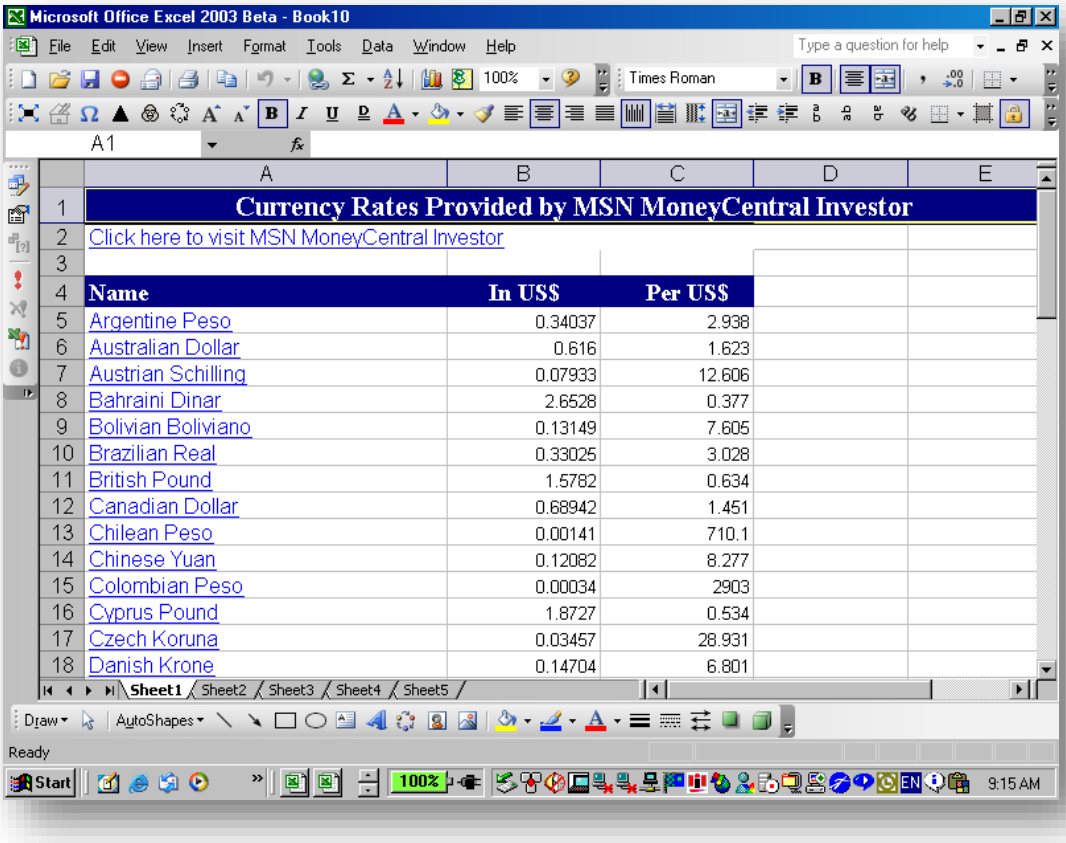




There are several key options shown above, including the ability to tie your web query to ticker symbols entered into a particular Excel cell; the ability to preserve formatting, and the ability to fill formulas (such as our calculations for total value), as more data is extracted by Excel. This is a great feature and using this technology, you can extract data out of any ODBC compliant database directly into Excel. All you need is the ODBC (Open Database Connectivity) driver for the desired database loaded on your computer, and in almost all cases, this is a free downloaded driver.

53. **Exchange Rate Query** – Using Excel's query feature you can also build a query to import live currency exchange rates. In Excel 2003 start by selecting **"Data – Import External Data, Currency Rates"**. The query dialog box will appear. The Wizard will ask you where you would like to import the data.





54. 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.

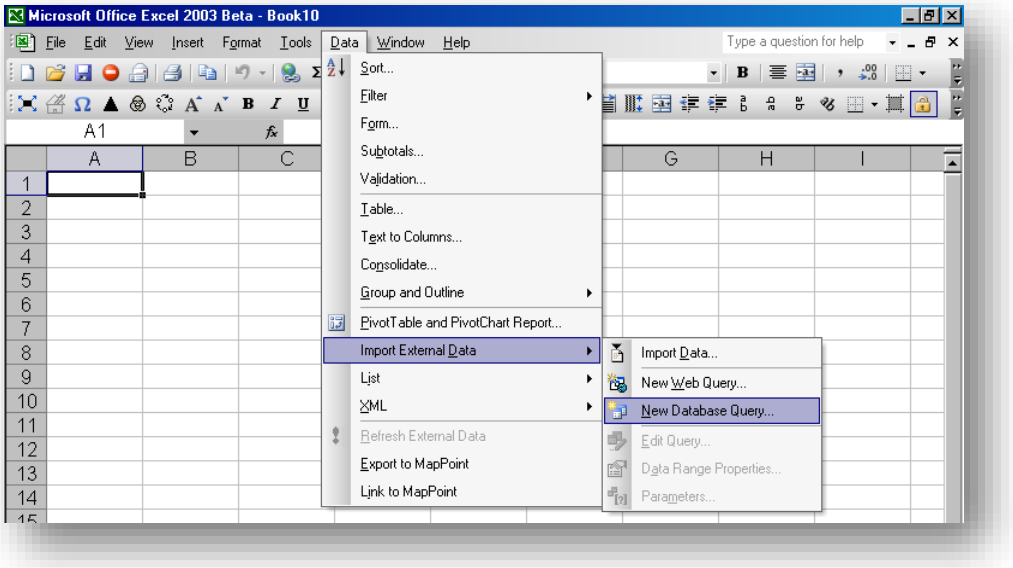
To use Microsoft Query to retrieve external data, you must:

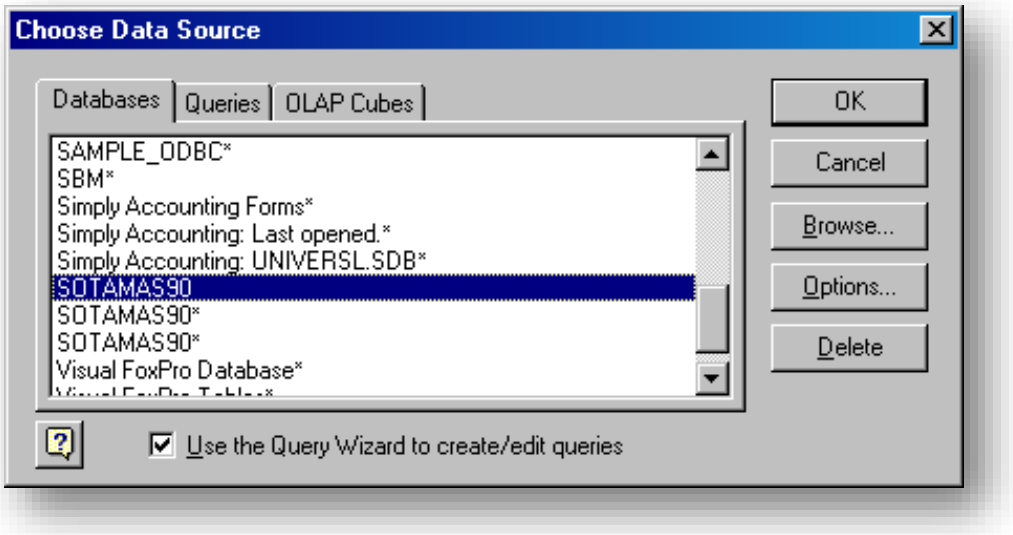
1. **Have access to an external data source -** If the data is not on your local computer, you may need to see the administrator of the external database for a password, user permission, or other information about how to connect to the database.

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

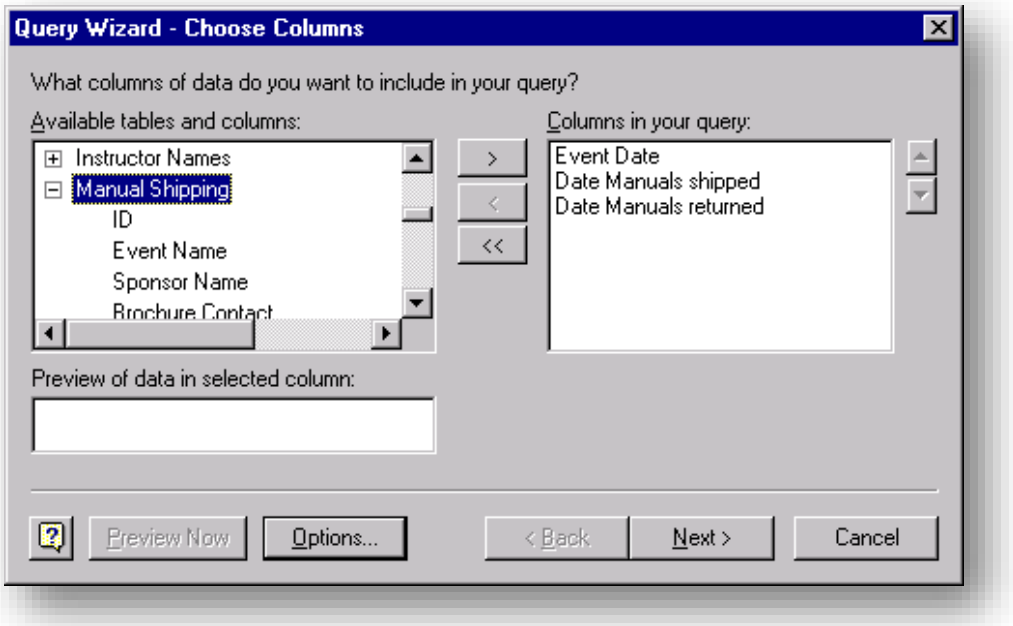
3. **Specify a source to retrieve data from, and then start using Microsoft Query** - For example, if you want to insert database information, display the Database toolbar, click Insert Database, click Get Data, and then click MS Query.

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.

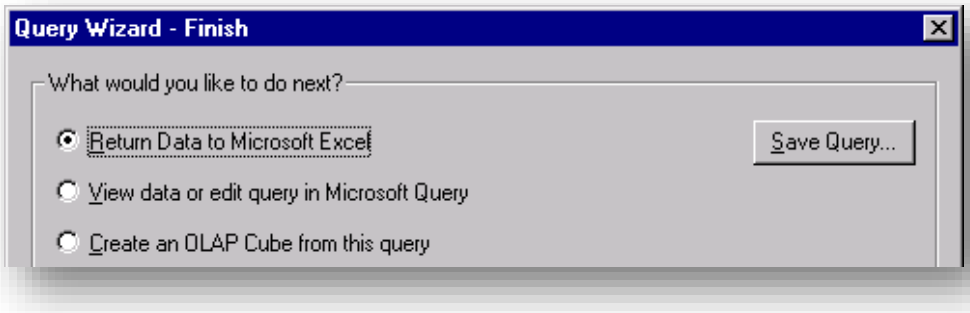


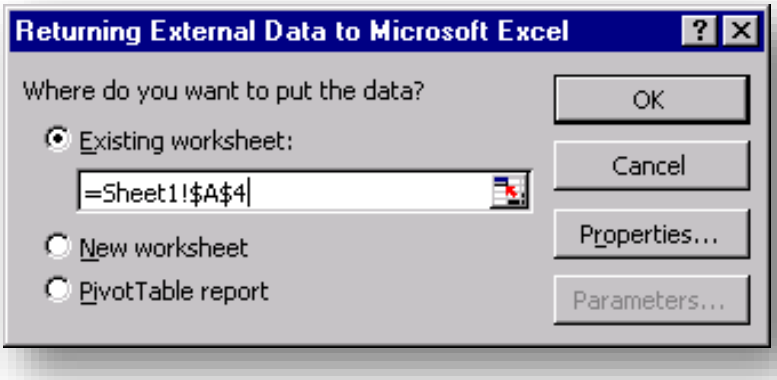


The first step is to select the type of database you want to query and to select the specific database.



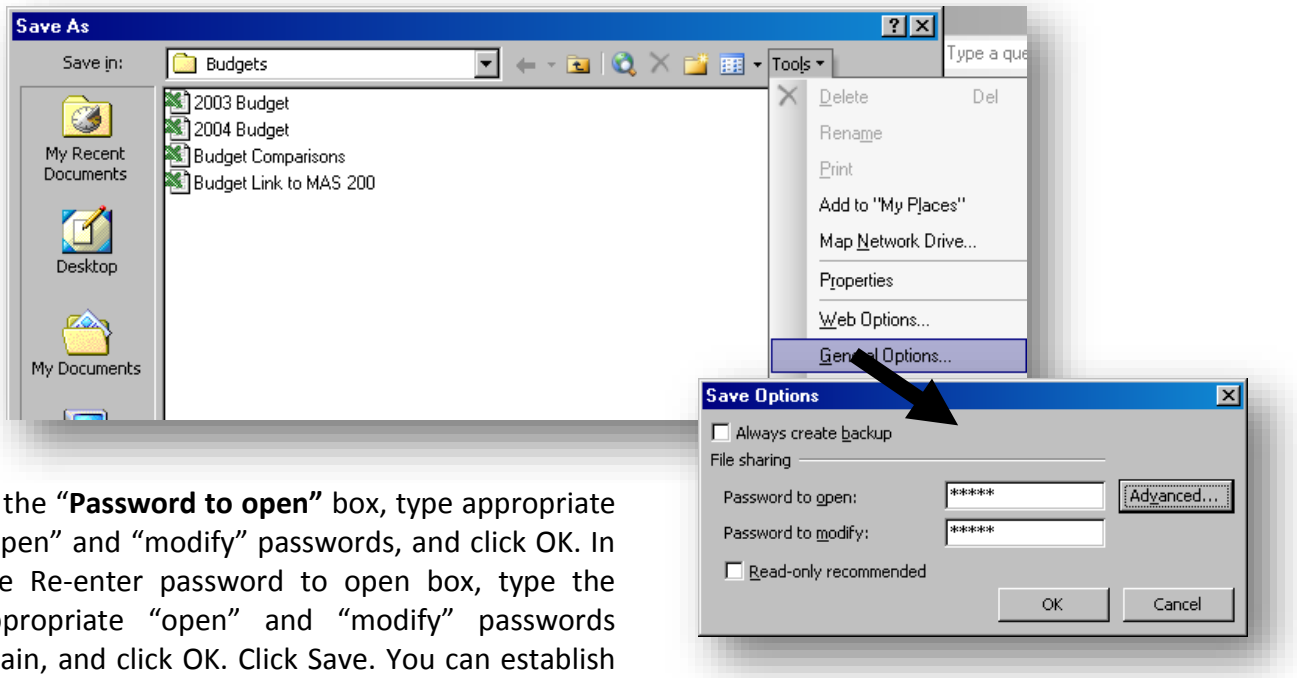
Upon the selection of the desired database a list of tables will be presented. Choose the desired tables, and select the desired data fields to be imported. You will then have the option to filter and sort the data before it is imported. Finally you will be given the option to save the query so that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



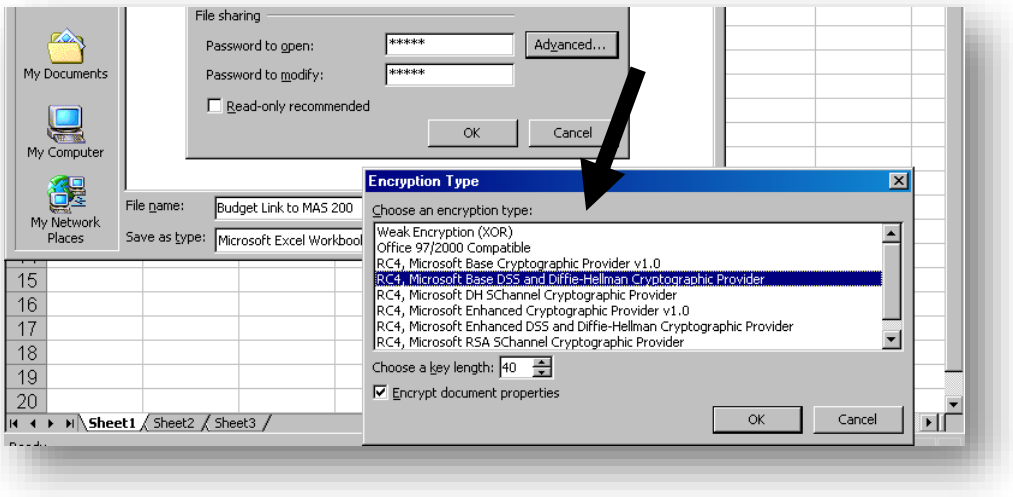


55. Protecting Excel Files with Passwords - Excel files can be protected in a variety of ways. The easiest method is to use Excel's built in password feature which allows you to create a password when a file is saved. With this tool, you can create a password which prevents either opening or modifying the file. The following are the steps needed to save a password protected Excel file in Excel 2003:

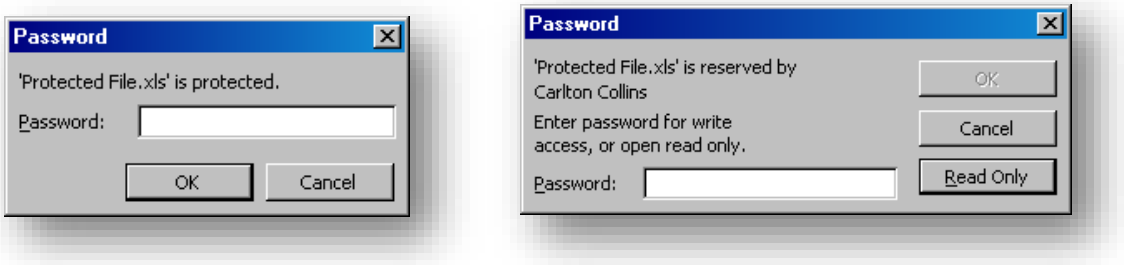
- On the "**File"** menu, click "**Save As"**.
- On the "**Tools"** menu in the "**Save As"** dialog box, click "**General Options"**.



In the "**Password to open"** box, type appropriate "open" and "modify" passwords, and click OK. In the Re-enter password to open box, type the appropriate "open" and "modify" passwords again, and click OK. Click Save. You can establish different passwords for opening or modifying an Excel file.

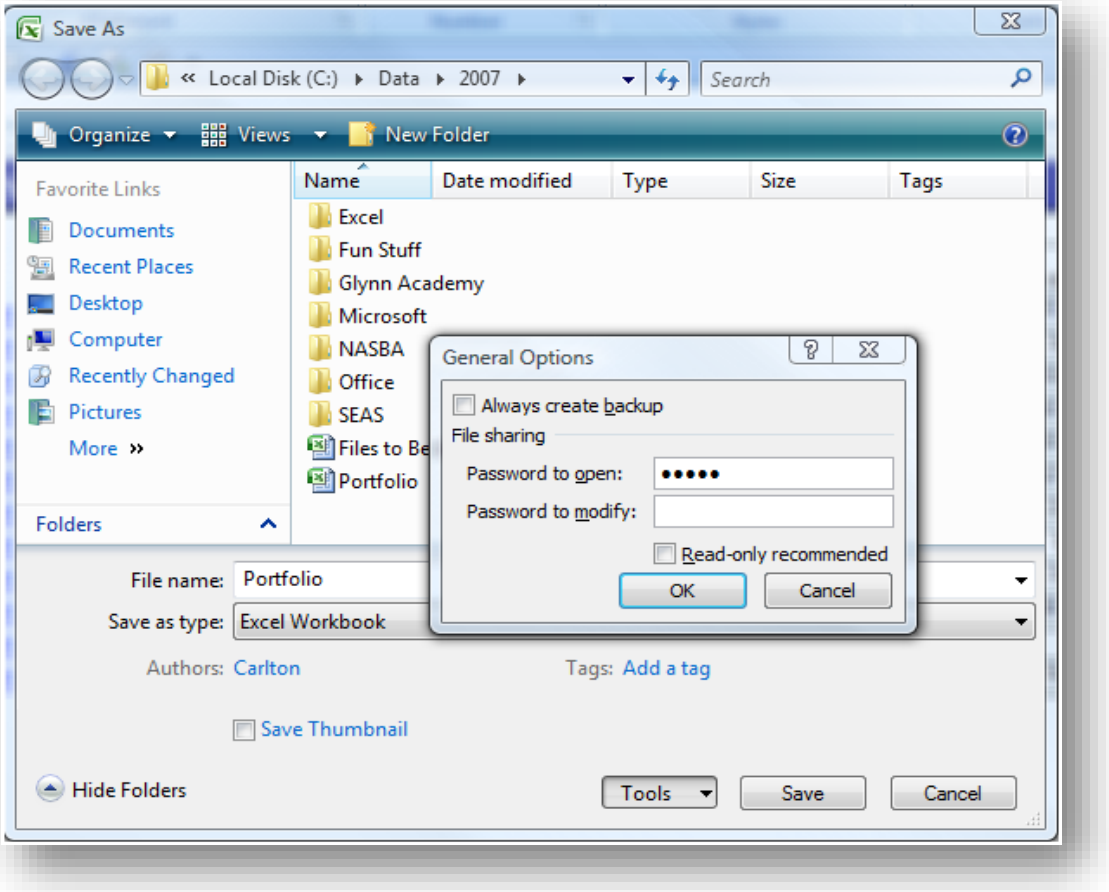


For the truly paranoid, Excel offers a wide range of encryption options, including control over the encryption technology and size of the encryption key used – ranging from 40 bit to 128 bit encryption. The dialog boxes shown below are what you will see when you attempt to open a password protected Excel file:



As you can see from the above screens, you can create a password that will be needed to open the file, or a password that will be needed to modify the file, or both. If you only create a password to modify the file, anyone can open the file, but will not be able to save the file unless they use a different file name or save the file in a different location. If you do not create a password for either but click the "Read-only recommended" check box, the person opening the file will simply get a suggestion that they open the file as a read only file. However, they are not required to do so, and can, at their option open the file as an unrestricted normal file.

56. **Password Protection in Excel 2007** – Password protection works the same way in excel 2007, except that the default level of encryption is 128 bit. This means that if you forget the password, there is no recovery option.

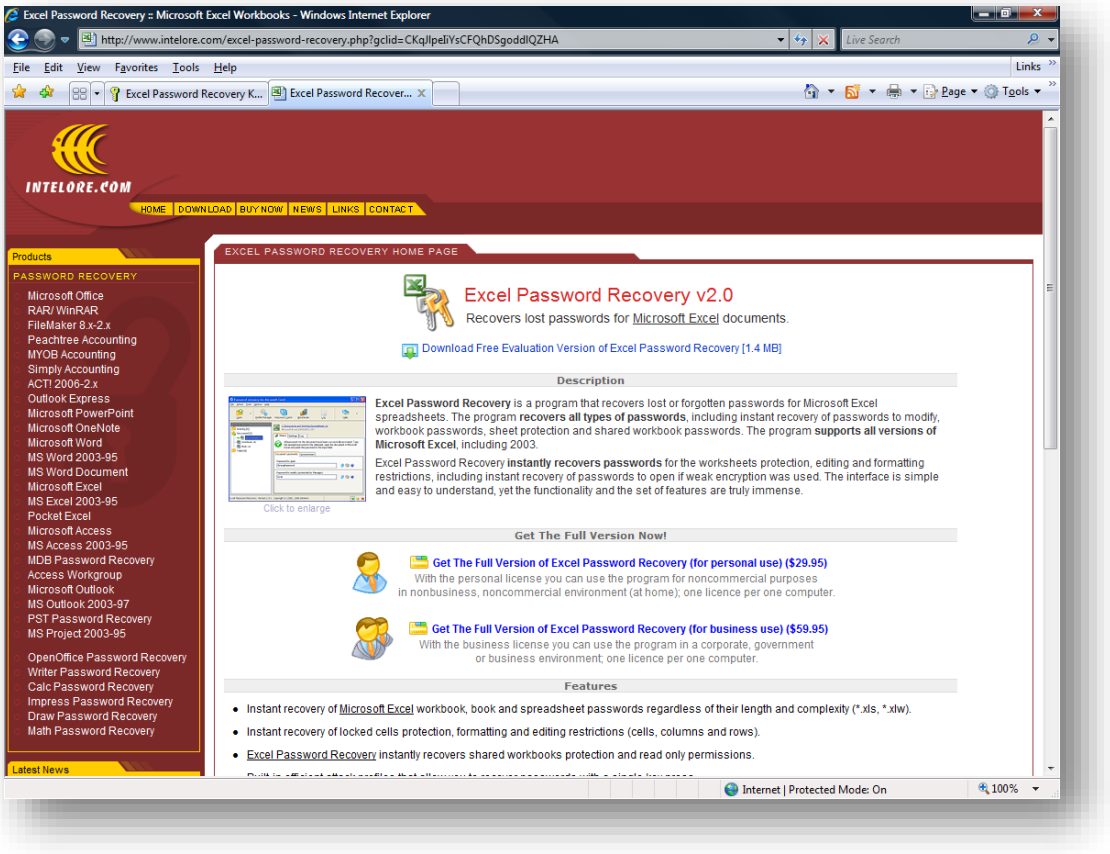


57. Opening Files When You Forget The Password - When you create a password, you should write it down and keep it in a secure place. If a password to a critical file is lost, or if the employee who knows the password leaves or dies, then valuable data and hundreds of people-hours could be at risk.

If you lose the password for an Excel 2003 file saved with the default 40-bit encryption, you may be able to open the file using third party services and utilities for finding a missing password - some people call these hacking tools. These third party services and utilities are not free and can take several weeks so you need to estimate the cost of the loss before proceeding. Some of the utilities involve dictionary-based solutions and others use the brute force method where every possible combination of characters is used. One company even uses an approach that looks for data encryption keys. Since the maximum length of a password is 15 characters, the brute force method is reasonably possible with enough computing power. The following are some Web sites that provide password cracking utilities and/or password recovery services:

www.lostpassword.com	www.crak.com

www.elcomsoft.com	http://lastbit.com/default.asp
www.accessdata.com	http://www.passwordportal.net/
www.pwcrack.com/excel.htm	http://www.intelore.com/



Example Source of Software to Recover MS Excel Passwords

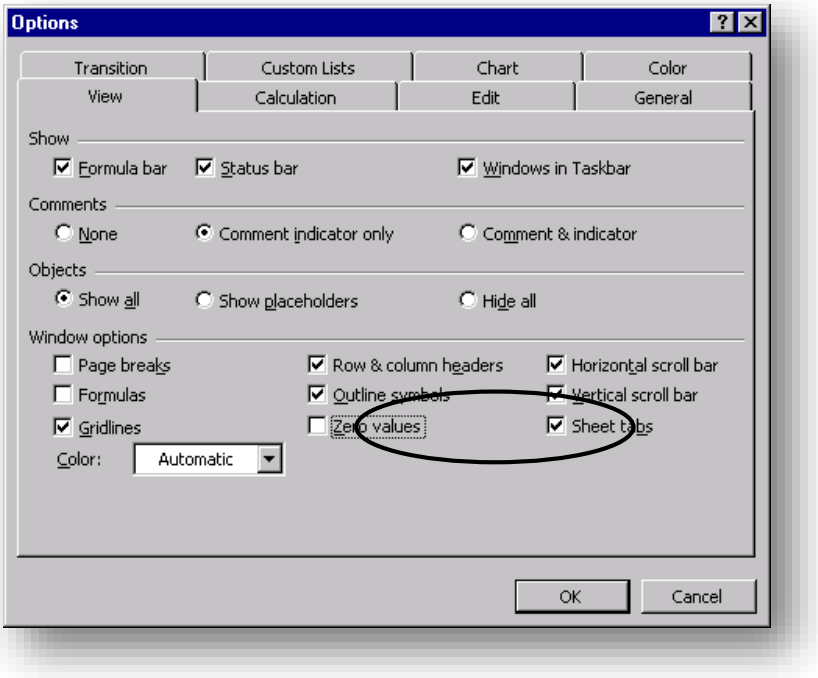
Basically some of these tools simply extract the data and open it in a blank Excel file. Others attempt to open the files using a large database of common passwords. Still others use the brute force method of testing every known prime number up to 40 bits (5 characters) in an attempt to find the password. For example, you may use 128 bit encryption to lock your file, but the password that accesses the 128 bit encryption key is “sunshine” which is not strong enough to protect the file.

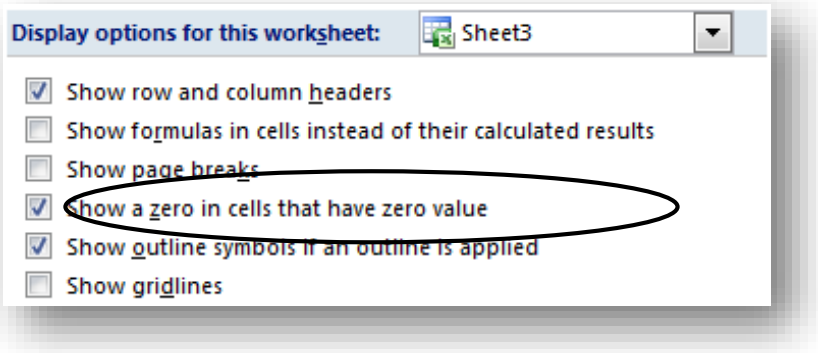
Please be warned that password cracking web sites frequently feature pornography, so searching for this topic at the office in plain view of others might not be a good idea. For stubborn cases, you might consider using a password cracking service; some of these services offer a money back guarantee. If they don’t crack the password, you don’t pay.

58. CTRL + SHFT + Arrow Key - The CTRL + SHFT + arrow key can be used easily to select rows or columns of data. Simply position your cursor at the top of a column or beginning of a row and press this key combination.

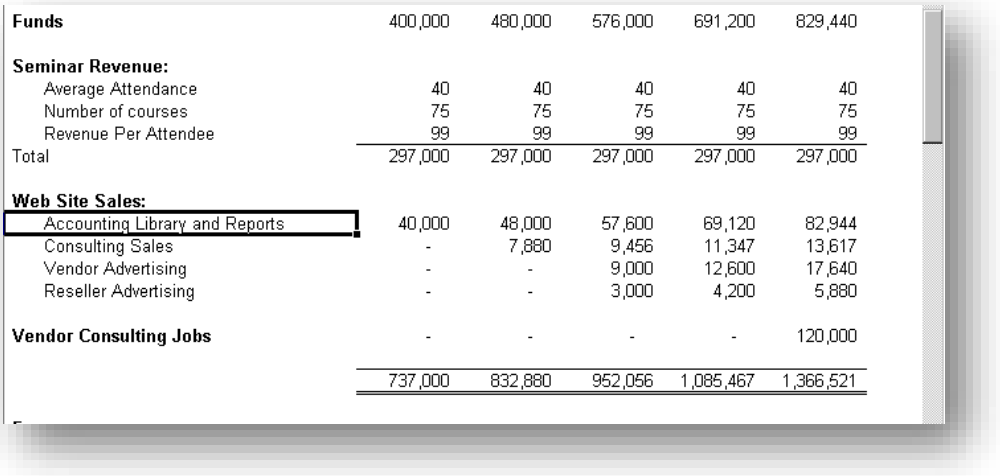
59. Hiding Zero Values - Frequently CPAs prefer to suppress zero values, and display blanks or dashes instead. This can be accomplished in three ways.

1. The first method suppresses all the zeros in the worksheet. It is accomplished by removing the check from the "Zero Values" check box in the **"Tools, Options, View"** dialog box in Excel 2003, or **"Excel Options, Advanced, Display Options, Show Zero"** in Excel 2007.





The screen below shows the results of hiding zero values in Excel.



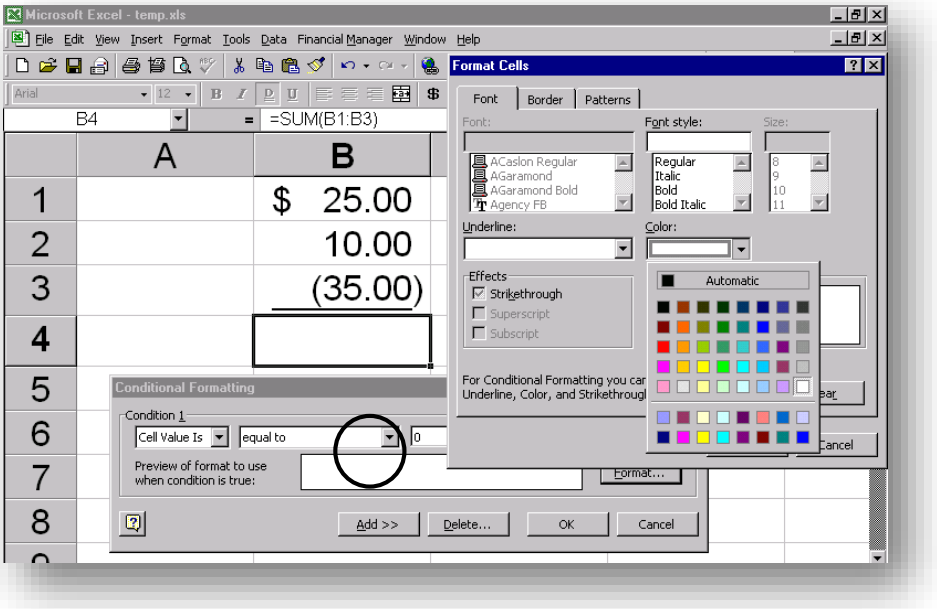
Funds	400,000	480,000	576,000	691,200	829,440
Seminar Revenue:					
Average Attendance	40	40	40	40	40
Number of courses	75	75	75	75	75
Revenue Per Attendee	99	99	99	99	99
Total	297,000	297,000	297,000	297,000	297,000
Web Site Sales:					
Accounting Library and Reports	40,000	48,000	57,600	69,120	82,944
Consulting Sales	-	7,880	9,456	11,347	13,617
Vendor Advertising	-	-	9,000	12,600	17,640
Reseller Advertising	-	-	3,000	4,200	5,880
Vendor Consulting Jobs	-	-	-	-	120,000
	737,000	832,880	952,056	1,085,467	1,366,521

2. The second method is often more useful as it allows you to hide zero values in selected cells. This is accomplished by placing a special "Custom Format" in those cells where you do not want the zero to appear. The following are the steps used to suppress zeros in selected cells:

    1. Select the cells that contain the zeros (0's) you want to hide.
    2. On the Format menu, click Cells, and then click the Number tab.
    3. In the Category list, click Custom.
    4. In the Type box, type 0;-0;;@

    There is one drawback to the above mentioned method of suppressing zeros. If the value in one of these cells changes to a nonzero value, the format of the value will be similar to the General number format. To get around this drawback you can use the third method to hide zeros which is "Conditional Formatting". You can even have negative numbers formatted differently than positive numbers. The following are the steps necessary to hide zeros with the Conditional Formatting feature while at the same time preserving the format you want for positive and negative numbers.

    1. Select the cell(s) that you want to affect.
    2. Open the Format Menu and choose Conditional Formatting.
    3. Select from the dropdown lists the options necessary to build an equation equal to zero.
    4. Next, click Format.
    5. Click the dropdown arrow to display the Color palette and select white (or the appropriate background color for your worksheet)
    6. Click OK to return to the Conditional Formatting dialog box.
    7. Click OK to accept the settings you have made.



3. **The Accounting Format** - The accounting format has several advantages but one disadvantage is that it will yield a "–" (dash) rather than a zero when a cell evaluates to be zero. This can be easily fixed by creating a custom format that slightly modifies the accounting format.

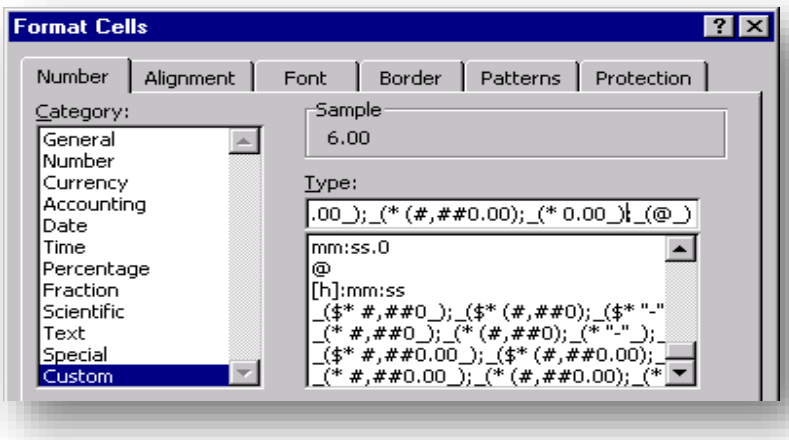
Accounting Format Before Modification

_(* #,##0.00_);_(* (#,##0.00);_(* "-"??_);_(@_)

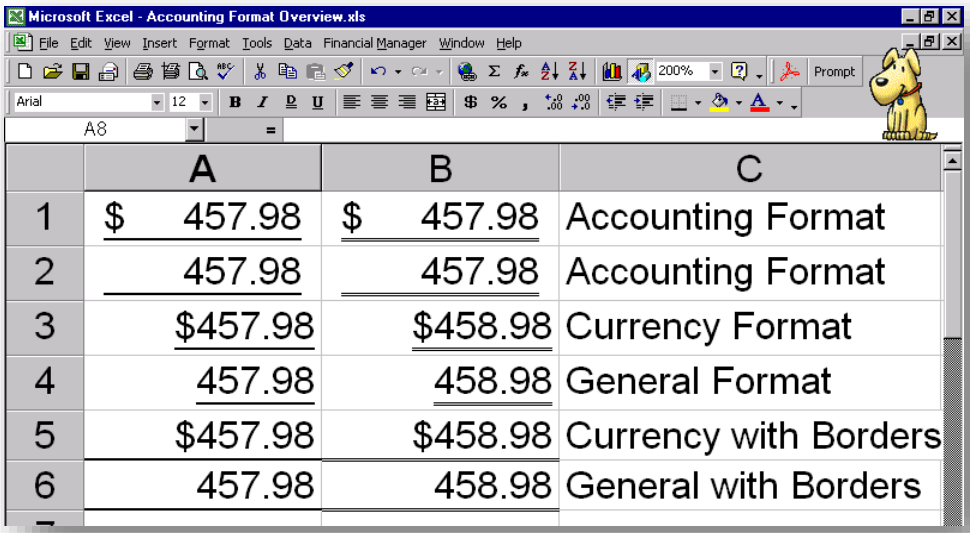
Accounting Format Modified to Get 0.00 Rather and - for Zero Values

_(* #,##0.00_);_(* (#,##0.00);_(* 0.00_);_(@_)

The easiest way to create this custom format is to first format the cell using the accounting format. Next bring up the format dialog box and select Custom Format. The current cell format (i.e. the accounting format) will be displayed in the Custom Format dialog box and all you will have to do is to modify the format sequence.

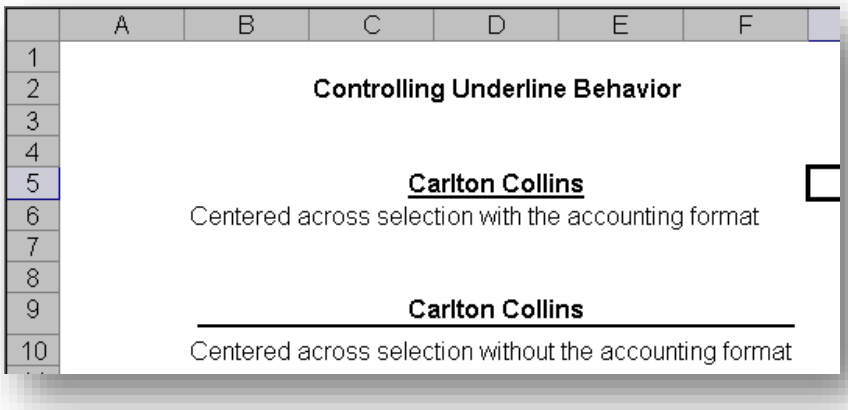


60. Using The Accounting Format to Underline Labels - The accounting format is useful in financial spreadsheets because it allows the user to create single and double underlines that do not change with the size of the number in the cell and are always just a little narrower than the cell.

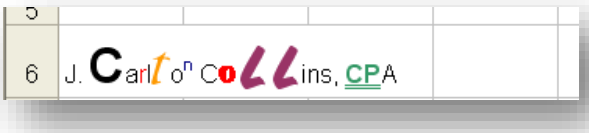


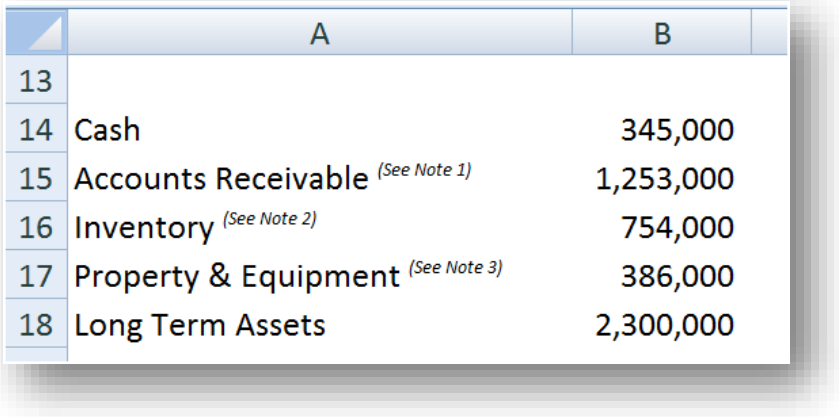
	A	B	C
1	$ 457.98	$ 457.98	Accounting Format
2	457.98	457.98	Accounting Format
3	$457.98	$458.98	Currency Format
4	457.98	458.98	General Format
5	$457.98	$458.98	Currency with Borders
6	457.98	458.98	General with Borders

The accounting format can also have a very favorable affect on labels you are trying to underline, especially when those labels are centered across multiple cells.



61. Formatting Individual Letters in Excel - You can apply formatting to individual letters in edit mode, two examples of which are shown below.





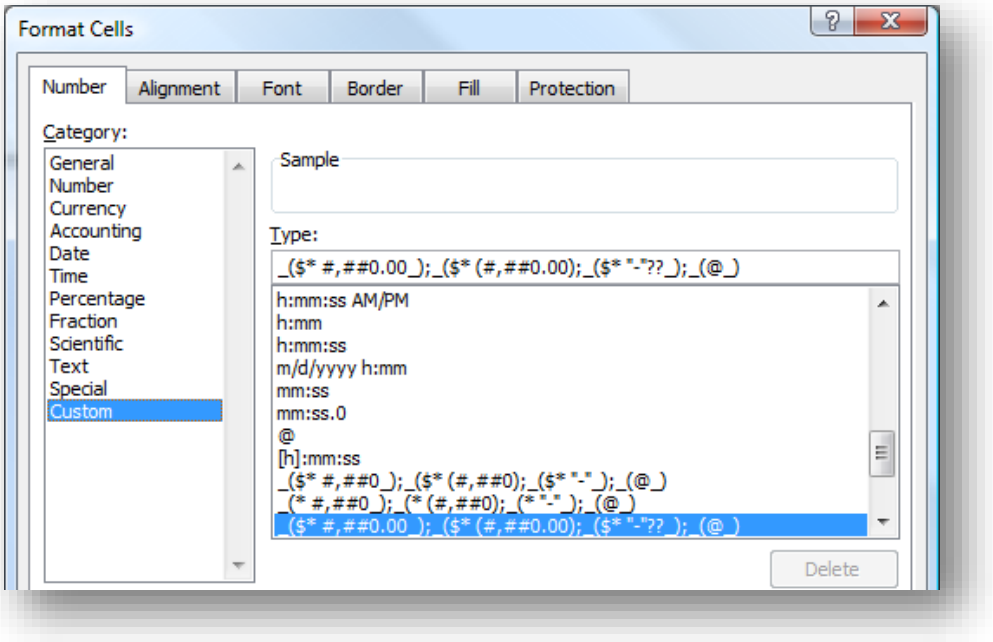
	A	B
13		
14	Cash	345,000
15	Accounts Receivable *(See Note 1)*	1,253,000
16	Inventory *(See Note 2)*	754,000
17	Property & Equipment *(See Note 3)*	386,000
18	Long Term Assets	2,300,000

62. Using Custom Formats to Control Numbers - If the number format options provided by Excel don't meet your needs you can easily create your own custom formats. Excel offers tools for creating very specialized number and date formats. These capabilities even include the ability to include labels as part of the format. For example, a format could include the label "Per Unit" as part of the format.

1. Select the cells you want to format.
2. On the Format menu, click Cells, and then click the Number tab.
3. In the Category list, click a category, and then click a built-in format that resembles the one you want.
4. In the Category list, click Custom.
5. In the Type box, edit the number format codes to create the format you want. (Editing a built-in format does not remove the format.)

You can specify up to four sections of format codes. The sections, separated by semicolons, define the formats for positive numbers, negative numbers, zero values, and text, in that order. If you specify only two sections, the first is used for positive numbers and zeros, and the second is used for negative numbers. If you specify one section, all numbers use that format. If you skip a section, include the ending semicolon for that section. Use format codes that describe how you want to display:

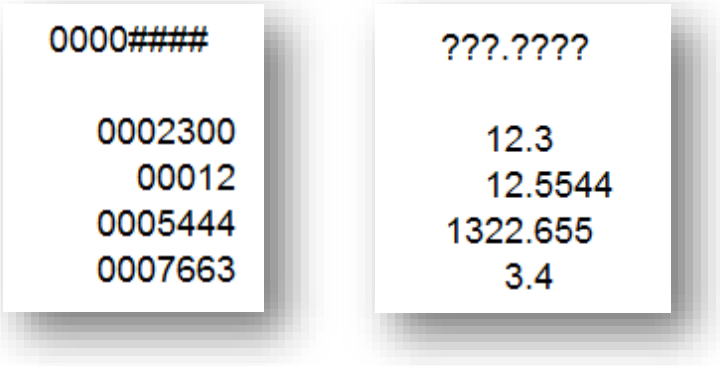
1. A number
2. Date or time
3. Currency, percentage, or scientific notation
4. Text or spacing



Number Format Codes

1. # displays only significant digits and does not display insignificant zeros.
2. 0 (zero) displays insignificant zeros if a number has fewer digits than there are zeros in the format.
3. ? adds spaces for insignificant zeros on either side of the decimal point so that decimal points align when formatted with a fixed-width font, such as Courier New. You can also use ? for fractions that have varying numbers of digits.

For example: To have 12 displayed as 12.0 and 1234.568 displayed as 1234.57 you would use the #.0# custom format. To have 44.398, 102.65, and 2.8 with aligned decimals you would use the ???.??? custom format. Here are visual examples:



Date and Time Format Codes

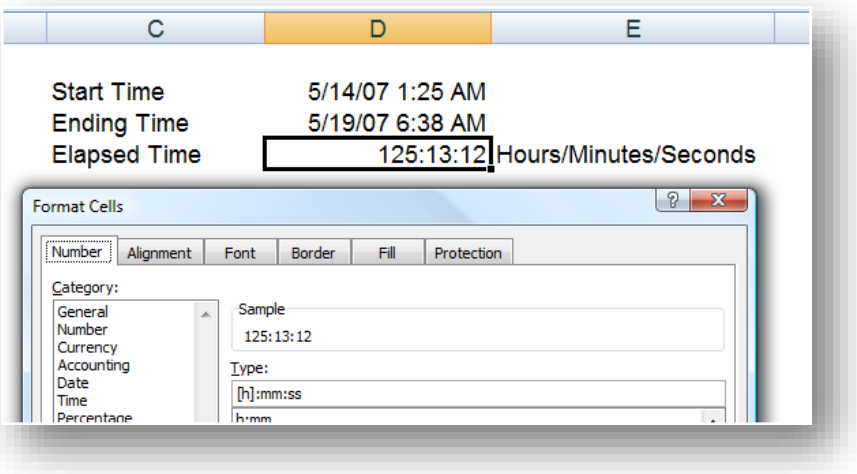
To display days, months, and years, include the following format codes in a section. If you use "m" immediately after the "h" or "hh" code or immediately before the "ss" code, Microsoft Excel displays minutes instead of the month.

If the format contains an AM or PM, the hour is based on the 12-hour clock, where "AM" or "A" indicates times from midnight until noon and "PM" or "P" indicates times from noon until midnight. Otherwise, the hour is based on the 24-hour clock. The "m" or "mm" code must appear immediately after the "h" or "hh" code or immediately before the "ss" code; otherwise, Microsoft Excel displays the month instead of minutes.

To Display	Use this Code
Months as 1–12	M
Months as 01–12	Mm
Months as Jan–Dec	Mmm
Months as January–December	Mmmm
Months as the first letter of the month	Mmmmm
Days as 1–31	D
Days as 01–31	Dd
Days as Sun–Sat	Ddd
Days as Sunday–Saturday	Dddd
Years as 00–99	Yy
Years as 1900–9999	Yyyy
Hours as 0–23	H
Hours as 00–23	Hh
Minutes as 0–59	M
Minutes as 00–59	Mm
Seconds as 0–59	S
Seconds as 00–59	Ss
Hours as 4 AM	h AM/PM
Time as 4:36 PM	h:mm AM/PM
Time as 4:36:03 P	h:mm:ss A/P
Elapsed time in hours; for example, 25.02	[h]:mm
Elapsed time in minutes; for example, 63:46	[mm]:ss
Elapsed time in seconds	[ss]
Fractions of a second	h:mm:ss.00

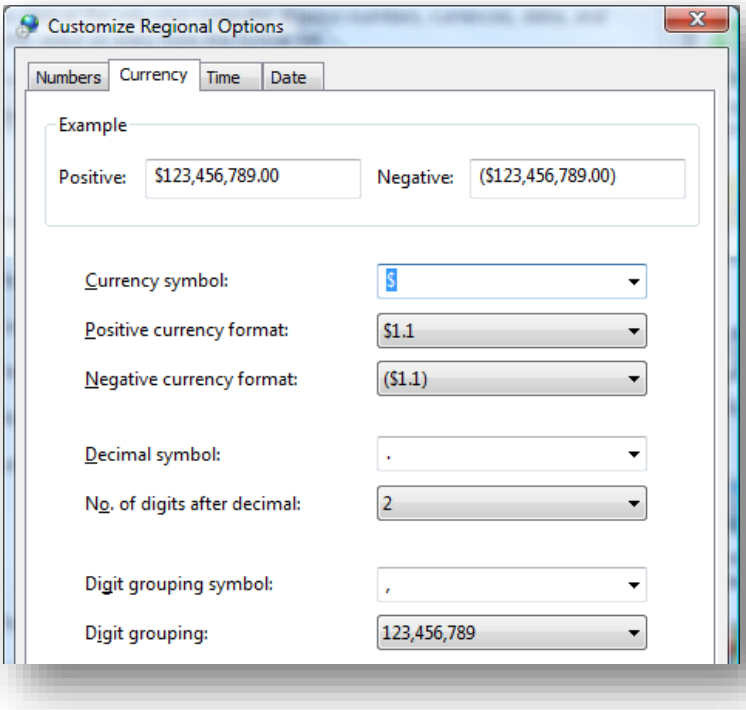
In addition to the above formatting characters, Excel allows you to use the left and right bracket around any time or date code to make Excel show elapsed time. For example, let's assume you have a start time (or date) as a fixed value in a cell and you have a formula that calculates the current time and date (i.e. =now()) in another cell. You can subtract the beginning time or date from the current time and date and have the elapsed time (or number

of days, or number of minutes, or number of seconds, etc.) displayed using the left and right brackets.



Keep in mind that you can also custom format formulas as well.

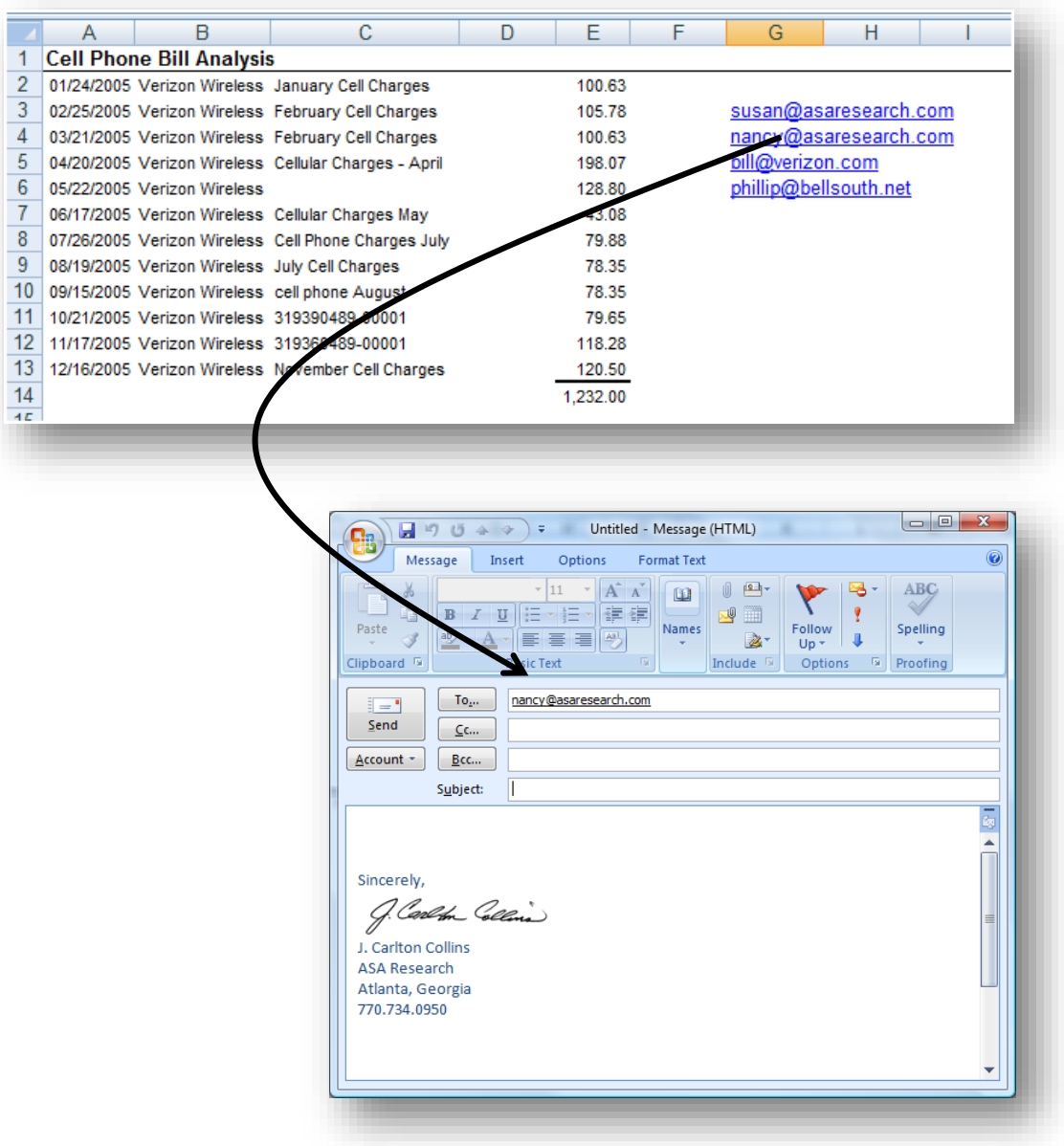
63. **Note Regarding Custom Formats -** Custom formats are saved with the workbook. To have Microsoft Excel always use a specific currency symbol, change the currency symbol selected in Regional Settings in Control Panel before you start Excel.



64. **Percentage Formats** - To display numbers as a percentage of 100, include the percent sign (%) in the number format. For example, a number such as .08 appears as 8%; 2.8 appears as 280%.

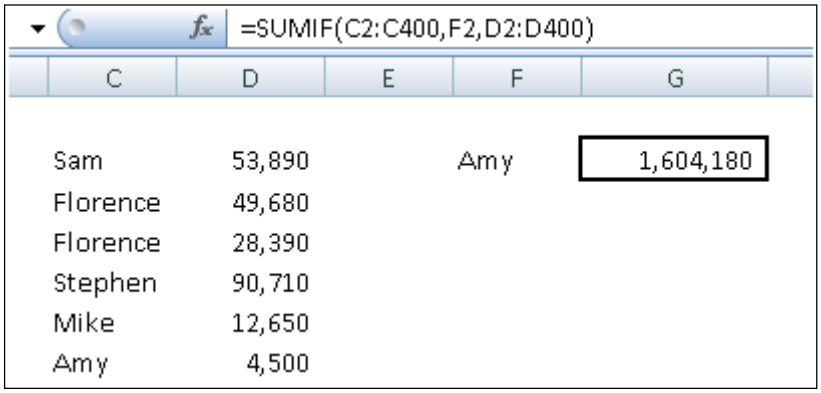
65. **E-Mail Hyperlinks in Excel Workbooks** - Excel automatically recognizes e-mail hyperlinks in worksheets. In some cases this feature can make it easier for users of the worksheet to communicate with one another.

    To use this feature, simply type the relevant e-mail addresses, and excel automatically converts them to a hyperlink. Thereafter, worksheet users can click on these addresses to launch their e-mail application, complete with e-mail address inserted.

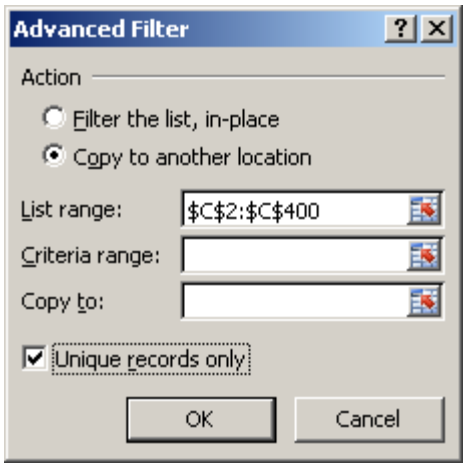


66. **Text to Speech** – Excel provides the ability to read text aloud. Excel 2007's Speak Cells Tool sounds better and clearer than Excel 2003's text to Speech capabilities. The actual voice used can be changed in the Control Panel.

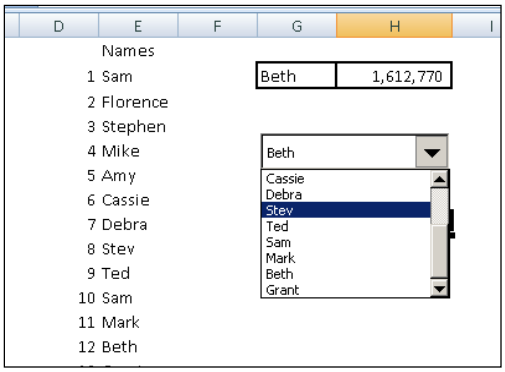
67. **SUMIF** – The SUMIF function can be used to sum only selected cells in arrange when adjacent cells meet a specified criteria. For example, assume column A has a list of 20 repeating names, and that list is 400 lines long. Further assume that column B has values. Your goal is to total the cell values for a selected name, such as "Amy" as shown in the example below:



68. **Data Filter Advanced** – If you have a long list of text or values, and you want to extract only a unique list of those values, you can use the data, Filter, Advanced Filter, Unique Records Only command to accomplish this task.



69. COMBO Box – The combo box tool can turn a list into a drop down box. A drawback of the Excel combo box tool is that it only returns the number of the selection, not the selection itself. Therefore the Combo Box tool is often used in conjunction with the VLOOKUP function).



-

Amortization Schedule Hands on Practice

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 some money 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 Scenario 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

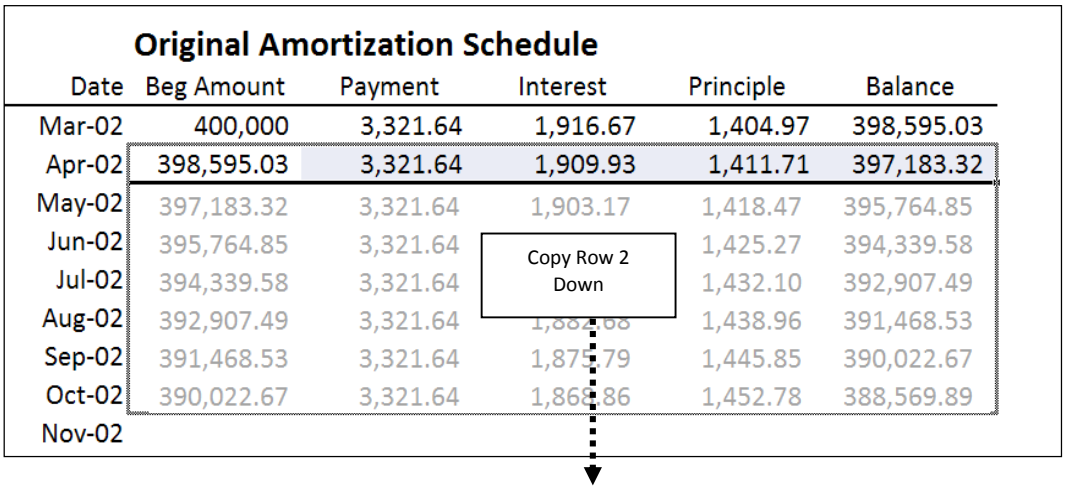
Formulas

Original Amortization Schedule

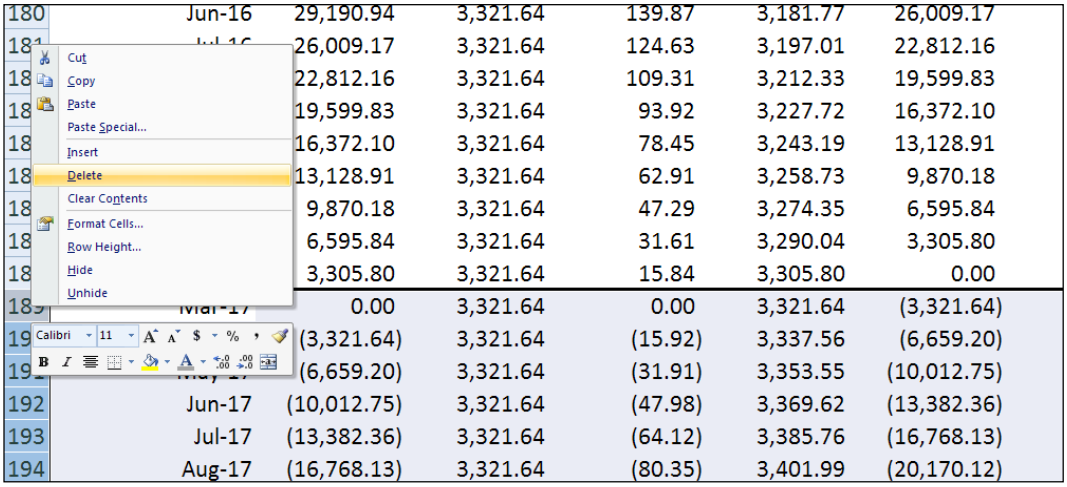
Date	Beg Amount	Payment	Interest	Principle	Balance
Mar-02	400,000	3,321.64	1,916.67	1,404.97	398,595.03
Apr-02	398,595.03	3,321.64	1,909.93	1,411.71	397,183.32

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.

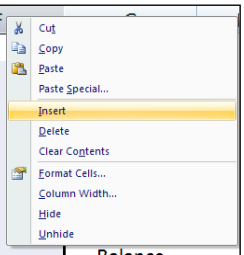


7. Enter a formula under the interest column to calculate the total amount of interest paid.

	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

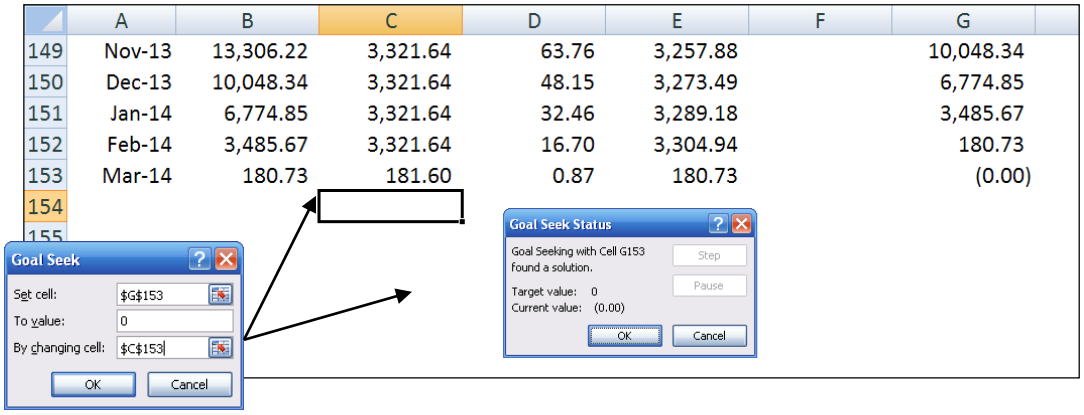
Sheet1 Sheet2 Sheet3

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.

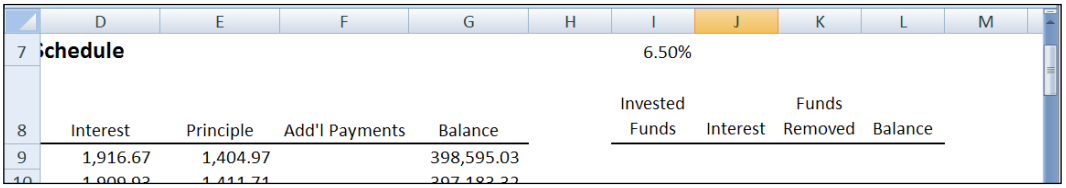


12. Insert SUM formulas under the interest and principle columns, and create another formula to subtract the total interest on Sheet1 by the total interest calculated on Sheet2.

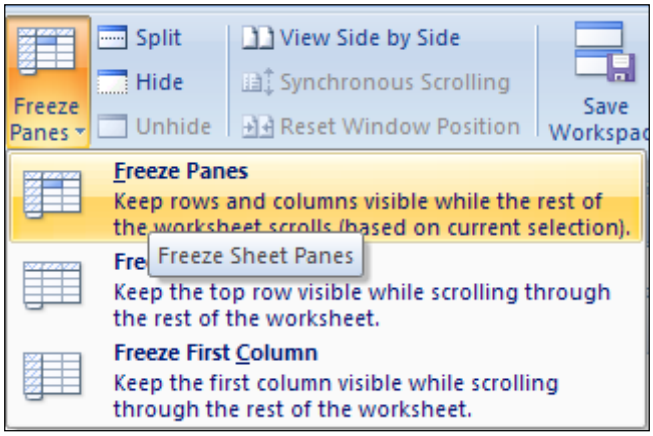
151	Jan-14	6,774.85	3,321.64	32.46	3,289.18		3,485.67
152	Feb-14	3,485.67	3,321.64	16.70	3,304.94		180.73
153	Mar-14	180.73	181.60	0.87	180.73		(0.00)
154	Totals			153,497.81	325,000.00	75,000.00	
155							
156	Total Interest Savings			44,397.45			

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.

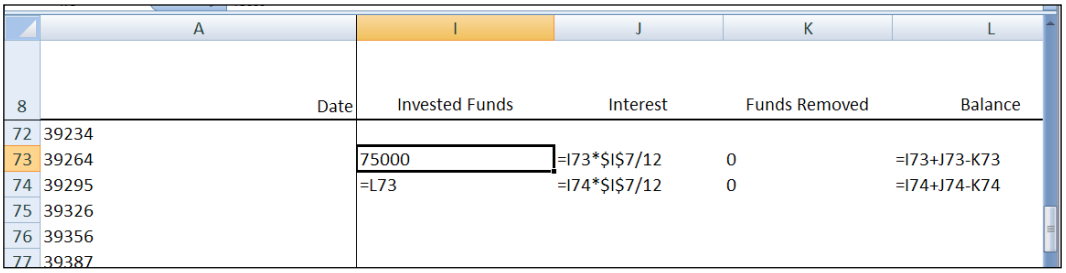
13. Create a copy of Sheet2 on Sheet3. Paste the Column Widths as well. Erase the $75,000 principle payment. Add columns to the right to accommodate the mutual fund investment.



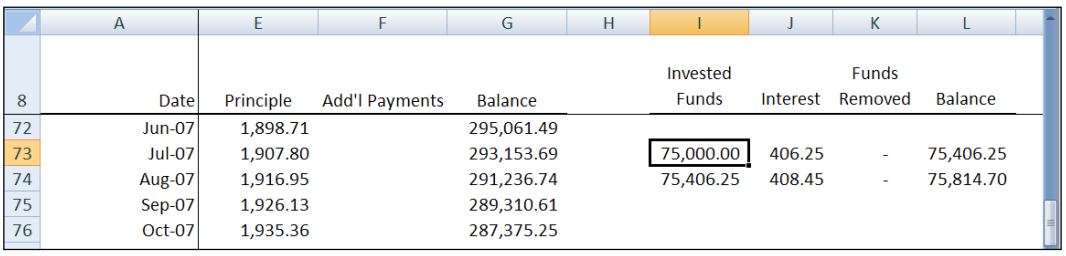
14. Place your cursor underneath the headings, and to the right of the date column. Next, fix the headings by selecting "Freeze Panes, Freeze Sheet Panes" from the View Ribbon's Widow chunk as shown below. This will enable you to scroll the data and still see the row and column headings even when scrolling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



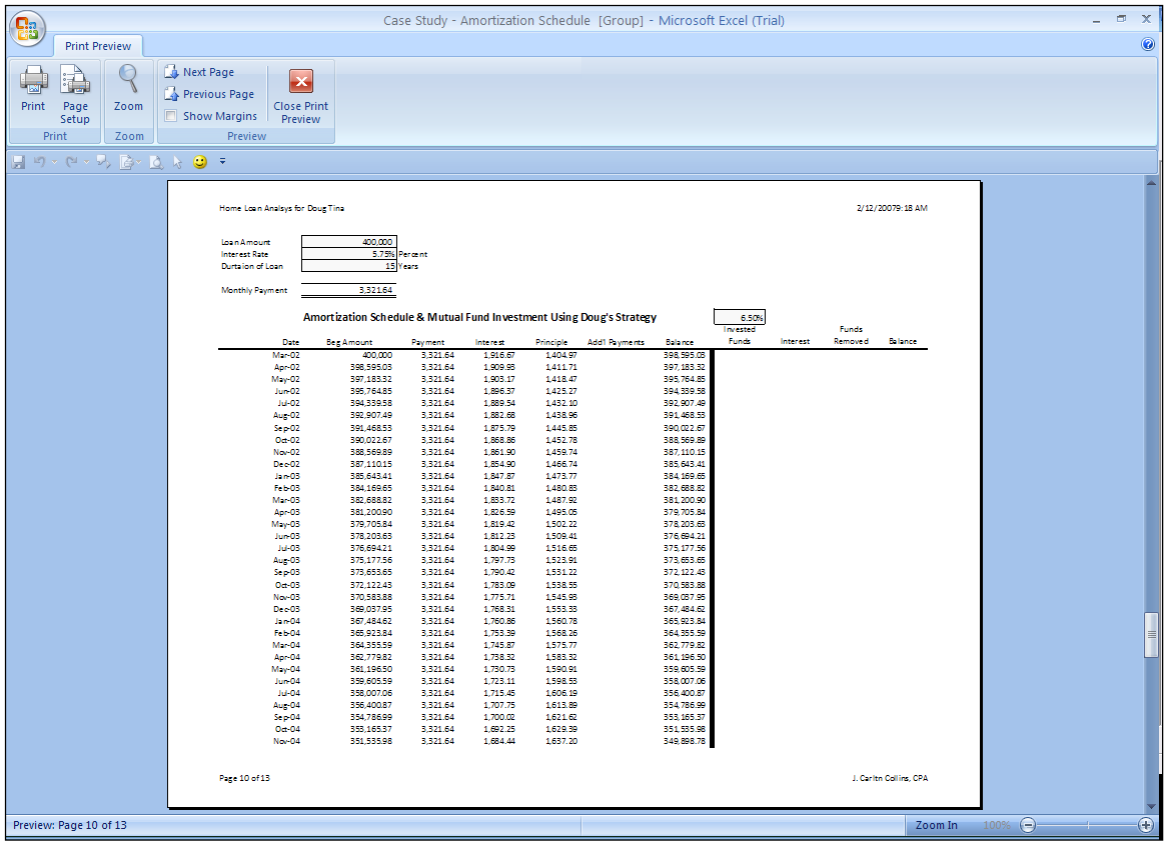
Results

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.

Financial Statements Projections with Tax Calculations
Hands on Practice

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:

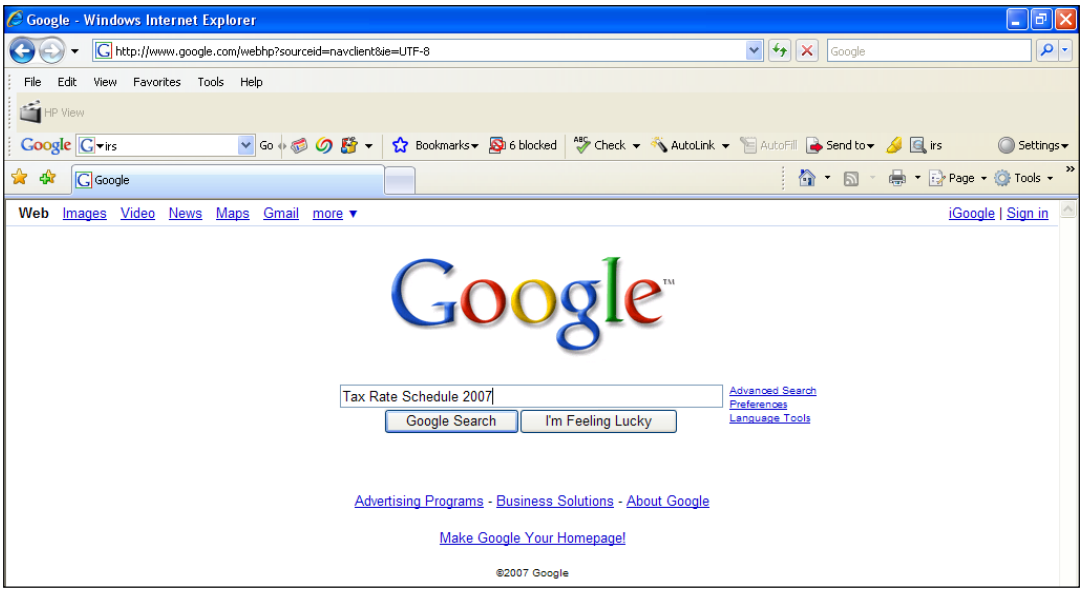
1. Copying Web Data to Excel
2. Parsing Data
3. =FIND
4. =MID
5. =VALUE
6. =VLOOKUP
7. Absolute vs Relative References
8. Worksheet Design
9. 3-D Worksheets

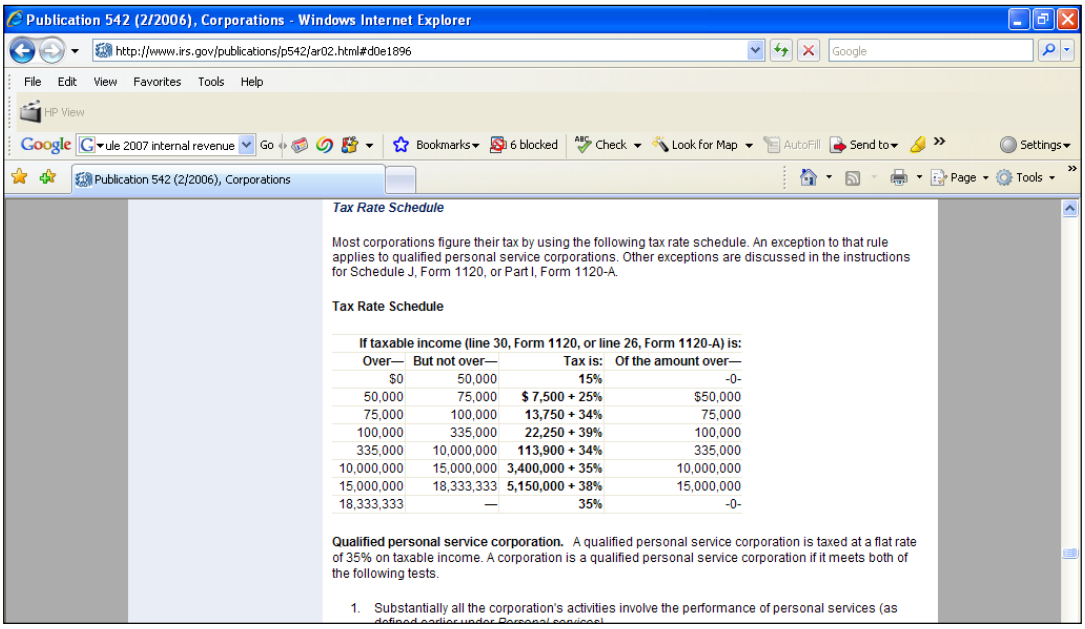
The =HLOOKUP & =VLOOKUP Functions

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

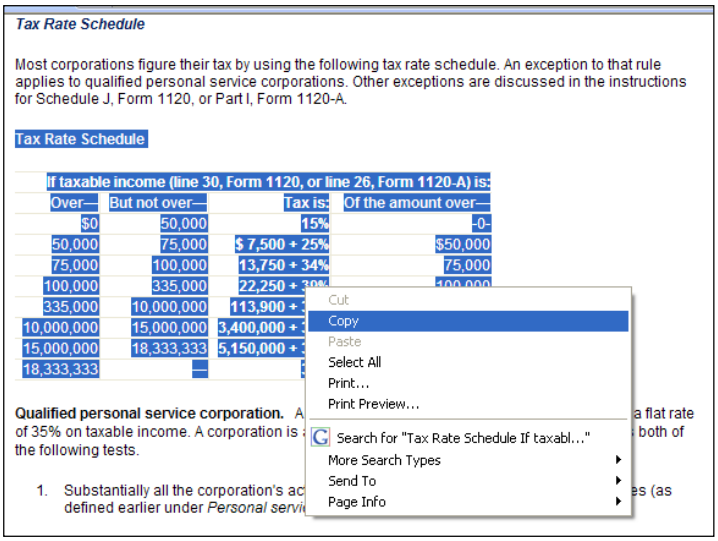
spreadsheet below. Our case study begins by looking up the necessary tax rate schedule on the IRS web site.

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

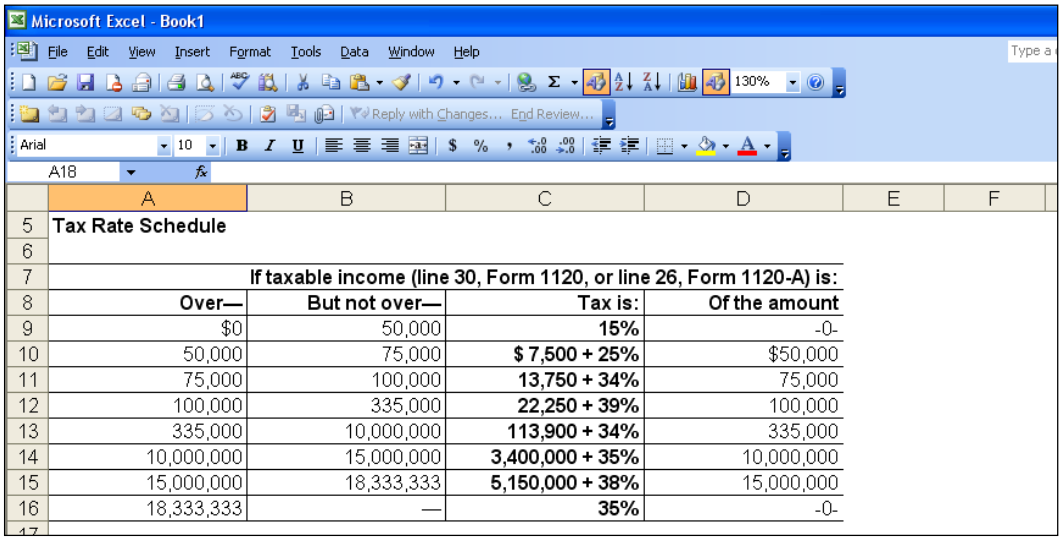




2. Copy the tax rate schedule from the IRS web site.

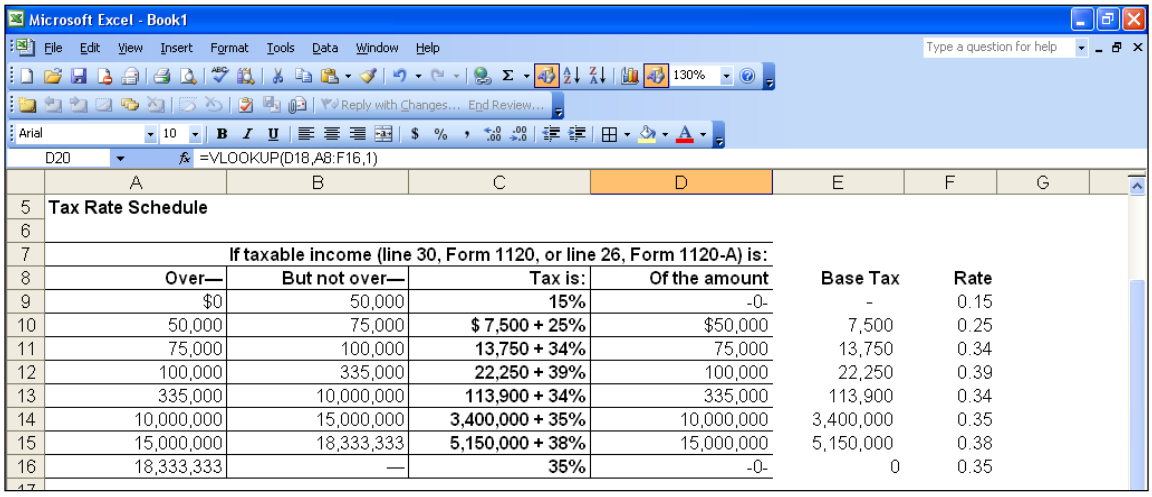


3. Paste the results into Excel.



	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	

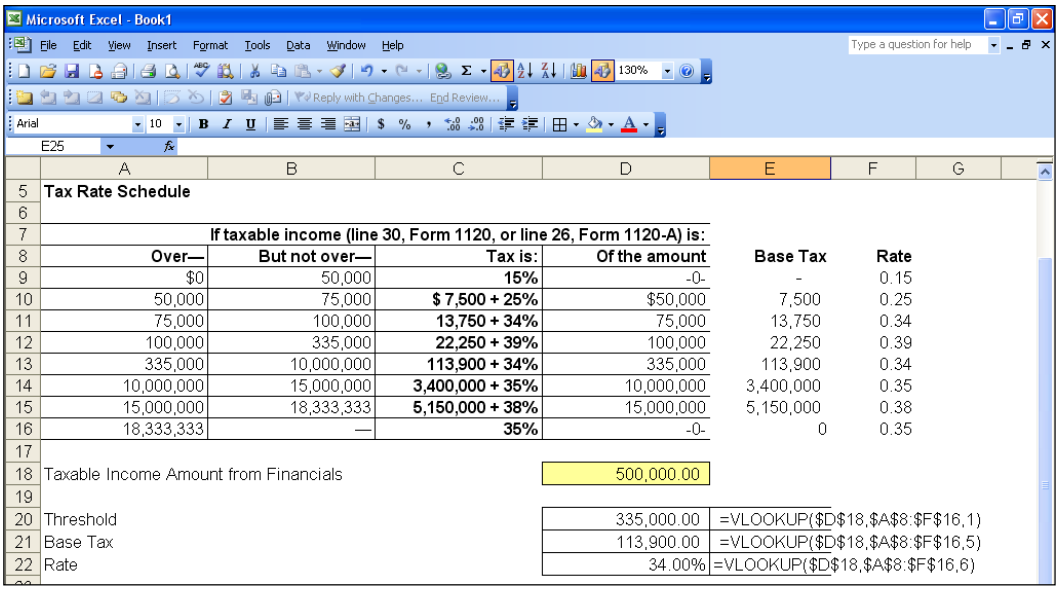
The following screen shows the formulas used to convert the text in column 3 into values in columns 5 and 6.

, 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:**			
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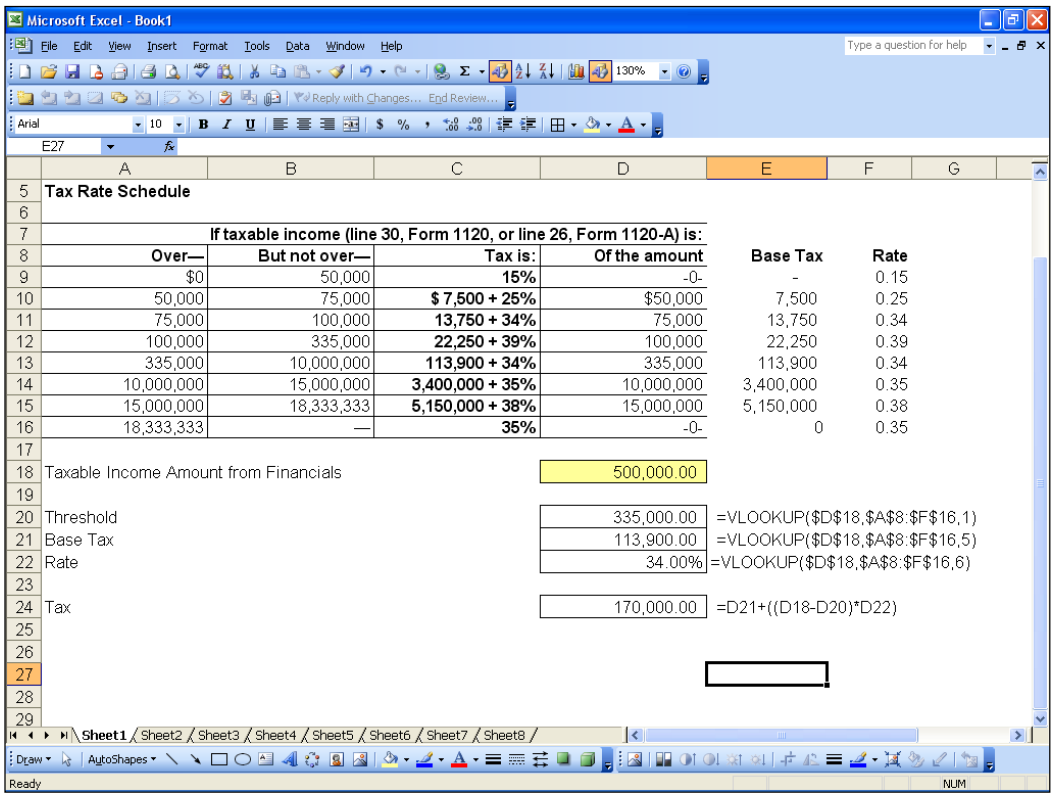
15	15,000,000	18,333,333	**5,150,000 + 38%**	15,000,000	5,150,000	0.38	
16	18,333,333	—	**35%**	-0-	0	0.35	
17							
18	Taxable Income Amount from Financials			500,000.00			
19							
20	Threshold			335,000.00	=VLOOKUP($D$18,$A$8:$F$16,1)		
21	Base Tax			113,900.00	=VLOOKUP($D$18,$A$8:$F$16,5)		
22	Rate			34.00%	=VLOOKUP($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

	A	B	C	D	E	F	G
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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)		
23							
24	Tax			170,000.00	=D21+((D18-D20)*D22)		
25							
26							
27							
28							
29							

Summary of 50 Quick Tips – Shown at a Glance

The Excel workbook used in class to demonstrate these quick tips can be downloaded instantly at the following address:

1	Right Click Status Bar - *(View sums, averages, mins, maxes immediately)*
2	CTRL + Mouse Scroll - *(Zoom in & out with your mouse)*
3	Double Click the Format Painter - *(Tool sticks until clicked again)*
4	Replace Formatting - *(Find and replace one formatting with another)*
5	Click on Edge of Cell - *(Navigate in a range of cells)*
6	Turn off Task Pane - *(Put an end to TaskPane)*
7	Control Tilde (CTRL + ~) - *(View underlying formulas)*
8	Indent Icon - *(Indent cells or columns instantly)*
9	ALT + Down Arrow (or Shift-F10) - *(Pick from a drop down list)*
10	F4 - *(Repeat the last command such as insert rows or change row height)*
11	Alt + Enter - *(Wrap text instantly)*
12	& - *(Combine text from multiple cells)*
13	Right Click Tab, Copy, Create Copy - *(Insert new sheet with headers, footers, etc)*
14	File, Send To, Mail Recipient - *(E-Mail a worksheet, workbook or chart)*
15	ComboBox from Forms Toolbar - *(Insert a combobox)*
16	Double Click Fill Handle - *(Copies formula down the relevant range)*
17	=Upper, =Lower, =Proper - *(Change text case)*
18	Paste Special, Values - *(Convert formulas to numbers)*
19	F4 in Edit Mode - *(Toggle Absolute References)*
20	Paste Special, Transpose - *(Invert a matrix of numbers)*
21	Ctrl + D - *(Copy Data to the down)*
22	Ctrl + R - *(Copy data to the right)*
23	Defined Names - *(Refer to names rather than cell addresses)*
24	Data, AutoFilter, Advanced, Copy, Unique - *(Extract unique values)*
25	Tools, Options, Calculation, Precision as Displayed *(Avoid rounding errors)*
26	Right Click Toolbar, Options, Show Full Menus - *(Show all menu options)*
27	Tools, View, Zero Values - *(Hide zero values)*
28	Tools, AutoCorrect, Smart Tags, None - *(Turn off Smart Tags)*
29	Filter Data, Apply Color, Un-filter Data - *(Color filtered results)*
30	PDF2XL - *($95 product converts PDF's to Excel files)*
31	Data Validation - *(Insert a pop up comment into a cell)*
32	Ctrl+Shft+End - *(Select row to the right)*
33	Ctrl+Shft+Home - *(Select row to the left)*
34	F11 - *(Produce a quick chart)*
35	Print Area in Name Box - *(Quickly identify the print area)*
36	Displaying the Styles Tool - *(Toolbar access to styles)*
37	Format, Styles - *(Create new styles)*
38	Control Panel, Regional Options - *(Control how dates are displayed)*
39	=Substitute - *(Remove or replace unwanted characters)*
40	View, Sized with Window - *(Resizes chart to fit Window)*

41	Ctrl+Spacebar - *(Select a column)*
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 50 / 9 recently used files
17. Default File Format - Tools, Options, Transition
18. Embedded Voice clips
19. Embedded Video Clips
20. Organization Charts

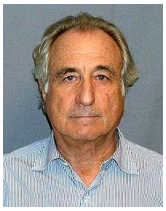
Chapter 2

Benford's Law

Benford's Law

Benford's Law predicts the occurrence of digits in large sets of data. Simply put, this law maintains that we can expect some digits to occur more often than others. For example, the numeral 1 should occur as the first digit in any multiple-digit number about 30.1% of the time, while the numeral 9 should occur as the first digit only 4.6% of the time. We also can apply the law to determine the expected occurrence of the second digit of a number, the first two digits of a number and other combinations.

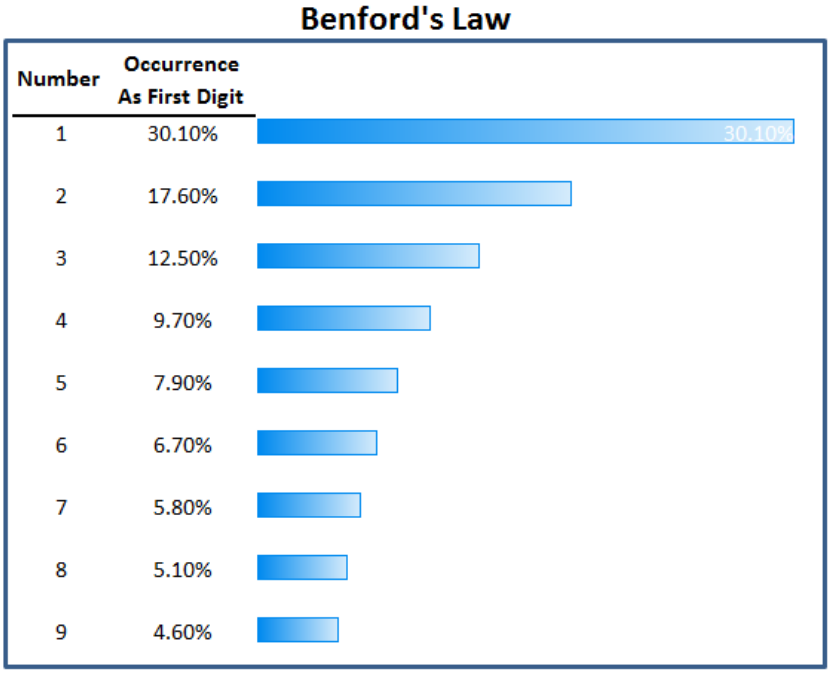
How can such predictions help you red-flag potential irregularities? When someone creates false transactions or commits a data-entry error, the resulting numbers often deviate from the law's expectations. This is true when someone creates random numbers or intentionally keeps certain transactions below required authorization levels.



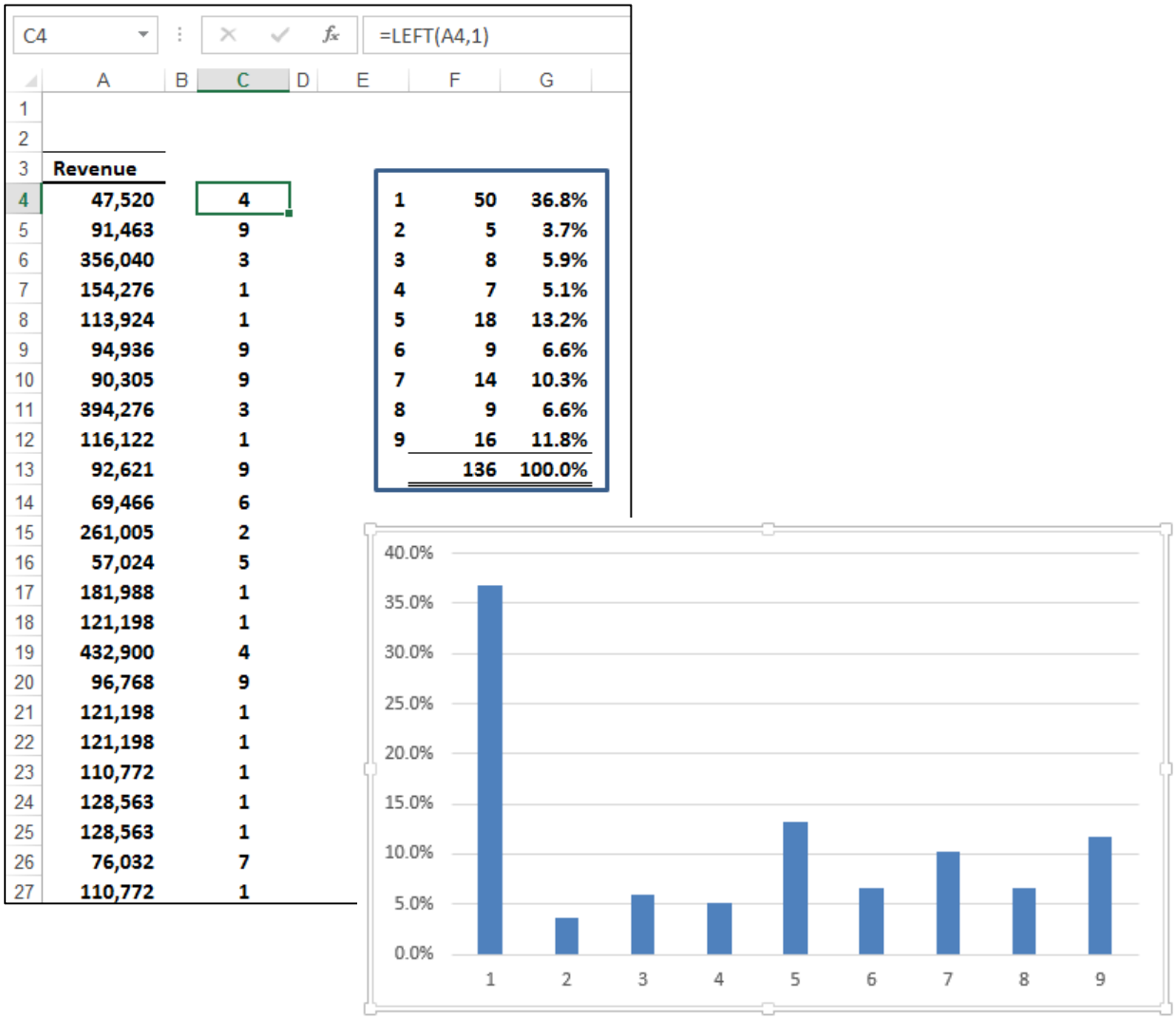
For example, in 2008, Bernie Madoff famously created fictitious data to hide an estimated $65 billion in losses resulting from Madoff's investment Ponzi scheme. – Had the CPAs looked at this data using Benford's Law, they might have found that the digits smelled of fraud, perhaps triggering a deeper investigation.

Applying Benford's Law Using Excel

According to Benford's Law, the various digits should occur as the first digit position according to the following percentages.



To analyze data, simply use the LEFT function to extract the leading digits, and then add them up as follows. As a simple example, I found a random workbook containing 136 rows of revenue amounts. I entered a formula in cell C4 to extract the first digit and copied this formula down. Next I used the COUNTIF function to count the number of occurrences of each of the nine digits, and calculated their rate of occurrence, then charted the results.



You can clearly see that this data pattern does not conform to Benford's law, and yes, I fabricated this particular set of data years ago.

When Excel helps you spot a deviation like this, it raises a red flag. Considerable statistical research supports the effectiveness of Benford's Law, making it a valuable tool for CPAs. The technique isn't guaranteed to detect fraud in all situations but is useful in analyzing the credibility of accounting records.

A Note of Caution

Benford's Law is not effective for all financial data. If the data set is small, the law becomes less accurate because there are not enough items in the sample and so the rules of randomness don't apply—or at least apply with less predictability.

Also, if the data include built-in minimums and maximums, they also might not conform well to the law's predictions. For example, consider a petty-cash fund where all disbursements are between a $10 minimum and a $20 maximum. All first digits would be either 1 or 2, and the expected distribution of first digits would not apply. Likewise, when a company's major product sells for, say, $9.95, most sales totals will be a multiple of 995, again offsetting the value of the process. Finally, when a data set consists of assigned numbers, such as a series of internally generated invoice numbers, the data will not follow a Benford distribution.

History of Benford's Law

Newcomb, 1881 - The discovery of Benford's law dates back to 1881, when the American astronomer Simon Newcomb noticed that in logarithm tables (used at that time to perform calculations) the earlier pages (which contained numbers that started with 1) were much more worn than the other pages. Newcomb's published result is the first known instance of this observation and includes a distribution on the second digit, as well. Newcomb proposed a law that the probability of a single number N being the first digit of a number was equal to $\log(N + 1) - \log(N)$.

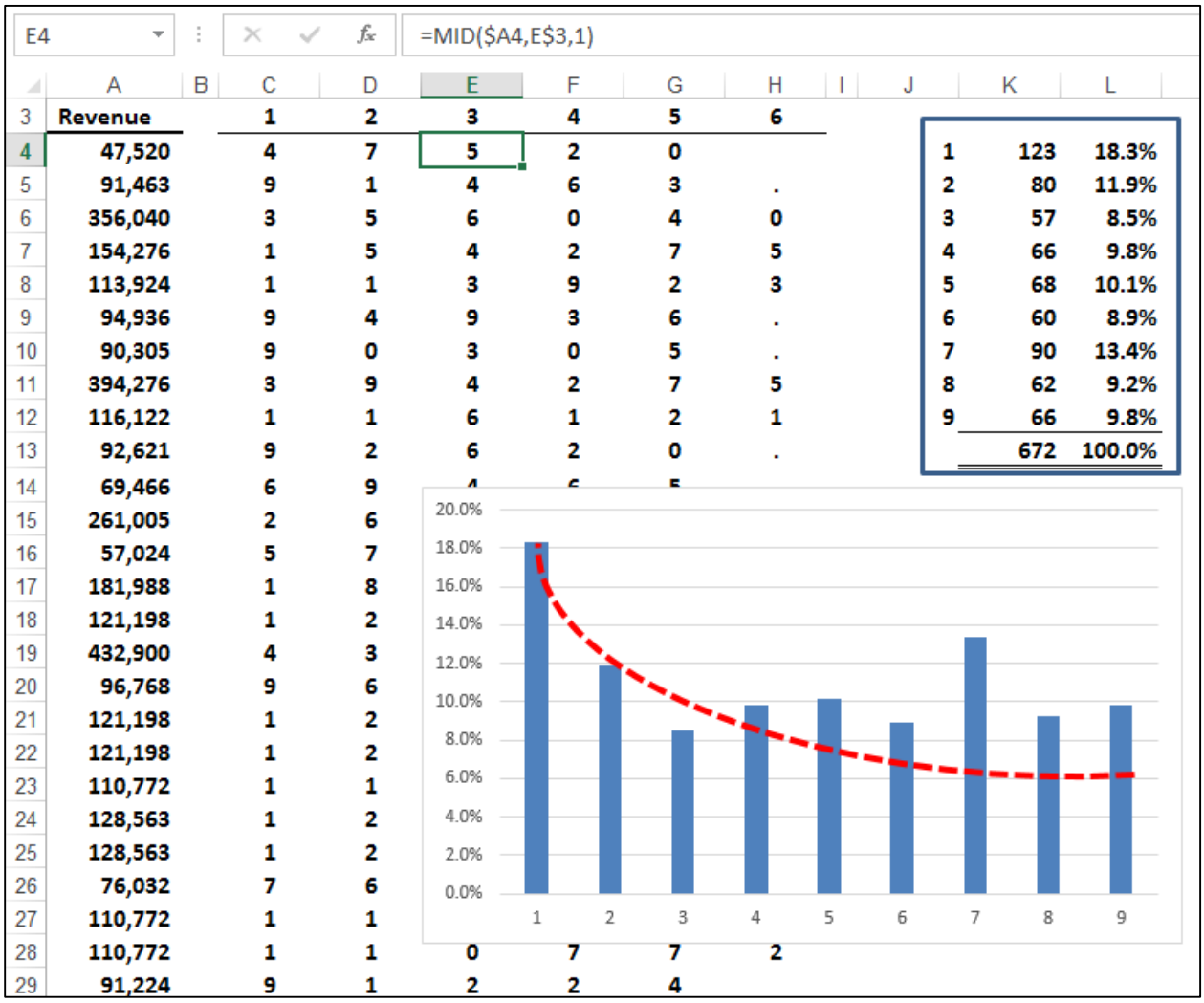
Benford, 1938 - The phenomenon was again noted in 1938 by the physicist Frank Benford, who tested it on data from 20 different domains and was credited for it. His data set included the surface areas of 335 rivers, the sizes of 3259 US populations, 104 physical constants, 1800 molecular weights, 5000 entries from a mathematical handbook, 308 numbers contained in an issue of Readers' Digest, the street addresses of the first 342 persons listed in American Men of Science and 418 death rates. The total number of observations used in the paper was 20,229. This discovery was later named after Benford.

Varian, 1972 - In 1972, Hal Varian suggested that the law could be used to detect possible fraud in lists of socio-economic data submitted in support of public planning decisions. Based on the plausible assumption that people who make up figures tend to distribute their digits fairly uniformly, a simple comparison of first-digit frequency distribution from the data with the expected distribution according to Benford's law ought to show up any anomalous results.

Nigrini, 1999 - Following this idea, Mark Nigrini showed that Benford's law could be used in forensic accounting and auditing as an indicator of accounting and expenses fraud. In practice, applications of Benford's law for fraud detection routinely use more than the first digit.

Analyzing All Digits

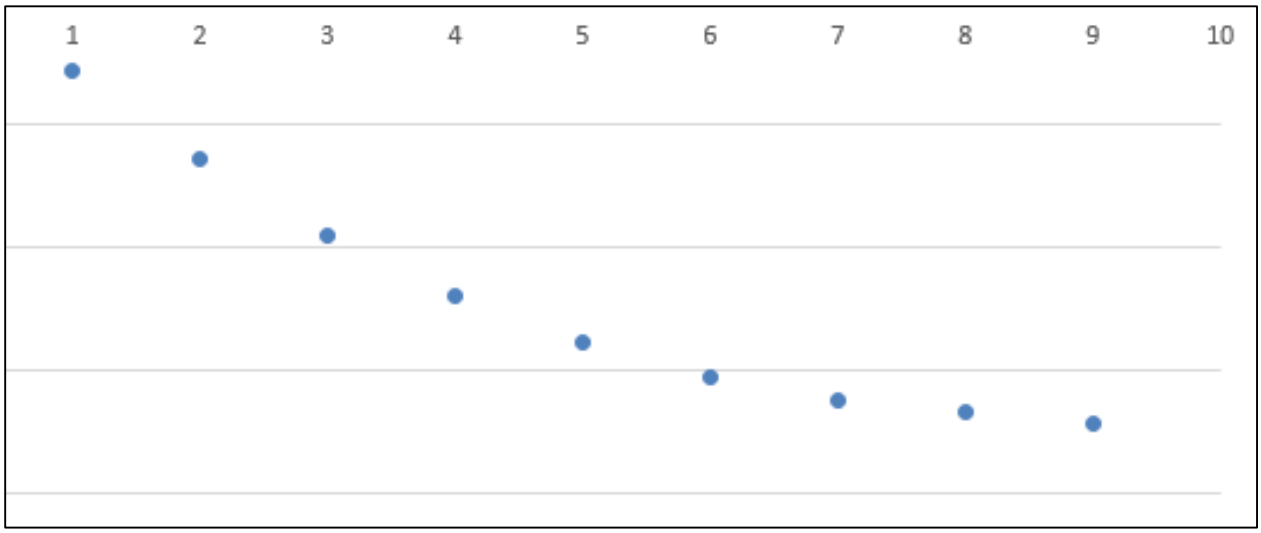
Building on the simple example described above, we can expand our Excel formulas to analyze all of the digits included in a set of data as follows: In the example shown below, I have used the MID function to extract each digit from the column of values in column **A**, and the resulting individual numerals are displayed in columns **C** through **H**. Next, I totaled the occurrence for each number 1 through 9 in the summary box and charted the results.



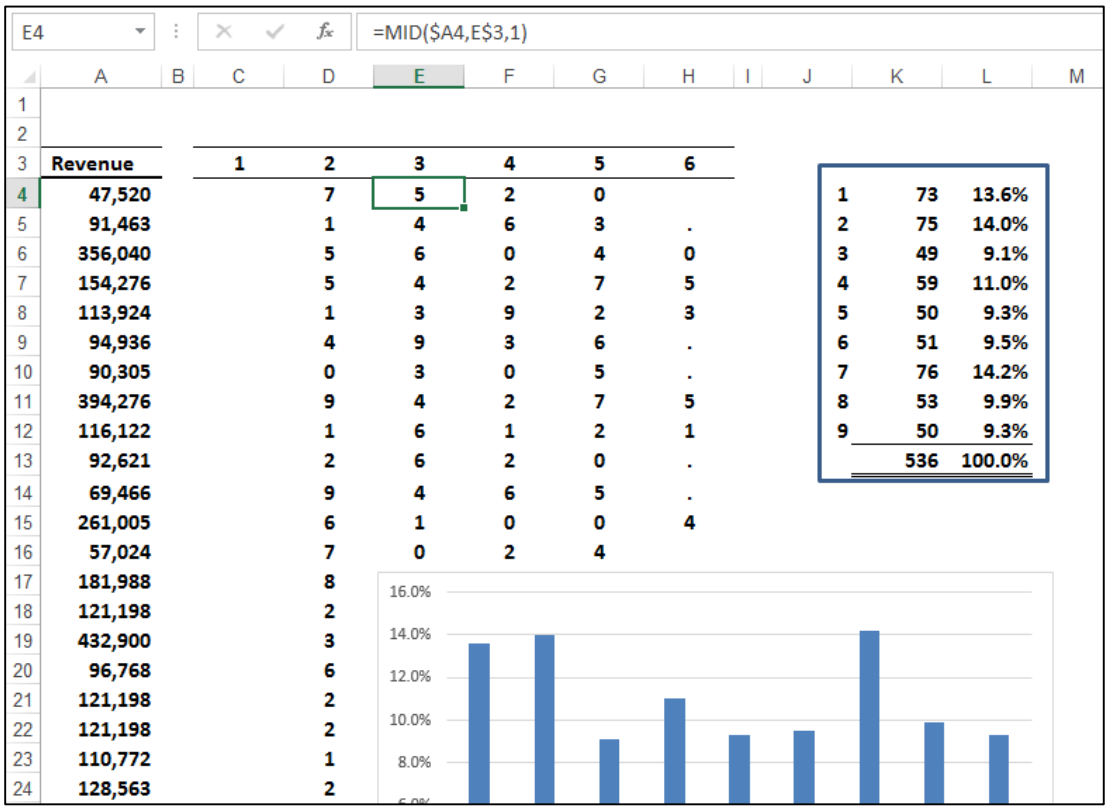
In this example, the data does appear to ever so slightly adhere to Benford's Law as the first 4 bars in the chart and a few others seem to come close to matching Benford's declining curve.

According to Benford's Law one would expect lower numerals to appear more frequently than higher values, but why? Lower digits (1, 2,& 3) tend to appear more frequently than higher digits (7, 8, & 9) because it is easier to own 1 acre than 9 acres; and more people have $100 than $900. Lower numbers are typically more achievable than higher numbers in many

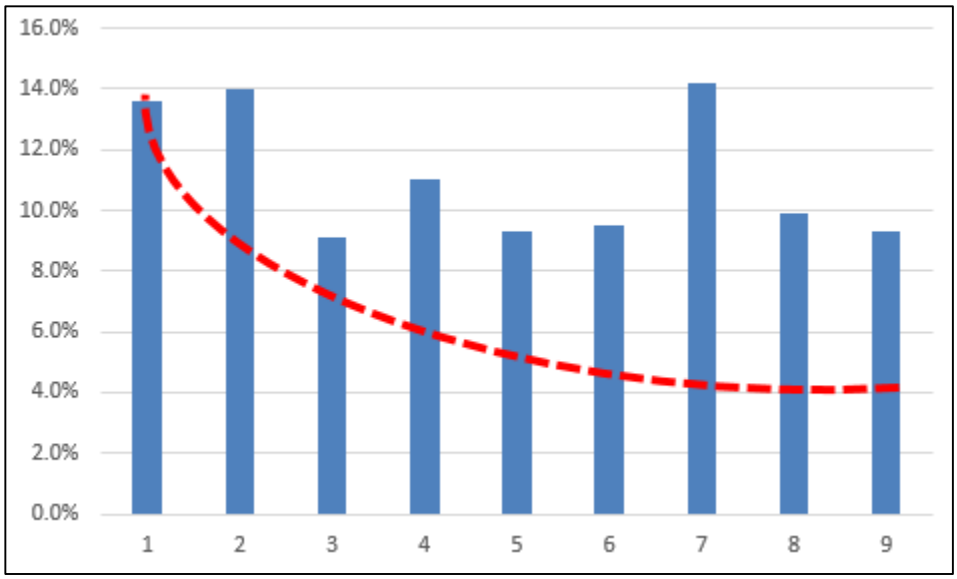
situations. For this reason, we would expect to see an analysis of numbers form a slightly curved declining chart like this one:



However, the presence of the leading digit may significantly skew the data, therefore, we could ignore the leading digit and analyze the occurrence of the remaining 8 numerals in an effort to determine whether or not the data appears to roughly follow Benford's Law. Ignoring the leading digit reveals the following analysis.



As expected, the numeral 1 occurs less often than when the leading digits were included. Still, with the leading digit ignored, the data appears not to follow Benford's Law.



Conclusion

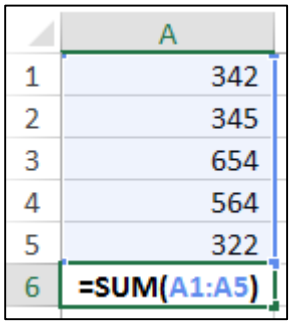
This case study was intentionally brief and is only intended to convey the general ideas related to Benford's law. The forensic CPA may choose to run these numbers to help confirm suspicions or beliefs related to the authenticity of a large data set of numbers in question. There are probably many instances where this approach would offer little value, however in a high ticket audit with high potential for fraud, running Benford's Law analysis is a rather quick exercise which may offer insights to help the forensic CPA determine how to best proceed.

Chapter 3

Excel Functions

Introduction to Excel Functions

An Excel function is a preset formula that calculates a specific result based on the criteria/variables/arguments you specify. All functions start with the equal sign followed by the function's name and criteria/variables/arguments you specify. As a simple example, the most frequently used function in Excel is the SUM function, which is used to add data.



There are a total of 455 Excel Functions in Excel 2013; the following table summarizes the number of functions introduced in previous editions of Excel.

New Functions Added to Excel

	First Functions Appear
Excel 5.0 (1993)	299
Excel 5.0 thru 2001	40
Excel 2002	0
Excel 2003	5
Excel 2007	61
Excel 2010	50
Excel 2013	455
Total	

Excel Functions are preprogrammed formulas that make the task of writing complex formulas easier. There are a total of 455 functions in Excel. These functions are separated into 14 categories as follows:

Categories & Number Of Functions In Each Category

1. Compatibility ..... (38)
2. Cubes ..... (7)
3. Databases ..... (12)
4. Date and times ..... (24)

Relevance to CPAs

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 approximately 171 functions are more relevant or important to CPAs; therefore in my opinion, CPAs wishing to increase their command of Excel functions should concentrate on learning these functions primarily. To help you accomplish this goal, presented below is a list of all 455 Excel functions, along with a brief explanation of each function. The 170 functions that I find more relevant are shown in red bold.

Compatibility

1	BETADIST	Returns the beta cumulative distribution
2	BETAINV	Returns the inverse of the cumulative distribution for a specified beta distribution
3	BINOMDIST	Returns the individual term binomial distribution probability
4	CHIDIST	Returns the one-tailed probability of the chi-squared distribution
5	CHIINV	Returns the inverse of the one-tailed probability of the chi-squared distribution
6	CHITEST	Returns the test for independence
7	CONFIDENCE	Returns the confidence interval for a population mean
8	COVAR	Returns covariance, the avg of the products of paired deviations
9	CRITBINOM	Returns the smallest value for which the cumulative binomial distribution is less than or equal to a criterion value
10	EXPONDIST	Returns the exponential distribution
11	FDIST	Returns the F probability distribution
12	FINV	Returns the inverse of the F probability distribution

13	FTEST	Returns the result of an F-test
14	GAMMADIST	Returns the gamma distribution
15	GAMMAINV	Returns the inverse of the gamma cumulative distribution
16	HYPGEOMDIST	Returns the hypergeometric distribution
17	LOGINV	Returns the inverse of the lognormal cumulative distribution
18	LOGNORMDIST	Returns the cumulative lognormal distribution
19	MODE	Returns the most common value in a data set
20	NEGBINOMDIST	Returns the negative binomial distribution
21	NORMDIST	Returns the normal cumulative distribution
22	NORMINV	Returns the inverse of the normal cumulative distribution
23	NORMSDIST	Returns the standard normal cumulative distribution
24	NORMSINV	Returns the inverse of the standard normal cumulative distribution
25	**PERCENTILE**	**Returns the k-th percentile of values in a range**
26	**PERCENTRANK**	**Returns the percentage rank of a value in a data set**
27	POISSON	Returns the Poisson distribution
28	QUARTILE	Returns the quartile of a data set
29	**RANK**	**Returns the rank of a number in a list of numbers**
30	STDEV	Estimates standard deviation based on a sample
31	**STDEVP**	**Calculates standard deviation based on the entire population**
32	TDIST	Returns the Student's t-distribution
33	TINV	Returns the inverse of the Student's t-distribution
34	TTEST	Returns the probability associated with a Student's t-test
35	VAR	Estimates variance based on a sample
36	VARP	Calculates variance based on the entire population
37	WEIBULL	Returns the Weibull distribution
38	ZTEST	Returns the one-tailed probability-value of a z-test

Cubes

39	**CUBEKPIMEMBER**	**Returns a key performance indicator (KPI) property and displays the KPI name in the cell. A KPI is a quantifiable measurement, such as monthly gross profit or quarterly employee turnover, that is used to monitor an organization's performance.**
40	CUBEMEMBER	Returns a member or tuple from the cube. Use to validate that the member or tuple exists in the cube.
41	CUBEMEMBERPROPERTY	Returns the value of a member property from the cube. Use to validate that a member name exists within the cube and to return the specified property for this member.
42	CUBERANKEDMEMBER	Returns the nth, or ranked, member in a set. Use to return one or more elements in a set, such as the top 10 sales performers.

43	CUBESET	Defines a calculated set of members or tuples by sending a set expression to the cube on the server, which creates the set, and then returns that set to Microsoft Office Excel.
44	CUBESETCOUNT	Returns the number of items in a set.
45	CUBEVALUE	Returns an aggregated value from the cube.

Databases

46	**DAVERAGE**	**Returns the average of selected database entries**
47	**DCOUNT**	**Counts the cells that contain numbers in a database**
48	**DCOUNTA**	**Counts nonblank cells in a database**
49	**DGET**	**Extracts from a database a single record that matches the specified criteria**
50	**DMAX**	**Returns the maximum value from selected database entries**
51	**DMIN**	**Returns the minimum value from selected database entries**
52	DPRODUCT	Multiplies the values in a particular field of records that match the criteria in a database
53	DSTDEV	Estimates standard deviation based on a sample of the database
54	DSTDEVP	Calculates the standard deviation based on the entire population of selected database entries
55	**DSUM**	**Adds the numbers in the field column of records in the database that match the criteria**
56	DVAR	Estimates variance based on a sample of the database
57	DVARP	Calculates variance based on the entire population of selected database entries

Date and Time

58	**DATE**	**Returns the serial number of a particular date**
59	**DATEVALUE**	**Converts a date in the form of text to a serial number**
60	**DAY**	**Converts a serial number to a day of the month**
61	**DAYS**	**Returns the number of days between two dates**
62	DAYS360	Calculates the number of days between two dates based on a 360-day year
63	EDATE	Returns the serial number of the date that is the indicated number of months before or after the start date
64	EOMONTH	Returns the serial number of the last day of the month before or after a specified number of months
65	**HOUR**	**Converts a serial number to an hour**
66	**ISOWEEKNUM**	**Returns the number of the ISO week number of the year for a given date**
67	**MINUTE**	**Converts a serial number to a minute**
68	**MONTH**	**Converts a serial number to a month**
69	**NETWORKDAYS**	**Returns the number of whole workdays between two dates**

70	NETWORKDAYS.INTL	Returns the number of whole workdays between two dates using parameters to indicate how many days are weekend days
71	**NOW**	**Returns the serial number of the current date and time**
72	**SECOND**	**Converts a serial number to a second**
73	**TIME**	**Returns the serial number of a particular time**
74	**TIMEVALUE**	**Converts a time in the form of text to a serial number**
75	**TODAY**	**Returns the serial number of today's date**
76	**WEEKDAY**	**Converts a serial number to a day of the week**
77	**WEEKNUM**	**Converts a serial number to a number representing where the week falls numerically with a year**
78	**WORKDAY**	**Returns the serial number of the date before or after a specified number of workdays**
79	WORKDAY.INTL	Returns the serial number of the date before or after a specified number of workdays using parameters to indicate which and how many days are weekend days
80	**YEAR**	**Converts a serial number to a year**
81	YEARFRAC	Returns the year fraction representing the number of whole days between start_date and end_date

Engineering

82	BESSELI	Returns the modified Bessel In(x)
83	BESSELJ	Returns the Bessel Jn(x)
84	BESSELK	Returns the modified Bessel Kn(x)
85	BESSELY	Returns the Bessel Yn(x)
86	BIN2DEC	Converts a binary number to decimal
87	BIN2HEX	Converts a binary number to hexadecimal
88	BIN2OCT	Converts a binary number to octal
89	BITAND	Returns a 'Bitwise And' of two numbers
90	BITLSHIFT	Returns a value number shifted left by shift_amount bits
91	BITOR	Returns a bitwise OR of 2 numbers
92	BITRSHIFT	Returns a value number shifted right by shift_amount bits
93	BITXOR	Returns a bitwise 'Exclusive Or' of two numbers
94	COMPLEX	Converts real and imaginary coefficients into a complex number
95	**CONVERT**	**Converts a number from one measurement system to another**
96	DEC2BIN	Converts a decimal number to binary
97	DEC2HEX	Converts a decimal number to hexadecimal
98	DEC2OCT	Converts a decimal number to octal
99	**DELTA**	**Tests whether two values are equal**
100	ERF	Returns the error
101	ERF.PRECISE	Returns the error
102	ERFC	Returns the complementary error

103	ERFC.PRECISE	Returns the complementary ERF integrated between x and infinity
104	GESTEP	Tests whether a number is greater than a threshold value
105	HEX2BIN	Converts a hexadecimal number to binary
106	HEX2DEC	Converts a hexadecimal number to decimal
107	HEX2OCT	Converts a hexadecimal number to octal
108	IMABS	Returns the absolute value (modulus) of a complex number
109	IMAGINARY	Returns the imaginary coefficient of a complex number
110	IMARGUMENT	Returns the argument theta, an angle expressed in radians
111	IMCONJUGATE	Returns the complex conjugate of a complex number
112	IMCOS	Returns the cosine of a complex number
113	IMCOSH	Returns the hyperbolic cosine of a complex number
114	IMCOT	Returns the cotangent of a complex number
115	IMCSC	Returns the cosecant of a complex number
116	IMCSCH	Returns the hyperbolic cosecant of a complex number
117	IMDIV	Returns the quotient of two complex numbers
118	IMEXP	Returns the exponential of a complex number
119	IMLN	Returns the natural logarithm of a complex number
120	IMLOG10	Returns the base-10 logarithm of a complex number
121	IMLOG2	Returns the base-2 logarithm of a complex number
122	IMPOWER	Returns a complex number raised to an integer power
123	IMPRODUCT	Returns the product of from 2 to 255 complex numbers
124	IMREAL	Returns the real coefficient of a complex number
125	IMSEC	Returns the secant of a complex number
126	IMSECH	Returns the hyperbolic secant of a complex number
127	IMSIN	Returns the sine of a complex number
128	IMSINH	Returns the hyperbolic sine of a complex number
129	IMSQRT	Returns the square root of a complex number
130	IMSUB	Returns the difference between two complex numbers
131	IMSUM	Returns the sum of complex numbers
132	IMTAN	Returns the tangent of a complex number
133	OCT2BIN	Converts an octal number to binary
134	OCT2DEC	Converts an octal number to decimal
135	OCT2HEX	Converts an octal number to hexadecimal

Financial

136	**ACCRINT**	**Returns accrued interest for a security paying periodic interest**
137	**ACCRINTM**	**Returns accrued interest for a security paying interest at maturity**
138	AMORDEGRC	Returns the depreciation for each accounting period by using a depreciation coefficient
139	AMORLINC	Returns the depreciation for each accounting period

140	COUPDAYBS	Returns the number of days from the beginning of the coupon period to the settlement date
141	COUPDAYS	Returns the number of days in the coupon period that contains the settlement date
142	COUPDAYSNC	Returns the number of days from the settlement date to the next coupon date
143	COUPNCD	Returns the next coupon date after the settlement date
144	COUPNUM	Returns the number of coupons payable between the settlement date and maturity date
145	COUPPCD	Returns the previous coupon date before the settlement date
146	CUMIPMT	Returns the cumulative interest paid between two periods
147	CUMPRINC	Returns cumulative principal paid on a loan between two periods
148	DB	Returns the depreciation of an asset for a specified period by using the fixed-declining balance method
149	**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**
150	DISC	Returns the discount rate for a security
151	DOLLARDE	Converts a dollar price, expressed as a fraction, into a dollar price, expressed as a decimal number
152	DOLLARFR	Converts a dollar price, expressed as a decimal number, into a dollar price, expressed as a fraction
153	DURATION	Returns the annual duration of a security with periodic interest payments
154	**EFFECT**	**Returns the effective annual interest rate**
155	**FV**	**Returns the future value of an investment**
156	FVSCHEDULE	Returns the future value of an initial principal after applying a series of compound interest rates
157	INTRATE	Returns the interest rate for a fully invested security
158	**IPMT**	**Returns interest payment for an investment for a given period**
159	**IRR**	**Returns the internal rate of return for a series of cash flows**
160	**ISPMT**	**Calculates the interest paid during a specific period of an investment**
161	MDURATION	Returns the Macauley modified duration for a security with an assumed par value of $100
162	MIRR	Returns the internal rate of return where positive and negative cash flows are financed at different rates
163	NOMINAL	Returns the annual nominal interest rate
164	NPER	Returns the number of periods for an investment
165	**NPV**	**Returns the net present value of an investment based on a series of periodic cash flows and a discount rate**
166	ODDFPRICE	Returns price per $100 face value of a security with an odd first period
167	ODDFYIELD	Returns the yield of a security with an odd first period

168	ODDLPRICE	Returns the price per $100 face value of a security with an odd last period
169	ODDLYIELD	Returns the yield of a security with an odd last period
170	PDURATION	Returns the number of periods required by an investment to reach a specified value
171	**PMT**	**Returns the periodic payment for an annuity**
172	**PPMT**	**Returns the payment on the principal for an investment for a given period**
173	PRICE	Returns the price per $100 face value of a security that pays periodic interest
174	PRICEDISC	Returns the price per $100 face value of a discounted security
175	PRICEMAT	Returns the price per $100 face value of a security that pays interest at maturity
176	**PV**	**Returns the present value of an investment**
177	**RATE**	**Returns the interest rate per period of an annuity**
178	**RECEIVED**	**Returns the amount received at maturity for a fully invested security**
179	RRI	Returns an equivalent interest rate for the growth of an investment
180	**SLN**	**Returns the straight-line depreciation of an asset for one period**
181	SYD	Returns the sum-of-years' digits depreciation of an asset for a specified period
182	**TBILLEQ**	**Returns the bond-equivalent yield for a Treasury bill**
183	TBILLPRICE	Returns the price per $100 face value for a Treasury bill
184	**TBILLYIELD**	**Returns the yield for a Treasury bill**
185	VDB	Returns the depreciation of an asset for a specified or partial period by using a declining balance method
186	**XIRR**	**Returns the internal rate of return for a schedule of cash flows that is not necessarily periodic**
187	**XNPV**	**Returns the net present value for a schedule of cash flows that is not necessarily periodic**
188	**YIELD**	**Returns the yield on a security that pays periodic interest**
189	YIELDDISC	Returns the annual yield for a discounted security; for example, a Treasury bill
190	YIELDMAT	Returns the annual yield of a security that pays interest at maturity

Informational

191	**CELL**	**Returns information about the formatting, location, or contents of a cell Note This is not available in Excel Web App.**
192	**ERROR.TYPE**	**Returns a number corresponding to an error type**
193	**INFO**	**Returns information about the current operating environment. Note This is not available in Excel Web App.**
194	**ISBLANK**	**Returns TRUE if the value is blank**

195	ISERR	Returns TRUE if the value is any error value except #N/A
196	ISERROR	Returns TRUE if the value is any error value
197	ISEVEN	Returns TRUE if the number is even
198	ISFORMULA	Returns TRUE if there is a reference to a cell that contains a formula
199	ISLOGICAL	Returns TRUE if the value is a logical value
200	ISNA	Returns TRUE if the value is the #N/A error value
201	ISNONTEXT	Returns TRUE if the value is not text
202	ISNUMBER	Returns TRUE if the value is a number
203	ISODD	Returns TRUE if the number is odd
204	ISREF	Returns TRUE if the value is a reference
205	ISTEXT	Returns TRUE if the value is text
206	N	Returns a value converted to a number
207	NA	Returns the error value #N/A
208	SHEET	Returns the sheet number of the referenced sheet
209	SHEETS	Returns the number of sheets in a reference
210	TYPE	Returns a number indicating the data type of a value

Logical

211	AND	Returns TRUE if all of its arguments are TRUE
212	FALSE	Returns the logical value FALSE
213	IF	Specifies a logical test to perform
214	IFERROR	Returns a value you specify if a formula evaluates to an error; otherwise, returns the result of the formula
215	IFNA	Returns the value you specify if the expression resolves to #N/A, otherwise returns the result of the expression
216	NOT	Reverses the logic of its argument
217	OR	Returns TRUE if any argument is TRUE
218	TRUE	Returns the logical value TRUE
219	XOR	Returns a logical exclusive OR of all arguments

Lookup and Reference

220	ADDRESS	Returns a reference as text to a single cell in a worksheet
221	AREAS	Returns the number of areas in a reference
222	CHOOSE	Chooses a value from a list of values
223	COLUMN	Returns the column number of a reference
224	COLUMNS	Returns the number of columns in a reference
225	FORMULATEXT	Returns the formula at the given reference as text
226	GETPIVOTDATA	Returns data stored in a PivotTable report

227	**HLOOKUP**	**Looks in the top row of an array and returns the value of the indicated cell**
228	**HYPERLINK**	**Creates a shortcut or jump that opens a document stored on a network server, an intranet, or the Internet**
229	**INDEX**	**Uses an index to choose a value from a reference or array**
230	**INDIRECT**	**Returns a reference indicated by a text value**
231	**LOOKUP**	**Looks up values in a vector or array**
232	**MATCH**	**Looks up values in a reference or array**
233	**OFFSET**	**Returns a reference offset from a given reference**
234	**ROW**	**Returns the row number of a reference**
235	**ROWS**	**Returns the number of rows in a reference**
236	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).)
237	**TRANSPOSE**	**Returns the transpose of an array**
238	**VLOOKUP**	**Looks in the first column of an array and moves across the row to return the value of a cell**

Math & Trigonometry

239	**ABS**	**Returns the absolute value of a number**
240	ACOS	Returns the arccosine of a number
241	ACOSH	Returns the inverse hyperbolic cosine of a number
242	ACOT	Returns the arccotangent of a number
243	ACOTH	Returns the hyperbolic arccotangent of a number
244	**AGGREGATE**	**Returns an aggregate in a list or database**
245	ARABIC	Converts a Roman number to Arabic, as a number
246	ASIN	Returns the arcsine of a number
247	ASINH	Returns the inverse hyperbolic sine of a number
248	ATAN	Returns the arctangent of a number
249	ATAN2	Returns the arctangent from x- and y-coordinates
250	ATANH	Returns the inverse hyperbolic tangent of a number
251	BASE	Converts a number into a text representation with the given radix (base)
252	**CEILING**	**Rounds a number to the nearest integer or to the nearest multiple of significance**
253	**CEILING.MATH**	**Rounds a number up, to the nearest integer or to the nearest multiple of significance**
254	CEILING.PRECISE	Rounds a number the nearest integer or to the nearest multiple of significance. Regardless of the sign of the number, the number is rounded up.

255	COMBIN	Returns the number of combinations for a given number of objects
256	COMBINA	Returns the number of combinations with repetitions for a given number of items
257	COS	Returns the cosine of a number
258	COSH	Returns the hyperbolic cosine of a number
259	COT	Returns the cotangent of an angle
260	COTH	Returns the hyperbolic cotangent of a number
261	CSC	Returns the cosecant of an angle
262	CSCH	Returns the hyperbolic cosecant of an angle
263	**DECIMAL**	**Converts a text representation of a number in a given base into a decimal number**
264	DEGREES	Converts radians to degrees
265	**EVEN**	**Rounds a number up to the nearest even integer**
266	EXP	Returns *e* raised to the power of a given number
267	FACT	Returns the factorial of a number
268	FACTDOUBLE	Returns the double factorial of a number
269	FLOOR	Rounds a number down, toward zero
270	**FLOOR.MATH**	**Rounds a number down, to the nearest integer or to the nearest multiple of significance**
271	FLOOR.PRECISE	Rounds a number down to the nearest integer or to the nearest multiple of significance. Regardless of the sign of the number, the number is rounded down.
272	GCD	Returns the greatest common divisor
273	**INT**	**Rounds a number down to the nearest integer**
274	ISO.CEILING	Returns a number that is rounded up to the nearest integer or to the nearest multiple of significance
275	LCM	Returns the least common multiple
276	LN	Returns the natural logarithm of a number
277	LOG	Returns the logarithm of a number to a specified base
278	LOG10	Returns the base-10 logarithm of a number
279	MDETERM	Returns the matrix determinant of an array
280	MINVERSE	Returns the matrix inverse of an array
281	MMULT	Returns the matrix product of two arrays
282	MOD	Returns the remainder from division
283	MROUND	Returns a number rounded to the desired multiple
284	MULTINOMIAL	Returns the multinomial of a set of numbers
285	MUNIT	Returns the unit matrix or the specified dimension
286	**ODD**	**Rounds a number up to the nearest odd integer**
287	PI	Returns the value of pi
288	POWER	Returns the result of a number raised to a power
289	**PRODUCT**	**Multiplies its arguments**

290	**QUOTIENT**	**Returns the integer portion of a division**
291	RADIANS	Converts degrees to radians
292	**RAND**	**Returns a random number between 0 and 1**
293	**RANDBETWEEN**	**Returns a random number between the numbers you specify**
294	ROMAN	Converts an Arabic numeral to Roman, as text
295	**ROUND**	**Rounds a number to a specified number of digits**
296	**ROUNDDOWN**	**Rounds a number down, toward zero**
297	**ROUNDUP**	**Rounds a number up, away from zero**
298	SEC	Returns the secant of an angle
299	SECH	Returns the hyperbolic secant of an angle
300	SERIESSUM	Returns the sum of a power series based on the formula
301	**SIGN**	**Returns the sign of a number**
302	SIN	Returns the sine of the given angle
303	SINH	Returns the hyperbolic sine of a number
304	SQRT	Returns a positive square root
305	SQRTPI	Returns the square root of (number * pi)
306	**SUBTOTAL**	**Returns a subtotal in a list or database**
307	**SUM**	**Adds its arguments**
308	**SUMIF**	**Adds the cells specified by a given criteria**
309	**SUMIFS**	**Adds the cells in a range that meet multiple criteria**
310	**SUMPRODUCT**	**Returns the sum of the products of corresponding array components**
311	SUMSQ	Returns the sum of the squares of the arguments
312	SUMX2MY2	Returns the sum of the difference of squares of corresponding values in two arrays
313	SUMX2PY2	Returns the sum of the sum of squares of corresponding values in two arrays
314	SUMXMY2	Returns the sum of squares of differences of corresponding values in two arrays
315	TAN	Returns the tangent of a number
316	TANH	Returns the hyperbolic tangent of a number
317	TRUNC	Truncates a number to an integer

Statistical

318	AVEDEV	Returns the average of the absolute deviations of data points from their mean
319	**AVERAGE**	**Returns the average of its arguments**
320	AVERAGEA	Returns the average of its arguments, including numbers, text, and logical values
321	**AVERAGEIF**	**Returns the average (arithmetic mean) of all the cells in a range that meet a given criteria**

322	**AVERAGEIFS**	**Returns the average (arithmetic mean) of all cells that meet multiple criteria**
323	BETA.DIST	Returns the beta cumulative distribution
324	BETA.INV	Returns the inverse of the cumulative distribution for a specified beta distribution
325	BINOM.DIST	Returns the individual term binomial distribution probability
326	BINOM.DIST.RANGE	Returns the probability of a trial result using a binomial distribution
327	BINOM.INV	Returns the smallest value for which the cumulative binomial distribution is less than or equal to a criterion value
328	CHISQ.DIST	Returns the cumulative beta probability density
329	CHISQ.DIST.RT	Returns the one-tailed probability of the chi-squared distribution
330	CHISQ.INV	Returns the cumulative beta probability density
331	CHISQ.INV.RT	Returns the inverse of the one-tailed probability of the chi-squared distribution
332	CHISQ.TEST	Returns the test for independence
333	CONFIDENCE.NORM	Returns the confidence interval for a population mean
334	CONFIDENCE.T	Returns the confidence interval for a population mean, using a Student's t distribution
335	CORREL	Returns the correlation coefficient between two data sets
336	**COUNT**	**Counts how many numbers are in the list of arguments**
337	**COUNTA**	**Counts how many values are in the list of arguments**
338	**COUNTBLANK**	**Counts the number of blank cells within a range**
339	**COUNTIF**	**Counts the number of cells within a range that meet the given criteria**
340	**COUNTIFS**	**Counts the number of cells within a range that meet multiple criteria**
341	COVARIANCE.P	Returns covariance, the average of the products of paired deviations
342	COVARIANCE.S	Returns the sample covariance, the average of the products deviations for each data point pair in two data sets
343	DEVSQ	Returns the sum of squares of deviations
344	EXPON.DIST	Returns the exponential distribution
345	F.DIST	Returns the F probability distribution
346	F.DIST.RT	Returns the F probability distribution
347	F.INV	Returns the inverse of the F probability distribution
348	F.INV.RT	Returns the inverse of the F probability distribution
349	F.TEST	Returns the result of an F-test
350	FISHER	Returns the Fisher transformation
351	FISHERINV	Returns the inverse of the Fisher transformation
352	**FORECAST**	**Returns a value along a linear trend**
353	FREQUENCY	Returns a frequency distribution as a vertical array

354	GAMMA	Returns the Gamma value
355	GAMMA.DIST	Returns the gamma distribution
356	GAMMA.INV	Returns the inverse of the gamma cumulative distribution
357	GAMMALN	Returns the natural logarithm of the gamma, Γ(x)
358	GAMMALN.PRECISE	Returns the natural logarithm of the gamma, Γ(x)
359	GAUSS	Returns 0.5 less than the standard normal cumulative distribution
360	GEOMEAN	Returns the geometric mean
361	**GROWTH**	**Returns values along an exponential trend**
362	HARMEAN	Returns the harmonic mean
363	HYPGEOM.DIST	Returns the hypergeometric distribution
364	**INTERCEPT**	**Returns the intercept of the linear regression line**
365	**KURT**	**Returns the kurtosis of a data set**
366	**LARGE**	**Returns the k-th largest value in a data set**
367	**LINEST**	**Returns the parameters of a linear trend**
368	**LOGEST**	**Returns the parameters of an exponential trend**
369	LOGNORM.DIST	Returns the cumulative lognormal distribution
370	LOGNORM.INV	Returns the inverse of the lognormal cumulative distribution
371	**MAX**	**Returns the maximum value in a list of arguments**
372	**MAXA**	**Returns the maximum value in a list of arguments, including numbers, text, and logical values**
373	MEDIAN	Returns the median of the given numbers
374	**MIN**	**Returns the minimum value in a list of arguments**
375	**MINA**	**Returns the smallest value in a list of arguments, including numbers, text, and logical values**
376	MODE.MULT	Returns a vertical array of the most frequently occurring, or repetitive values in an array or range of data
377	MODE.SNGL	Returns the most common value in a data set
378	NEGBINOM.DIST	Returns the negative binomial distribution
379	NORM.DIST	Returns the normal cumulative distribution
380	NORM.INV	Returns the inverse of the normal cumulative distribution
381	NORM.S.DIST	Returns the standard normal cumulative distribution
382	NORM.S.INV	Returns the inverse of the standard normal cumulative distribution
383	**PEARSON**	**Returns the Pearson product moment correlation coefficient**
384	PERCENTILE.EXC	Returns the k-th percentile of values in a range, where k is in the range 0..1, exclusive
385	PERCENTILE.INC	Returns the k-th percentile of values in a range
386	PERCENTRANK.EXC	Returns the rank of a value in a data set as a percentage (0..1, exclusive) of the data set
387	PERCENTRANK.INC	Returns the percentage rank of a value in a data set
388	PERMUT	Returns the number of permutations for a given number of objects

389	PERMUTATIONA	Returns the number of permutations for a given number of objects (with repetitions) that can be selected from the total objects
390	PHI	Returns the value of the density for a standard normal distribution
391	POISSON.DIST	Returns the Poisson distribution
392	PROB	Returns the probability that values in a range are between two limits
393	QUARTILE.EXC	Returns the quartile of the data set, based on percentile values from 0..1, exclusive
394	QUARTILE.INC	Returns the quartile of a data set
395	RANK.AVG	Returns the rank of a number in a list of numbers
396	RANK.EQ	Returns the rank of a number in a list of numbers
397	**RSQ**	**Returns the square of the Pearson product moment correlation coefficient**
398	**SKEW**	**Returns the skewness of a distribution**
399	**SKEW.P**	**Returns the skewness of a distribution based on a population: a characterization of the degree of asymmetry of a distribution around its mean**
400	**SLOPE**	**Returns the slope of the linear regression line**
401	**SMALL**	**Returns the k-th smallest value in a data set**
402	STANDARDIZE	Returns a normalized value
403	STDEV.P	Calculates standard deviation based on the entire population
404	STDEV.S	Estimates standard deviation based on a sample
405	STDEVA	Estimates standard deviation based on a sample, including numbers, text, and logical values
406	STDEVPA	Calculates standard deviation based on the entire population, including numbers, text, and logical values
407	STEYX	Returns the standard error of the predicted y-value for each x in the regression
408	T.DIST	Returns the Percentage Points (probability) for the Student t-distribution
409	T.DIST.2T	Returns the Percentage Points (probability) for the Student t-distribution
410	T.DIST.RT	Returns the Student's t-distribution
411	T.INV	Returns the t-value of the Student's t-distribution as a of the probability and the degrees of freedom
412	T.INV.2T	Returns the inverse of the Student's t-distribution
413	T.TEST	Returns the probability associated with a Student's t-test
414	**TREND**	**Returns values along a linear trend**
415	TRIMMEAN	Returns the mean of the interior of a data set
416	VAR.P	Calculates variance based on the entire population
417	VAR.S	Estimates variance based on a sample
418	VARA	Estimates variance based on a sample, including numbers, text, and logical values

419	VARPA	Calculates variance based on the entire population, including numbers, text, and logical values
420	WEIBULL.DIST	Returns the Weibull distribution
421	Z.TEST	Returns the one-tailed probability-value of a z-test

Text

422	ASC	Changes full-width (double-byte) English letters or katakana within a character string to half-width (single-byte) characters
423	BAHTTEXT	Converts a number to text, using the ß (baht) currency format
424	**CHAR**	**Returns the character specified by the code number**
425	**CLEAN**	**Removes all nonprintable characters from text**
426	**CODE**	**Returns a numeric code for the first character in a text string**
427	**CONCATENATE**	**Joins several text items into one text item**
428	DBCS	Changes half-width (single-byte) English letters or katakana within a character string to full-width (double-byte) characters
429	**DOLLAR**	**Converts a number to text, using the $ (dollar) currency format**
430	**EXACT**	**Checks to see if two text values are identical**
431	**FIND, FINDBs**	**Finds one text value within another (case-sensitive)**
432	**FIXED**	**Formats a number as text with a fixed number of decimals**
433	**LEFT, LEFTBs**	**Returns the leftmost characters from a text value**
434	**LEN, LENBs**	**Returns the number of characters in a text string**
435	**LOWER**	**Converts text to lowercase**
436	**MID, MIDBs**	**Returns a specific number of characters from a text string starting at the position you specify**
437	NUMBERVALUE	Converts text to number in a locale-independent manner
438	PHONETIC	Extracts the phonetic (furigana) characters from a text string
439	**PROPER**	**Capitalizes the first letter in each word of a text value**
440	**REPLACE, REPLACEBs**	**Replaces characters within text**
441	**REPT**	**Repeats text a given number of times**
442	**RIGHT, RIGHTBs**	**Returns the rightmost characters from a text value**
443	**SEARCH, SEARCHBs**	**Finds one text value within another (not case-sensitive)**
444	**SUBSTITUTE**	**Substitutes new text for old text in a text string**
445	**T**	**Converts its arguments to text**
446	**TEXT**	**Formats a number and converts it to text**
447	**TRIM**	**Removes spaces from text**
448	UNICHAR	Returns the Unicode character that is references by the given numeric value
449	UNICODE	Returns the number (code point) that corresponds to the first character of the text
450	**UPPER**	**Converts text to uppercase**
451	**VALUE**	**Converts a text argument to a number**

User defined that are installed with add-ins

452	CALL	Calls a procedure in a dynamic link library or code resource
453	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)
454	REGISTER.ID	Returns the register ID of the specified dynamic link library (DLL) or code resource that has been previously registered
455	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

Web

453	ENCODEURL	Returns a URL-encoded string
454	FILTERXML	Returns specific data from the XML content by using the specified XPath
455	WEBSERVICE	

The 171 Most Relevant and Important Functions to CPAs

(According to Carlton's best guess)

The numbers in parenthesis correspond to the order
in which each function appears on the All Functions worksheet

Open an Excel file Containing Function Examples:
http://www.ASAResearch.com/web/functions.xlsx

The goal of this summary is to help CPAs focus on learning the most relevant and important functions first, without having to waste time wading through all 455 functions. Excel 2013 provides 455 functions, but in most cases only 37.5% of them are relevant and important to CPAs. Consider, how often do you expect to use the CRITBINOMIALDIST function? How often will the IMAGINARY function have relevance to your work? When did any CPA ever calculate depreciation using the SYD method (other than on a CPA example question). The reality is that CPAs don't have to know all of the functions to master Excel, you'll conquer Excel just by learning 37.5% of the included functions.

1. IF (213) - Specifies a logical test to perform.
2. SUM (307) - Adds its arguments.
3. SUBTOTAL (306) - Returns a subtotal in a list or database.
4. SUMIF (308) - Adds the cells specified by a given criteria.
5. COUNT (336) - Counts how many numbers are in the list of arguments.

6. COUNTA (337) - Counts how many values are in the list of arguments.
7. AVERAGE (319) - Returns the average of its arguments.
8. COUNTBLANK (338) - Counts the number of blank cells within a range.
9. COUNTIF (339) - Counts the number of cells within a range that meet the given criteria.
10. VALUE (451) - Converts a text argument to a number.
11. TEXT (446) - Formats a number and converts it to text.
12. VLOOKUP (238) - Looks in the first column of an array and moves across the row to return the value of the indicated cell.
13. HLOOKUP (227) - Looks in the top row of an array and returns the value of the indicated cell.
14. TWO WAY LOOKUP – Using both VLOOKUP and HLOOKUP together.
15. LOOKUP (231) - Looks up values in a vector or array.
16. MATCH (232) - Looks up values in a reference or array.
17. TRIM (447) - Removes spaces from text.
18. PROPER (439) - Capitalizes the first letter in each word of a text value.
19. LOWER (435) - Converts text to lowercase.
20. UPPER (450) - Converts text to uppercase.
21. LEFT, LEFTBs (433) - Returns the leftmost characters from a text value.
22. RIGHT, RIGHTBs (442) - Returns the rightmost characters from a text value.
23. MID, MIDBs (436) - Returns a specific number of characters from a text string starting at the position.
24. FIND, FINDBs (431) - Finds one text value within another (case-sensitive).
25. SUBSTITUTE (444) - Substitutes new text for old text in a text string.
26. LEN, LENBs (434) - Returns the number of characters in a text string.
27. REPLACE, REPLACEBs (440) - Replaces characters within text.
28. CONCATENATE (427) - Joins several text items into one text item.
29. CLEAN (425) - Removes all nonprintable characters from text.
30. NOW (71) - Returns the serial number of the current date and time.
31. TODAY (75) - Returns the serial number of today's date.
32. DATE (58) - Returns the serial number of a particular date.
33. MONTH (68) - Converts a serial number to a month.
34. DAY (60) - Converts a serial number to a day of the month.
35. YEAR (80) - Converts a serial number to a year.
36. WEEKDAY (76) - Converts a serial number to a day of the week.
37. ROUND (295) - Rounds a number to a specified number of digits.
38. ROUNDDOWN (296) - Rounds a number down, toward zero.
39. ROUNDUP (297) - Rounds a number up, away from zero.

40. MAX (371) - Returns the maximum value in a list of arguments.
41. DMAX (50) - Returns the maximum value from selected database entries.
42. MIN (374) - Returns the minimum value in a list of arguments.
43. DMIN (51) - Returns the minimum value from selected database entries.
44. MEDIAN - Returns the median of the given numbers.
45. MODE - Returns the most common value in a data set.
46. PERCENTILE (25) - Returns the k-th percentile of values in a range.
47. PERCENTRANK (26) - Returns the percentage rank of a value in a data set.
48. PMT (171) - Returns the periodic payment for an annuity.
49. NPV (165) - Returns the net present value of an investment based on a series of periodic cash flows.
50. DSUM (55) - Adds the numbers in the field column of records in the database that match the criteria.
51. DCOUNT (47) - Counts the cells that contain numbers in a database.
52. DCOUNTA (48) - Counts nonblank cells in a database.
53. AND (211) - Returns TRUE if all of its arguments are TRUE.
54. OR (217) - Returns TRUE if any argument is TRUE.
55. CHOOSE (222) - Chooses a value from a list of values.
56. TIME (73) - Returns the serial number of a particular time.
57. FV (155) - Returns the future value of an investment.
58. IRR (159) - Returns the internal rate of return for a series of cash flows.
59. YIELD (188) - Returns the yield on a security that pays periodic interest.
60. CELL (191) - Returns information about the formatting, location, or contents of a cell. Note
61. INFO (193) - Returns information about the current operating environment. Note This is not avail.
62. ERROR.TYPE (192) - Returns a number corresponding to an error type.
63. ISBLANK (194) - Returns TRUE if the value is blank.
64. ISNA (200) - Returns TRUE if the value is the #N/A error value.
65. GETPIVOTDATA (226) - Returns data stored in a PivotTable report.
66. HYPERLINK (228) - Creates a shortcut or jump that opens a document stored on a network server, an in.
67. TRANSPOSE (237) - Returns the transpose of an array.
68. ABS (239) - Returns the absolute value of a number.
69. RAND (292) - Returns a random number between 0 and 1.
70. RANDBETWEEN (293) - Returns a random number between the numbers you specify.
71. REPT (441) - Repeats text a given number of times.

72. SLN (180) - Returns the straight-line depreciation of an asset for one period.
73. SYD - Returns the sum-of-years' digits depreciation of an asset for a specified period.
74. DDB (149) - Returns the depreciation of an asset for a specified period by using the double-declining balance method.
75. DGET (49) - Extracts from a database a single record that matches the specified criteria.
76. ADDRESS (220) - Returns a reference as text to a single cell in a worksheet.
77. AGGREGATE (244) - Returns an aggregate in a list or database.
78. FORECAST (352) - Returns a value along a linear trend.
79. GROWTH (361) - Returns values along an exponential trend.
80. LARGE (366) - Returns the k-th largest value in a data set.
81. NOT (216) - Reverses the logic of its argument.
82. OFFSET (233) - Returns a reference offset from a given reference.
83. PEARSON (383) - Returns the Pearson product moment correlation coefficient.
84. PV (176) - Returns the present value of an investment.
85. RATE (177) - Returns the interest rate per period of an annuity.
86. SEARCH, SEARCHBs (443) - Finds one text value within another (not case-sensitive).
87. SMALL (401) - Returns the k-th smallest value in a data set.
88. XIRR (186) - Returns the internal rate of return for a schedule of cash flows that is not necessarily.
89. XOR (219) - Returns a logical exclusive OR of all arguments.
90. AVERAGEIF (321) - Returns the average (arithmetic mean) of all the cells in a range that meet a give.
91. AVERAGEIFS (322) - Returns the average (arithmetic mean) of all cells that meet multiple criteria.
92. COLUMN (223) - Returns the column number of a reference.
93. COLUMNS (224) - Returns the number of columns in a reference.
94. CONVERT (95) - Converts a number from one measurement system to another.
95. COUNTIFS (340) - Counts the number of cells within a range that meet multiple criteria.
96. DATEVALUE (59) - Converts a date in the form of text to a serial number.
97. DECIMAL (263) - Converts a text representation of a number in a given base into a decimal number.
98. DOLLAR (429) - Converts a number to text, using the $ (dollar) currency format.
99. EXACT (430) - Checks to see if two text values are identical.
100. FORMULATEXT (225) - Returns the formula at the given reference as text.
101. HOUR (65) - Converts a serial number to an hour.
102. INDEX (229) - Uses an index to choose a value from a reference or array.

103. ISERR (195) - Returns TRUE if the value is any error value except #N/A.
104. ISERROR (196) - Returns TRUE if the value is any error value.
105. ISFORMULA (198) - Returns TRUE if there is a reference to a cell that contains a formula.
106. KURT (365) - Returns the kurtosis of a data set.
107. MINUTE (67) - Converts a serial number to a minute.
108. NA (207) - Returns the error value #N/A.
109. PPMT (172) - Returns the payment on the principal for an investment for a given period.
110. ROW (234) - Returns the row number of a reference.
111. ROWS (235) - Returns the number of rows in a reference.
112. RSQ (397) - Returns the square of the Pearson product moment correlation coefficient.
113. SHEET (208) - Returns the sheet number of the referenced sheet.
114. SHEETS (209) - Returns the number of sheets in a reference.
115. SKEW (398) - Returns the skewness of a distribution.
116. SKEW.P (399) - Returns the skewness of a distribution based on a population: a characterization of t.
117. SUMIFS (309) - Adds the cells in a range that meet multiple criteria.
118. T (445) - Converts its arguments to text.
119. TYPE (210) - Returns a number indicating the data type of a value.
120. WEEKNUM (77) - Converts a serial number to a number representing where the week falls numerically with a year.
121. WORKDAY (78) - Returns the serial number of the date before or after a specified number of workdays.
122. XNPV (187) - Returns the net present value for a schedule of cash flows that is not necessarily periodic.
123. EFFECT (154) - Returns the effective annual interest rate.
124. INT (273) - Rounds a number down to the nearest integer.
125. INTERCEPT (364) - Returns the intercept of the linear regression line.
126. RANK (29) - Returns the rank of a number in a list of numbers.
127. RRI (179) - Returns an equivalent interest rate for the growth of an investment.
128. SIGN (301) - Returns the sign of a number.
129. SLOPE (400) - Returns the slope of the linear regression line.
130. CEILING (252) - Rounds a number to the nearest integer or to the nearest multiple of significance.
131. CEILING.MATH (253) - Rounds a number up, to the nearest integer or to the nearest multiple of significance.

132. CHAR (424) - Returns the character specified by the code number.
133. CODE (426) - Returns a numeric code for the first character in a text string.
134. DAVERAGE (46) - Returns the average of selected database entries.
135. DAYS (61) - Returns the number of days between two dates.
136. FALSE (212) - Returns the logical value FALSE.
137. FIXED (432) - Formats a number as text with a fixed number of decimals.
138. FLOOR.MATH (270) - Rounds a number down, to the nearest integer or to the nearest multiple of significance .
139. IFERROR (214) - Returns a value you specify if a formula evaluates to an error; otherwise, returns t.
140. IFNA (215) - Returns the value you specify if the expression resolves to #N/A, otherwise returns the.
141. INDIRECT (230) - Returns a reference indicated by a text value.
142. IPMT (158) - Returns the interest payment for an investment for a given period.
143. ISNONTEXT (201) - Returns TRUE if the value is not text.
144. ISNUMBER (202) - Returns TRUE if the value is a number.
145. MAXA (372) - Returns the maximum value in a list of arguments, including numbers, text, and logical .
146. MINA (375) - Returns the smallest value in a list of arguments, including numbers, text, and logical.
147. N (206) - Returns a value converted to a number.
148. NETWORKDAYS (69) - Returns the number of whole workdays between two dates.
149. RECEIVED (178) - Returns the amount received at maturity for a fully invested security.
150. SECOND (72) - Converts a serial number to a second.
151. SUMPRODUCT (310) - Returns the sum of the products of corresponding array components.
152. TREND (414) - Returns values along a linear trend.
153. TRUE (218) - Returns the logical value TRUE.
154. ACCRINT (136) - Returns the accrued interest for a security that pays periodic interest.
155. ACCRINTM (137) - Returns the accrued interest for a security that pays interest at maturity.
156. ISPMT (160) - Calculates the interest paid during a specific period of an investment.
157. ISTEXT (205) - Returns TRUE if the value is text.
158. LINEST (367) - Returns the parameters of a linear trend.
159. CUBEKPIMEMBER (39) - Returns a key performance indicator (KPI) property and displays the KPI name in.

160. DELTA (99) - Tests whether two values are equal.
161. EVEN (265) - Rounds a number up to the nearest even integer.
162. ISEVEN (197) - Returns TRUE if the number is even.
163. ISODD (203) - Returns TRUE if the number is odd.
164. ISOWEEKNUM (66) - Returns the number of the ISO week number of the year for a given date.
165. LOGEST (368) - Returns the parameters of an exponential trend.
166. ODD (286) - Rounds a number up to the nearest odd integer.
167. PRODUCT (289) - Multiplies its arguments.
168. QUOTIENT (290) - Returns the integer portion of a division.
169. STDEVP (31) - Calculates standard deviation based on the entire population.
170. TBILLEQ (182) - Returns the bond-equivalent yield for a Treasury bill.
171. TBILLYIELD (184) - Returns the yield for a Treasury bill.
172. TIMEVALUE (74) - Converts a time in the form of text to a serial number.

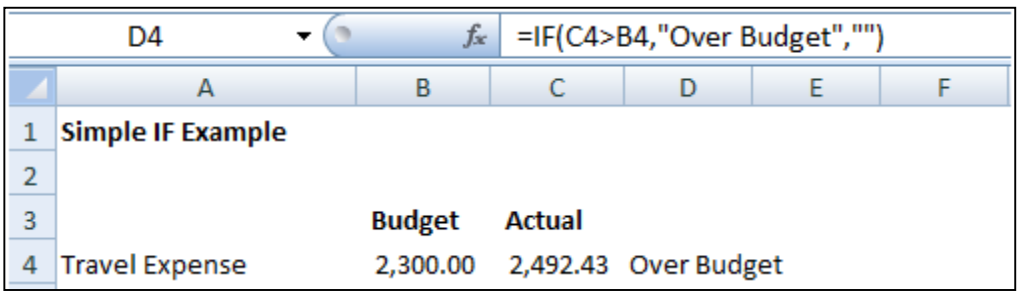
=IF

The "IF" function is the most powerful of all functions – not just in Excel, but in any programming language. It is the IF function that enables us to introduce logical thinking into our calculations. For example, "***…If Married, Query the Married Filing Jointly Rate Table, if Not, Query the Single Rate Table"..***. 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:

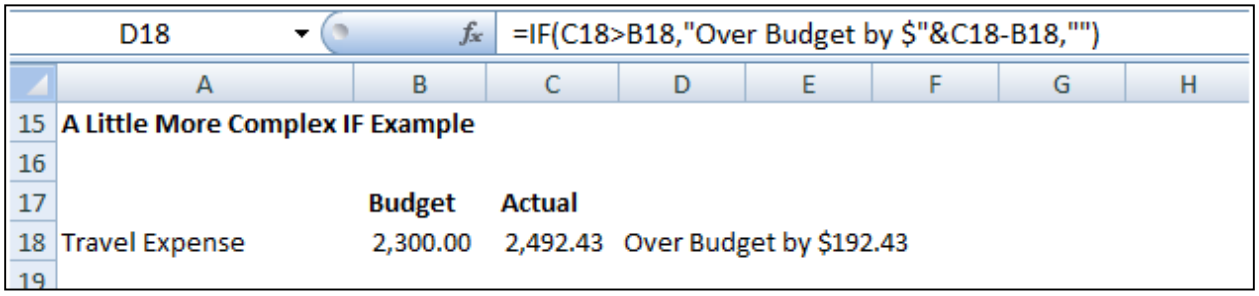
http://en.wikipedia.org/wiki/Conditional_(programming).
http://en.wikipedia.org/wiki/Logical_conditional#Conditional_statements

A 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:



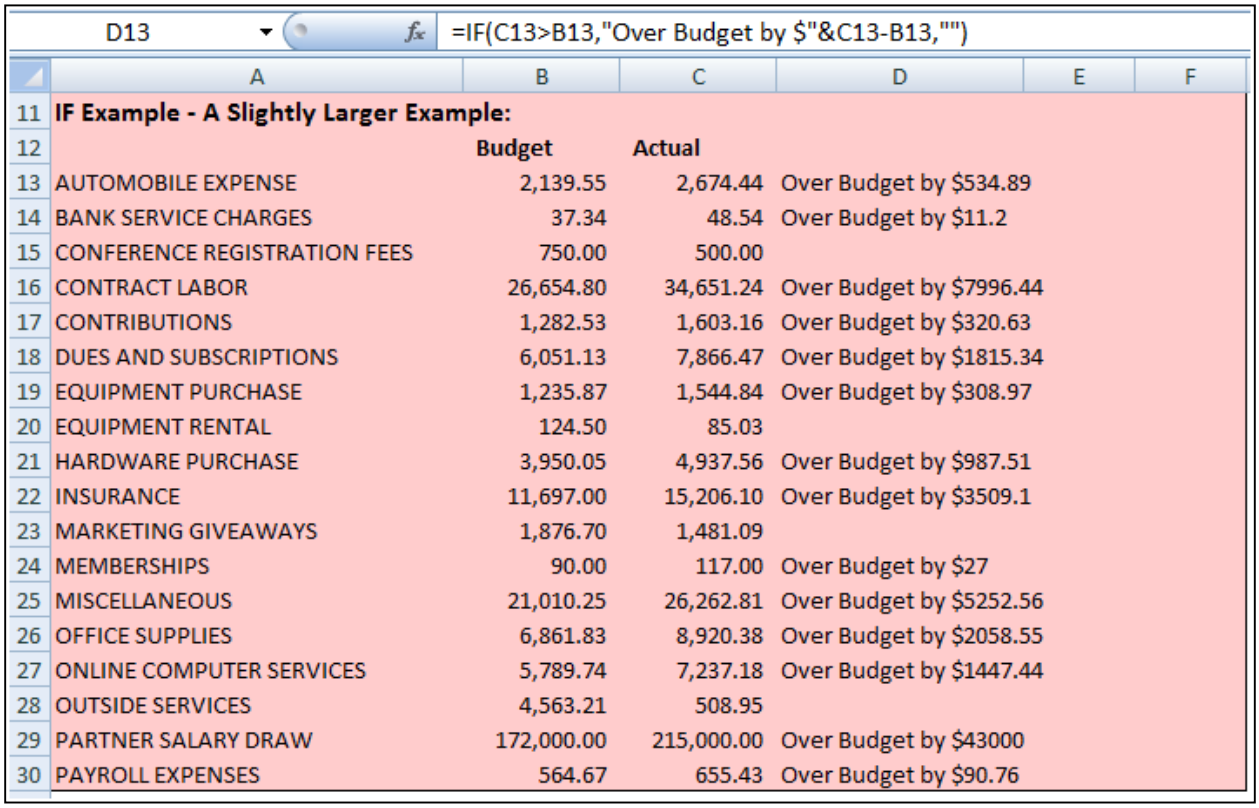
Simple IF with Calculation – Presented below is an example that is a little more complex:



D18 | =IF(C18>B18,"Over Budget by $"&C18-B18,"")

	A	B	C	D	E	F	G	H
15	**A Little More Complex IF Example**							
16								
17		**Budget**	**Actual**					
18	Travel Expense	2,300.00	2,492.43	Over Budget by $192.43				
19								

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

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

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.

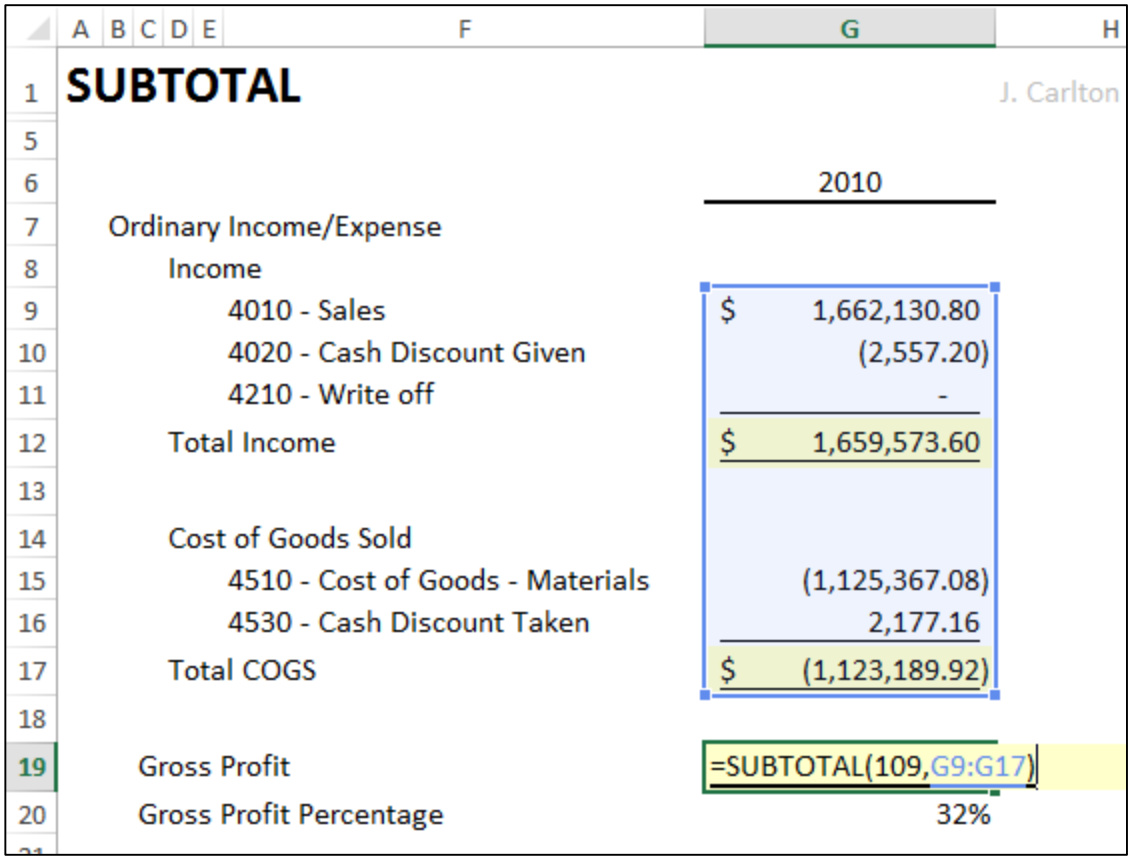
Key Pointers for Using the IF Function:

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","")

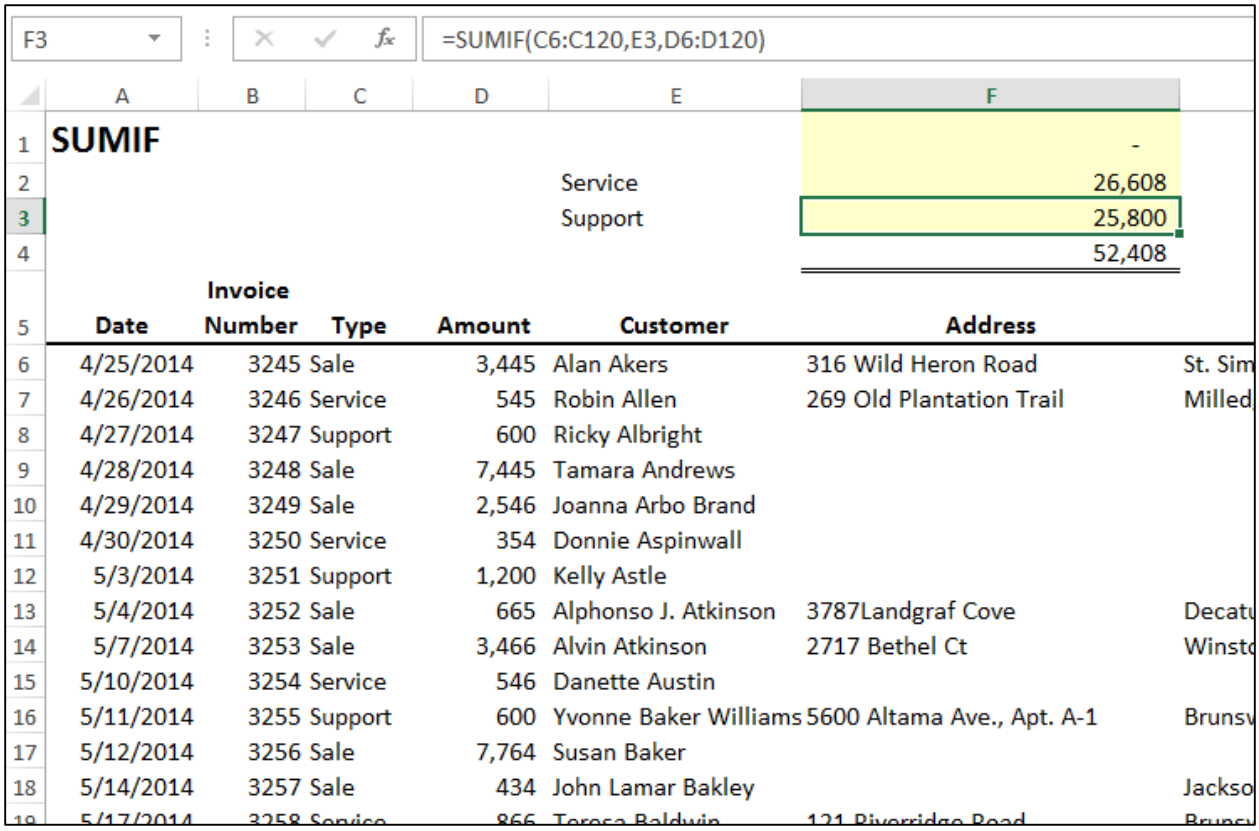
(Excel also provides an ISBLANK Function that would also work.)

170 Top Functions

	A	B	C	D	E	F
1	**SUM**					
2		**Using Commas**		**Using Plus Signs**		**Using a Colon**
3						
4		654.00		654.00		654.00
5		8,475.00		8,475.00		8,475.00
6		5,676.00		5,676.00		5,676.00
7		865.00		865.00		865.00
8		866.00		866.00		866.00
9		6,576.00		6,576.00		6,576.00
10		858.00		858.00		858.00
11		457.00		457.00		457.00
12		24,427.00		24,427.00		24,427.00
13						
14		=SUM(B4,B5,B6,B7,B8,B9,B10,B11)		=D4+D5+D6+D7+D8+D9+D10+D11		=SUM(F4:F11)
15						



	A	B	C	D	E	F	G	H
1	**SUBTOTAL**						J. Carlton	
5								
6							2010	
7	Ordinary Income/Expense							
8		Income						
9			4010 - Sales				$ 1,662,130.80	
10			4020 - Cash Discount Given				(2,557.20)	
11			4210 - Write off				-	
12		Total Income					$ 1,659,573.60	
13								
14		Cost of Goods Sold						
15			4510 - Cost of Goods - Materials				(1,125,367.08)	
16			4530 - Cash Discount Taken				2,177.16	
17		Total COGS					$ (1,123,189.92)	
18								
19		Gross Profit					=SUBTOTAL(109,G9:G17)	
20		Gross Profit Percentage					32%	



F3 =SUMIF(C6:C120,E3,D6:D120)

	A	B	C	D	E	F	
1	**SUMIF**					-	
2					Service	26,608	
3					Support	25,800	
4						52,408	
5	**Date**	**Invoice Number**	**Type**	**Amount**	**Customer**	**Address**	
6	4/25/2014	3245	Sale	3,445	Alan Akers	316 Wild Heron Road	St. Sim
7	4/26/2014	3246	Service	545	Robin Allen	269 Old Plantation Trail	Milled
8	4/27/2014	3247	Support	600	Ricky Albright		
9	4/28/2014	3248	Sale	7,445	Tamara Andrews		
10	4/29/2014	3249	Sale	2,546	Joanna Arbo Brand		
11	4/30/2014	3250	Service	354	Donnie Aspinwall		
12	5/3/2014	3251	Support	1,200	Kelly Astle		
13	5/4/2014	3252	Sale	665	Alphonso J. Atkinson	3787Landgraf Cove	Decatu
14	5/7/2014	3253	Sale	3,466	Alvin Atkinson	2717 Bethel Ct	Winsto
15	5/10/2014	3254	Service	546	Danette Austin		
16	5/11/2014	3255	Support	600	Yvonne Baker Williams	5600 Altama Ave., Apt. A-1	Brunsv
17	5/12/2014	3256	Sale	7,764	Susan Baker		
18	5/14/2014	3257	Sale	434	John Lamar Bakley		Jackso
19	5/17/2014	3258	Service	866	Teresa Baldwin	121 Riverridge Road	Brunsv

C5 =COUNT(C8:C29)

COUNT - Counts how many numbers are in the list of arguments

Girl Scout Cookie Sales

Number of Orders	11	14	11	8	12	10	66

Boxes Ordered

Customer Name	Tag Alongs	Thin Mints	Daisy Go Rounds	Trefolis	Do-Si-Dos	Samoas	Total
Alvin Atkinson	4	1	4		1	3	13
Danette Austin		2	1	2	3		8
Yvonne Baker Williams	1		1	2			4
Susan Baker			3		3	4	10
John Lamar Bakley	3	3					6
Teresa Baldwin	1		3	2	1	1	8
Richard Banks							0
Charles Banks	3	3		3		4	13

C5 =COUNTA(C8:C29)

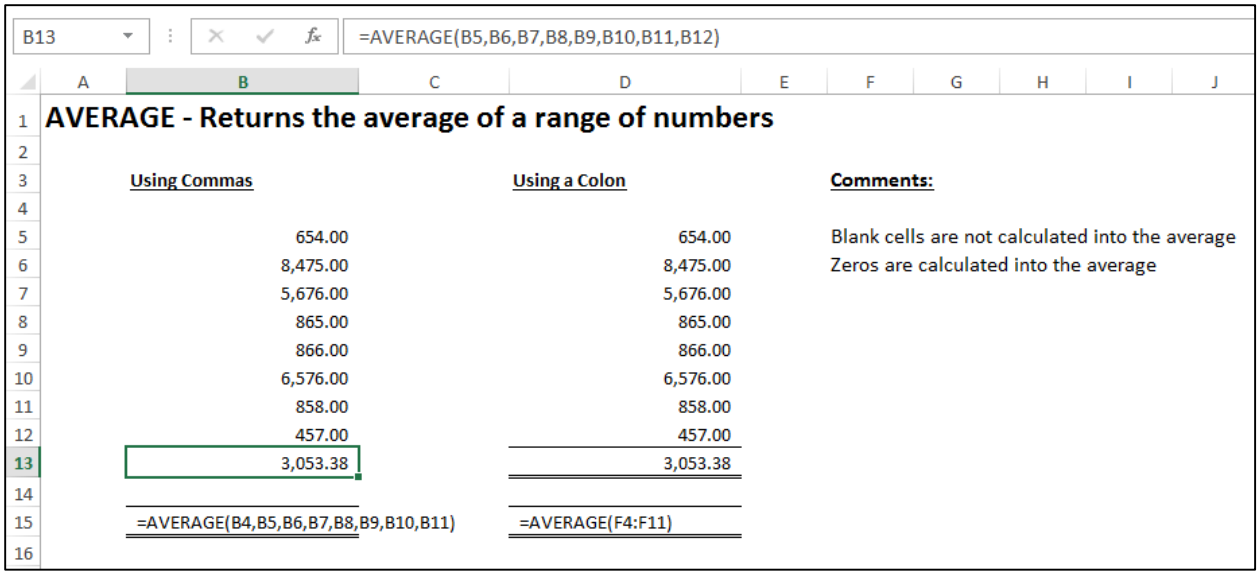
COUNTA - Counts how many nonblank cells in the list of arguments

Girl Scout Cookie Sales

Number of Orders	12	16	16	11	15	15	22

Boxes Ordered

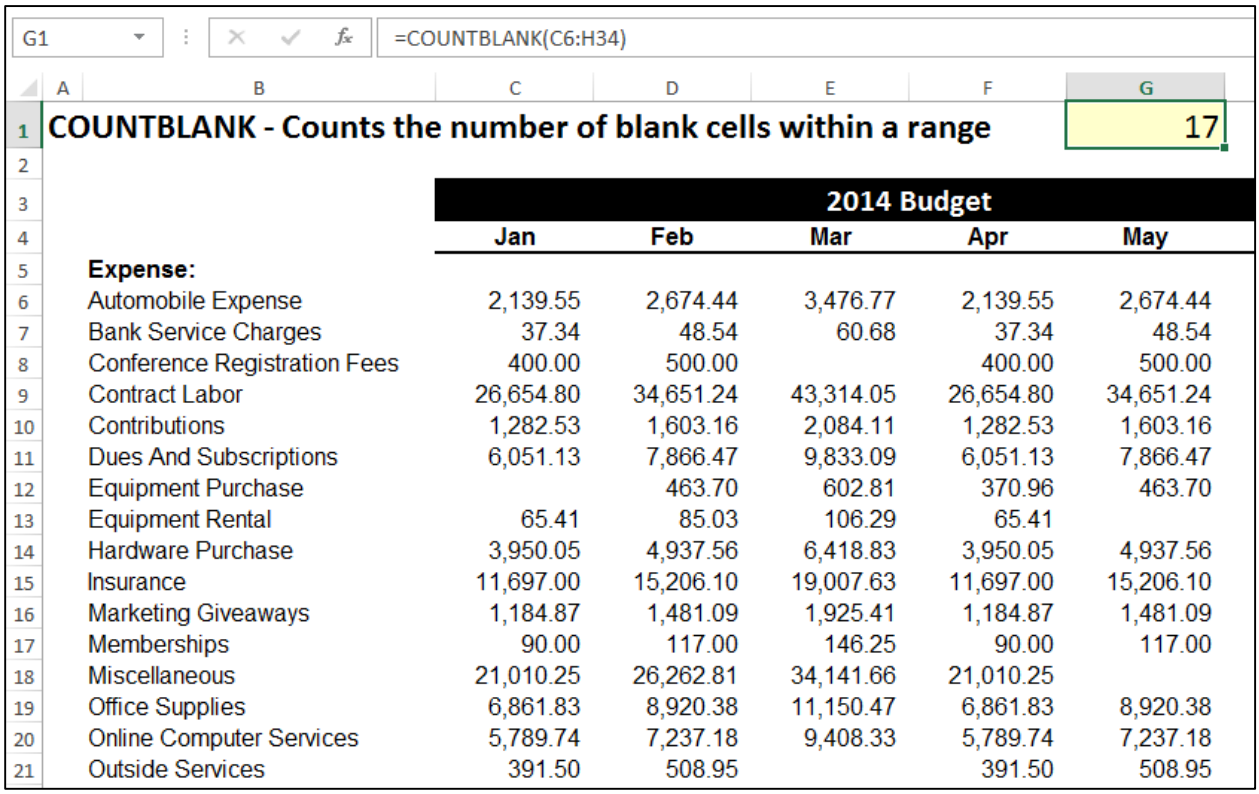
Customer Name	Tag Alongs	Thin Mints	Daisy Go Rounds	Trefolis	Do-Si-Dos	Samoas	Total
Alvin Atkinson	4 boxes	1 box	6 boxes	4 boxes	1 box	6 boxes	0
Danette Austin		2 cases	1 box		2 cases	1 box	0
Yvonne Baker Williams	6 boxes		1 box	6 boxes		1 box	0
Susan Baker		1 case	3 boxes		1 case	3 boxes	0
John Lamar Bakley	2 cases	3 cases		2 cases	3 cases		0
Teresa Baldwin				4 boxes	1 box	6 boxes	0
Richard Banks					2 cases	1 box	0



B13 =AVERAGE(B5,B6,B7,B8,B9,B10,B11,B12)

AVERAGE - Returns the average of a range of numbers

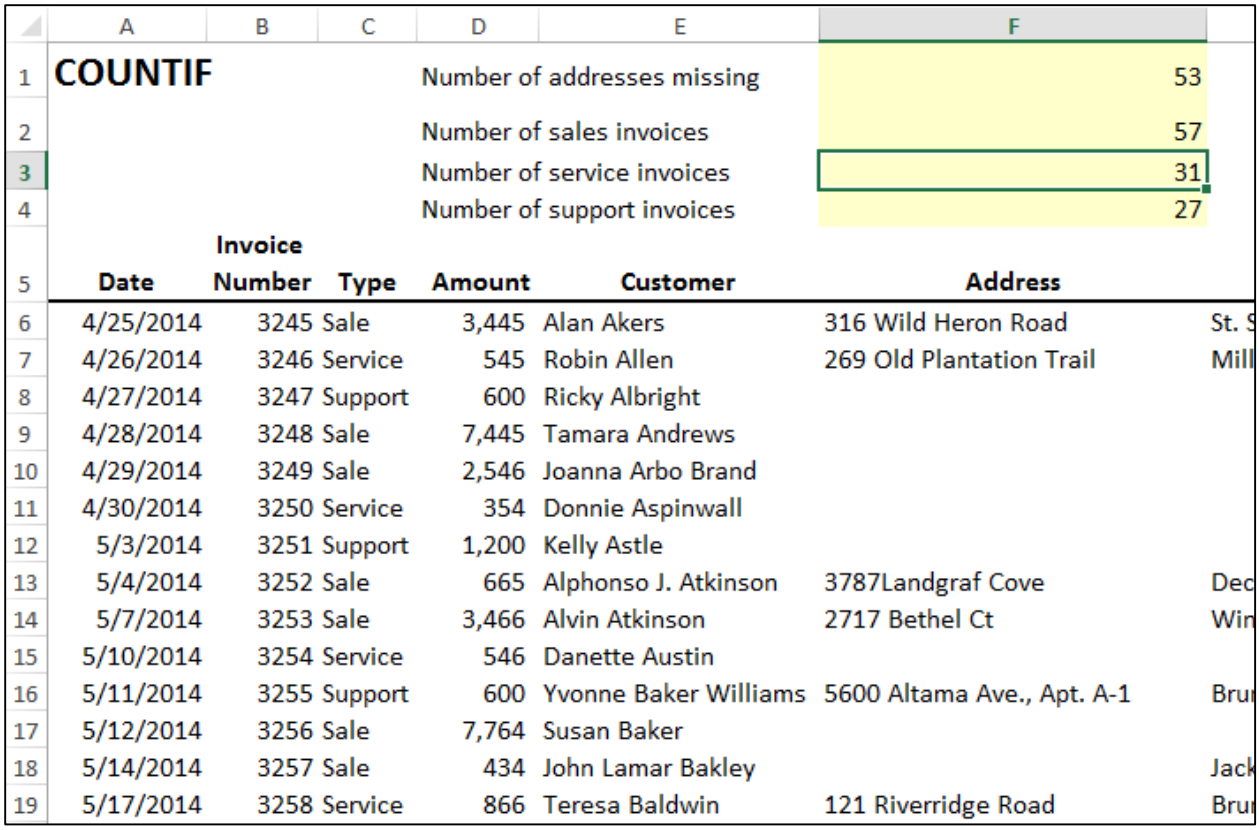
	Using Commas	Using a Colon	Comments:
	654.00	654.00	Blank cells are not calculated into the average
	8,475.00	8,475.00	Zeros are calculated into the average
	5,676.00	5,676.00	
	865.00	865.00	
	866.00	866.00	
	6,576.00	6,576.00	
	858.00	858.00	
	457.00	457.00	
	3,053.38	3,053.38	
	=AVERAGE(B4,B5,B6,B7,B8,B9,B10,B11)	=AVERAGE(F4:F11)	



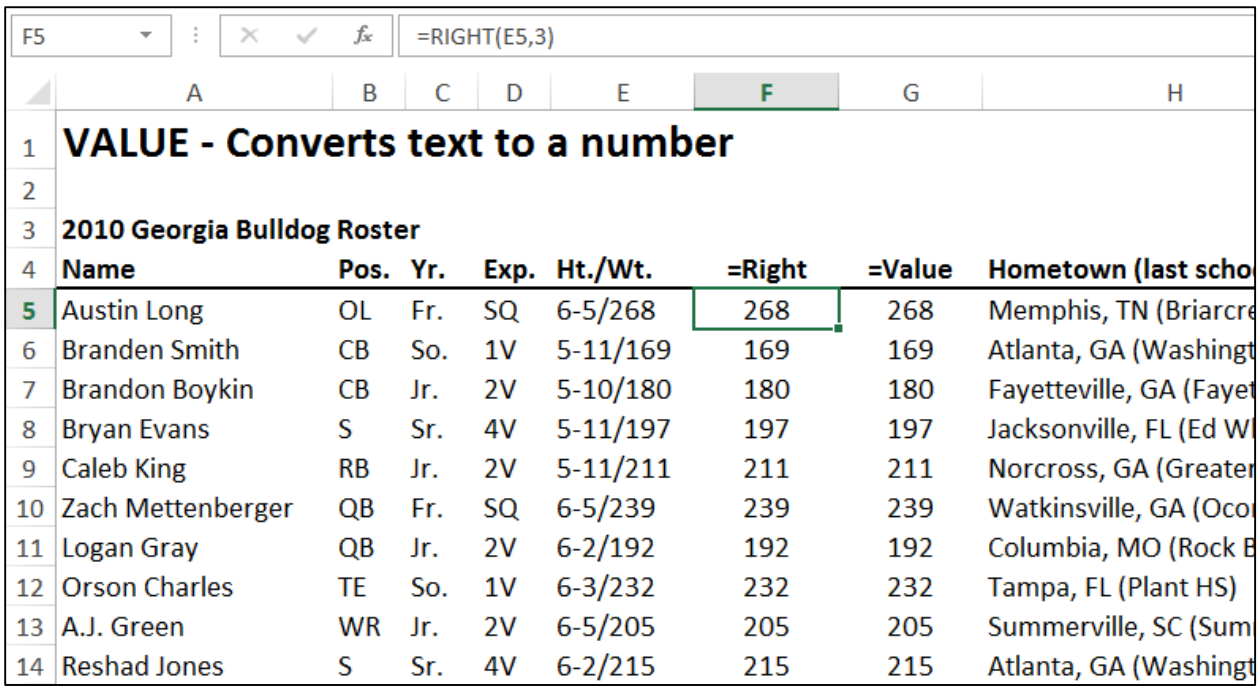
G1 =COUNTBLANK(C6:H34)

COUNTBLANK - Counts the number of blank cells within a range 17

	2014 Budget				
	Jan	Feb	Mar	Apr	May
Expense:					
Automobile Expense	2,139.55	2,674.44	3,476.77	2,139.55	2,674.44
Bank Service Charges	37.34	48.54	60.68	37.34	48.54
Conference Registration Fees	400.00	500.00		400.00	500.00
Contract Labor	26,654.80	34,651.24	43,314.05	26,654.80	34,651.24
Contributions	1,282.53	1,603.16	2,084.11	1,282.53	1,603.16
Dues And Subscriptions	6,051.13	7,866.47	9,833.09	6,051.13	7,866.47
Equipment Purchase		463.70	602.81	370.96	463.70
Equipment Rental	65.41	85.03	106.29	65.41	
Hardware Purchase	3,950.05	4,937.56	6,418.83	3,950.05	4,937.56
Insurance	11,697.00	15,206.10	19,007.63	11,697.00	15,206.10
Marketing Giveaways	1,184.87	1,481.09	1,925.41	1,184.87	1,481.09
Memberships	90.00	117.00	146.25	90.00	117.00
Miscellaneous	21,010.25	26,262.81	34,141.66	21,010.25	
Office Supplies	6,861.83	8,920.38	11,150.47	6,861.83	8,920.38
Online Computer Services	5,789.74	7,237.18	9,408.33	5,789.74	7,237.18
Outside Services	391.50	508.95		391.50	508.95

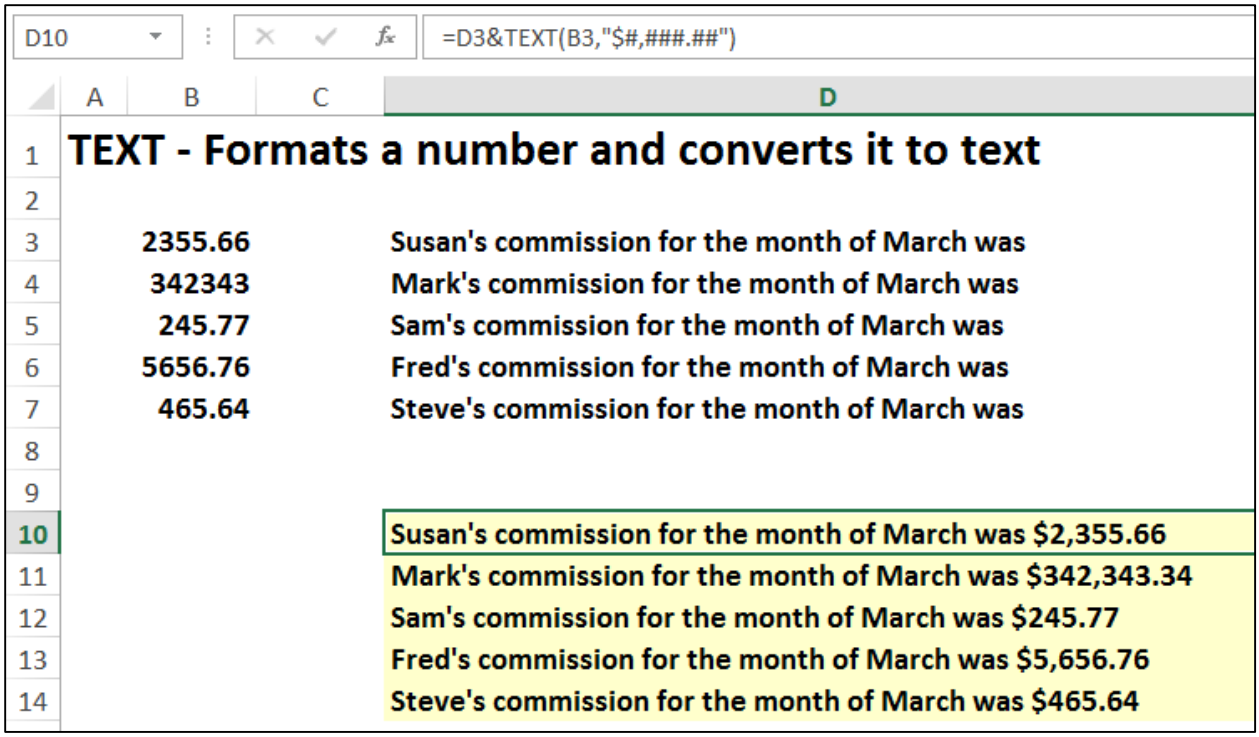


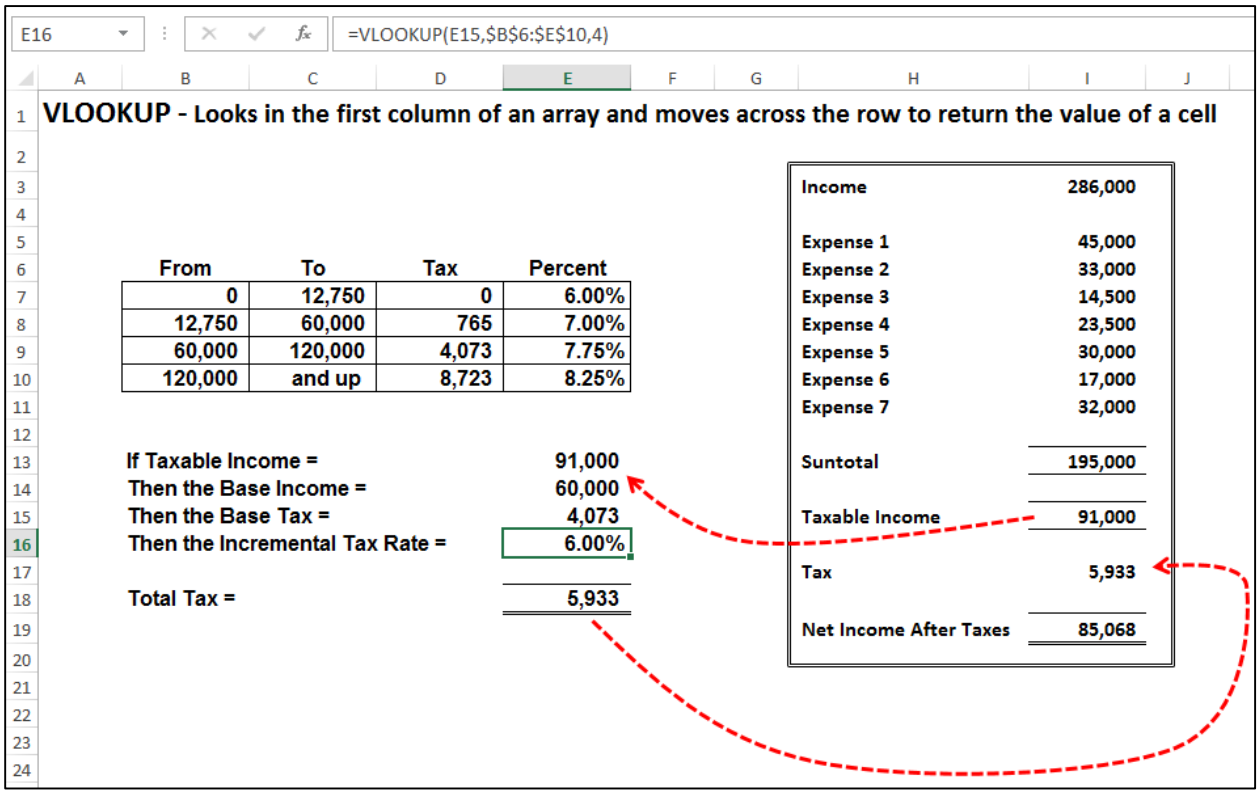
	A	B	C	D	E	F
1	**COUNTIF**			Number of addresses missing		53
2				Number of sales invoices		57
3				Number of service invoices		31
4				Number of support invoices		27
5	**Date**	**Invoice Number**	**Type**	**Amount**	**Customer**	**Address**
6	4/25/2014	3245	Sale	3,445	Alan Akers	316 Wild Heron Road
7	4/26/2014	3246	Service	545	Robin Allen	269 Old Plantation Trail
8	4/27/2014	3247	Support	600	Ricky Albright	
9	4/28/2014	3248	Sale	7,445	Tamara Andrews	
10	4/29/2014	3249	Sale	2,546	Joanna Arbo Brand	
11	4/30/2014	3250	Service	354	Donnie Aspinwall	
12	5/3/2014	3251	Support	1,200	Kelly Astle	
13	5/4/2014	3252	Sale	665	Alphonso J. Atkinson	3787Landgraf Cove
14	5/7/2014	3253	Sale	3,466	Alvin Atkinson	2717 Bethel Ct
15	5/10/2014	3254	Service	546	Danette Austin	
16	5/11/2014	3255	Support	600	Yvonne Baker Williams	5600 Altama Ave., Apt. A-1
17	5/12/2014	3256	Sale	7,764	Susan Baker	
18	5/14/2014	3257	Sale	434	John Lamar Bakley	
19	5/17/2014	3258	Service	866	Teresa Baldwin	121 Riverridge Road



F5 =RIGHT(E5,3)

	A	B	C	D	E	F	G	H
1	**VALUE - Converts text to a number**							
2								
3	**2010 Georgia Bulldog Roster**							
4	**Name**	**Pos.**	**Yr.**	**Exp.**	**Ht./Wt.**	**=Right**	**=Value**	**Hometown (last scho**
5	Austin Long	OL	Fr.	SQ	6-5/268	268	268	Memphis, TN (Briarcre
6	Branden Smith	CB	So.	1V	5-11/169	169	169	Atlanta, GA (Washingt
7	Brandon Boykin	CB	Jr.	2V	5-10/180	180	180	Fayetteville, GA (Fayet
8	Bryan Evans	S	Sr.	4V	5-11/197	197	197	Jacksonville, FL (Ed Wh
9	Caleb King	RB	Jr.	2V	5-11/211	211	211	Norcross, GA (Greater
10	Zach Mettenberger	QB	Fr.	SQ	6-5/239	239	239	Watkinsville, GA (Oco
11	Logan Gray	QB	Jr.	2V	6-2/192	192	192	Columbia, MO (Rock B
12	Orson Charles	TE	So.	1V	6-3/232	232	232	Tampa, FL (Plant HS)
13	A.J. Green	WR	Jr.	2V	6-5/205	205	205	Summerville, SC (Sum
14	Reshad Jones	S	Sr.	4V	6-2/215	215	215	Atlanta, GA (Washingt





E18 =HLOOKUP(D18,B6:J7,2)

HLOOKUP - Looks in the top row of an array and returns the value of the indicated cell

Quantity Break Pricing for Stereo Shoes

1	2 to 5	6 to 10	11 to 15	16 to 20	21 to 30	31 to 50	51 to 100	100 or more
$299.95	$293.95	$288.07	$282.31	$276.66	$271.13	$265.71	$260.39	$255.19

Order Form

Mahatma Ghandi
1012 Spiffy Road
Sri Lanka, India

Item	QTY	Price	Total
Stereo Shoes	4	$ 293.95	$ 1,175.80

Grand Total $ 1,175.80

E3 =HLOOKUP(C4,C6:K7,2)

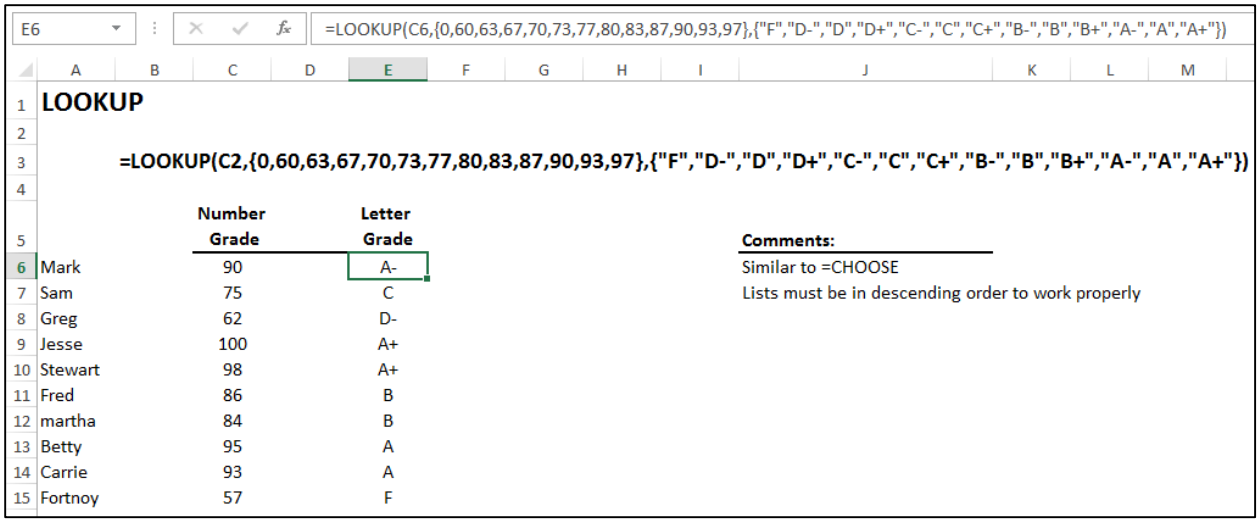
Two Way Look Up

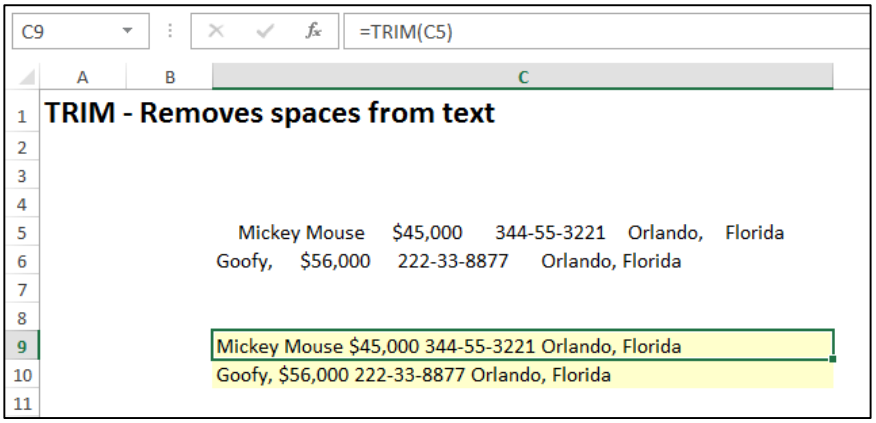
Player Asher Clark, Air Force
Stat TDs

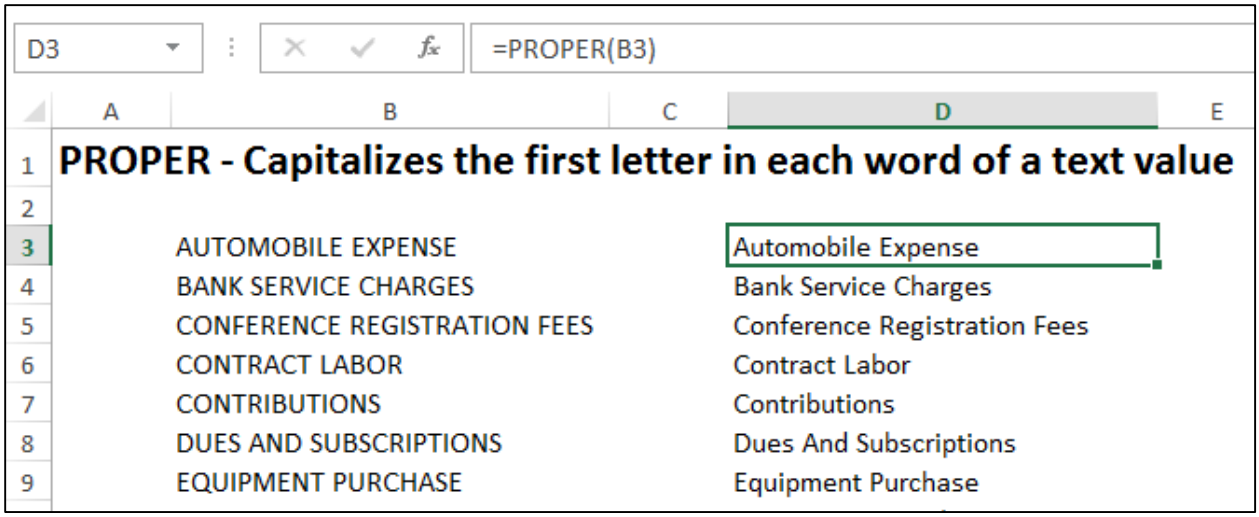
7

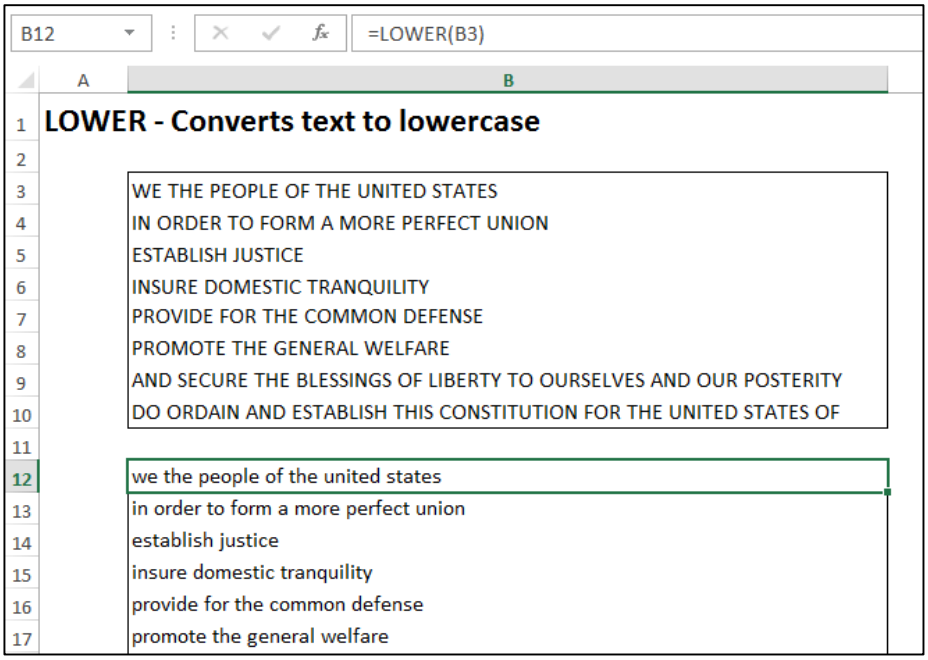
Player	Pos	Cl	Gm	Carries	Net	TDs	Avg	Ydspgm
Asher Clark, Air Force	RB	SO	13	151	865	7	5.73	66.54

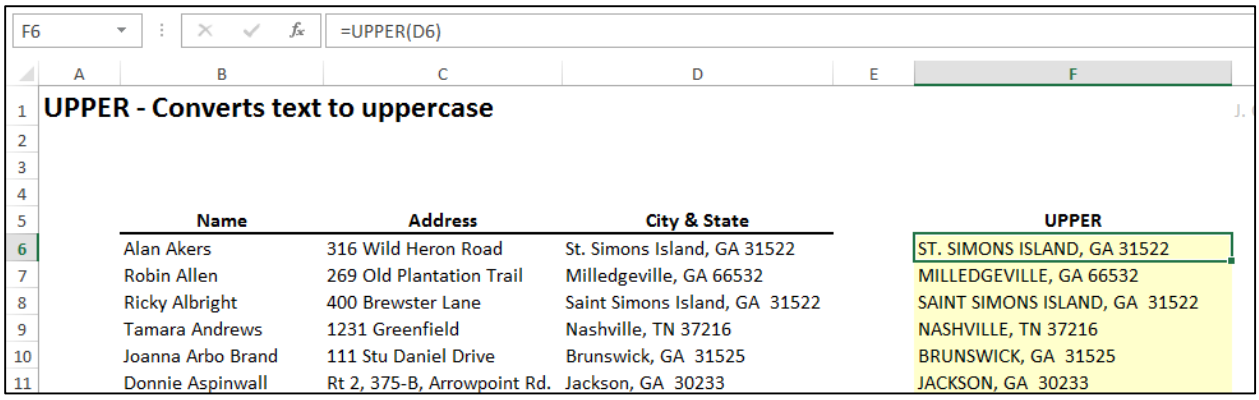
Rank	Player	Pos	Cl	Gm	Carries	Net	TDs	Avg	Ydspgm
57	Adam Robinson, Iowa	RB	FR	11	181	834	5	4.61	75.82
25	Alexander Robinson, Iowa St.	RB	JR	12	232	1195	6	5.15	99.58
13	Alfred Morris, Fla. Atlantic	RB	SO	12	263	1392	11	5.29	116
44	Andre Anderson, Tulane	RB	SR	12	238	1016	8	4.27	84.67
47	Andre Dixon, Connecticut	RB	SR	13	239	1093	14	4.57	84.08
6	Anthony Dixon, Mississippi St.	RB	SR	11	257	1391	12	5.41	126.45
72	Asher Clark, Air Force	RB	SO	13	151	865	7	5.73	66.54
84	B.J. Daniels, South Fla.	QB	FR	13	175	772	9	4.41	59.38

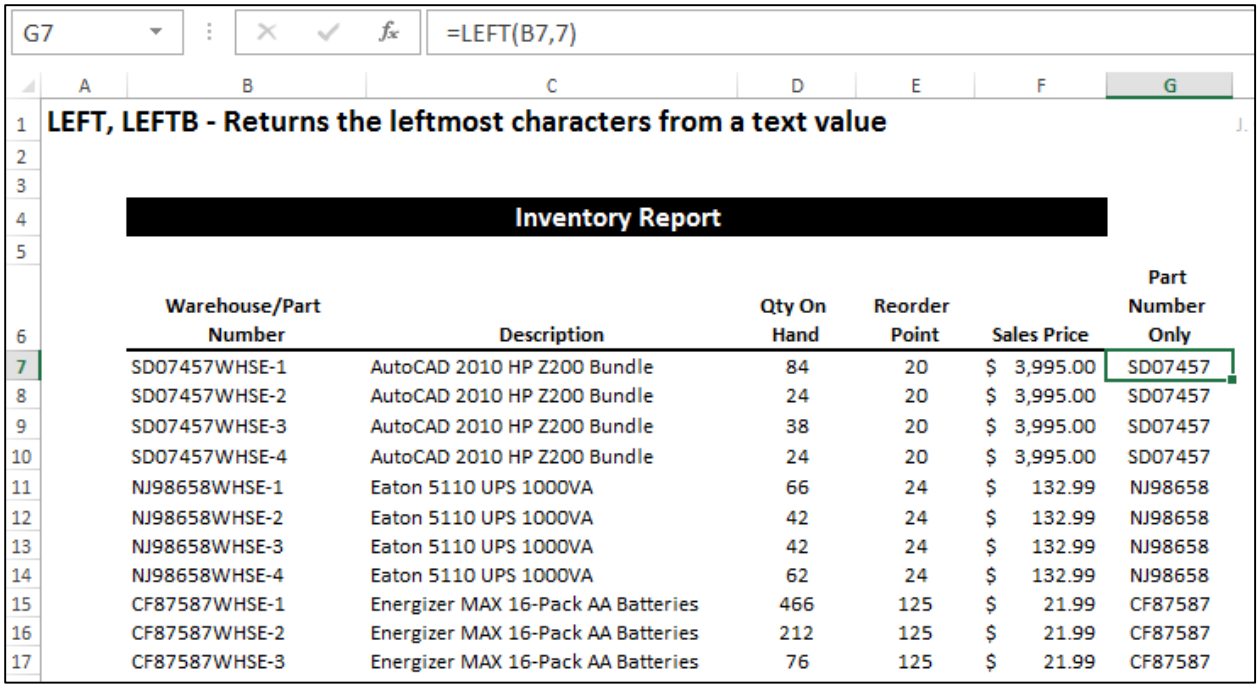










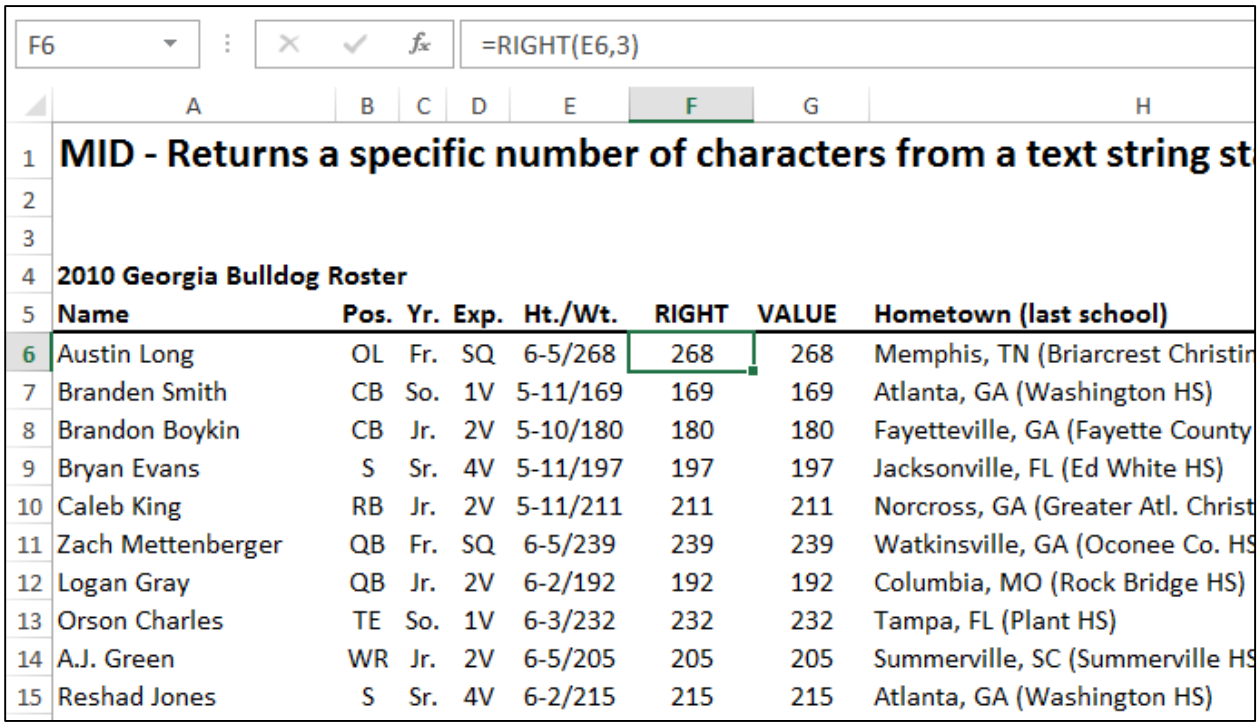


G7 =LEFT(B7,7)

LEFT, LEFTB - Returns the leftmost characters from a text value

Inventory Report

Warehouse/Part Number	Description	Qty On Hand	Reorder Point	Sales Price	Part Number Only
SD07457WHSE-1	AutoCAD 2010 HP Z200 Bundle	84	20	$ 3,995.00	SD07457
SD07457WHSE-2	AutoCAD 2010 HP Z200 Bundle	24	20	$ 3,995.00	SD07457
SD07457WHSE-3	AutoCAD 2010 HP Z200 Bundle	38	20	$ 3,995.00	SD07457
SD07457WHSE-4	AutoCAD 2010 HP Z200 Bundle	24	20	$ 3,995.00	SD07457
NJ98658WHSE-1	Eaton 5110 UPS 1000VA	66	24	$ 132.99	NJ98658
NJ98658WHSE-2	Eaton 5110 UPS 1000VA	42	24	$ 132.99	NJ98658
NJ98658WHSE-3	Eaton 5110 UPS 1000VA	42	24	$ 132.99	NJ98658
NJ98658WHSE-4	Eaton 5110 UPS 1000VA	62	24	$ 132.99	NJ98658
CF87587WHSE-1	Energizer MAX 16-Pack AA Batteries	466	125	$ 21.99	CF87587
CF87587WHSE-2	Energizer MAX 16-Pack AA Batteries	212	125	$ 21.99	CF87587
CF87587WHSE-3	Energizer MAX 16-Pack AA Batteries	76	125	$ 21.99	CF87587



F6 =RIGHT(E6,3)

MID - Returns a specific number of characters from a text string st

2010 Georgia Bulldog Roster

Name	Pos.	Yr.	Exp.	Ht./Wt.	RIGHT	VALUE	Hometown (last school)
Austin Long	OL	Fr.	SQ	6-5/268	268	268	Memphis, TN (Briarcrest Christir
Branden Smith	CB	So.	1V	5-11/169	169	169	Atlanta, GA (Washington HS)
Brandon Boykin	CB	Jr.	2V	5-10/180	180	180	Fayetteville, GA (Fayette County
Bryan Evans	S	Sr.	4V	5-11/197	197	197	Jacksonville, FL (Ed White HS)
Caleb King	RB	Jr.	2V	5-11/211	211	211	Norcross, GA (Greater Atl. Christ
Zach Mettenberger	QB	Fr.	SQ	6-5/239	239	239	Watkinsville, GA (Oconee Co. HS
Logan Gray	QB	Jr.	2V	6-2/192	192	192	Columbia, MO (Rock Bridge HS)
Orson Charles	TE	So.	1V	6-3/232	232	232	Tampa, FL (Plant HS)
A.J. Green	WR	Jr.	2V	6-5/205	205	205	Summerville, SC (Summerville HS
Reshad Jones	S	Sr.	4V	6-2/215	215	215	Atlanta, GA (Washington HS)

H6 =MID(F6,G6+2,2)

MID - Returns a specific number of characters from a text string starting at the position you specify

2010 Georgia Bulldog Roster

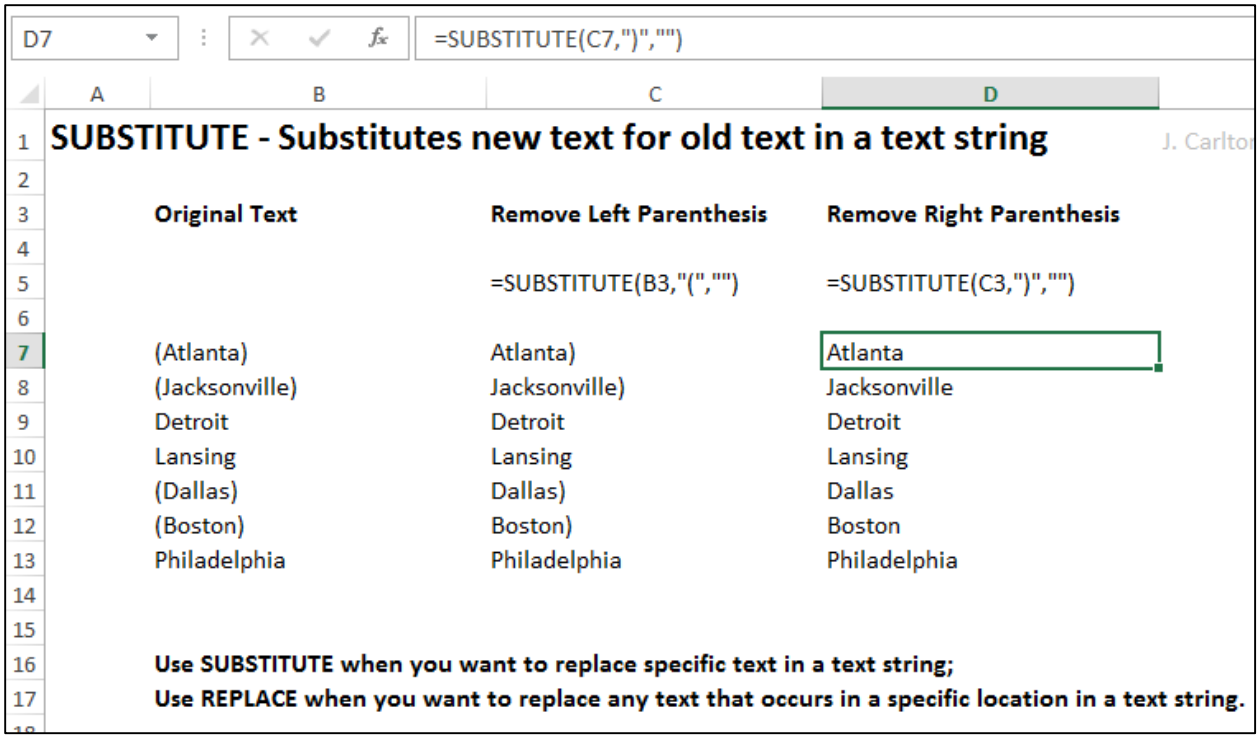
Name	Pos.	Yr.	Exp.	Ht./Wt.	Hometown (last school)	Find	State
Austin Long	OL	Fr.	SQ	6-5/268	Memphis, TN (Briarcrest Christina HS)	8	TN
Branden Smith	CB	So.	1V	5-11/169	Atlanta, GA (Washington HS)	8	GA
Brandon Boykin	CB	Jr.	2V	5-10/180	Fayetteville, GA (Fayette County HS)	13	GA
Bryan Evans	S	Sr.	4V	5-11/197	Jacksonville, FL (Ed White HS)	13	FL
Caleb King	RB	Jr.	2V	5-11/211	Norcross, GA (Greater Atl. Christian HS)	9	GA
Zach Mettenberger	QB	Fr.	SQ	6-5/239	Watkinsville, GA (Oconee Co. HS)	13	GA
Logan Gray	QB	Jr.	2V	6-2/192	Columbia, MO (Rock Bridge HS)	9	MO
Orson Charles	TE	So.	1V	6-3/232	Tampa, FL (Plant HS)	6	FL
A.J. Green	WR	Jr.	2V	6-5/205	Summerville, SC (Summerville HS)	12	SC
Reshad Jones	S	Sr.	4V	6-2/215	Atlanta, GA (Washington HS)	8	GA

G5 =FIND(",",F5)

FIND - Finds one text value within another (case-sensitive)

2010 Georgia Bulldog Roster

Name	Pos.	Yr.	Exp.	Ht./Wt.	Hometown (last school)	Find	State
Austin Long	OL	Fr.	SQ	6-5/268	Memphis, TN (Briarcrest Christina HS)	8	TN
Branden Smith	CB	So.	1V	5-11/169	Atlanta, GA (Washington HS)	8	GA
Brandon Boykin	CB	Jr.	2V	5-10/180	Fayetteville, GA (Fayette County HS)	13	GA
Bryan Evans	S	Sr.	4V	5-11/197	Jacksonville, FL (Ed White HS)	13	FL
Caleb King	RB	Jr.	2V	5-11/211	Norcross, GA (Greater Atl. Christian HS)	9	GA
Zach Mettenberger	QB	Fr.	SQ	6-5/239	Watkinsville, GA (Oconee Co. HS)	13	GA
Logan Gray	QB	Jr.	2V	6-2/192	Columbia, MO (Rock Bridge HS)	9	MO
Orson Charles	TE	So.	1V	6-3/232	Tampa, FL (Plant HS)	6	FL
A.J. Green	WR	Jr.	2V	6-5/205	Summerville, SC (Summerville HS)	12	SC
Reshad Jones	S	Sr.	4V	6-2/215	Atlanta, GA (Washington HS)	8	GA



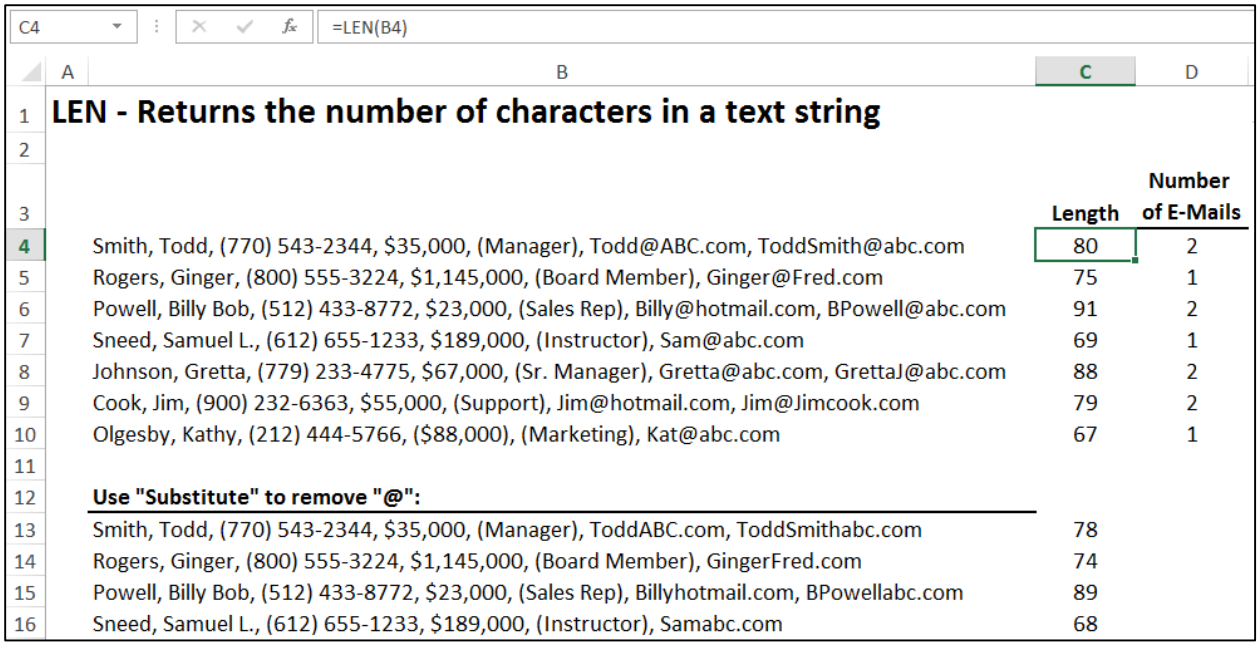
D7 =SUBSTITUTE(C7,")","")

SUBSTITUTE - Substitutes new text for old text in a text string

J. Carlton

Original Text	Remove Left Parenthesis	Remove Right Parenthesis
	=SUBSTITUTE(B3,"(","")	=SUBSTITUTE(C3,")","")
(Atlanta)	Atlanta)	Atlanta
(Jacksonville)	Jacksonville)	Jacksonville
Detroit	Detroit	Detroit
Lansing	Lansing	Lansing
(Dallas)	Dallas)	Dallas
(Boston)	Boston)	Boston
Philadelphia	Philadelphia	Philadelphia

Use SUBSTITUTE when you want to replace specific text in a text string;
Use REPLACE when you want to replace any text that occurs in a specific location in a text string.



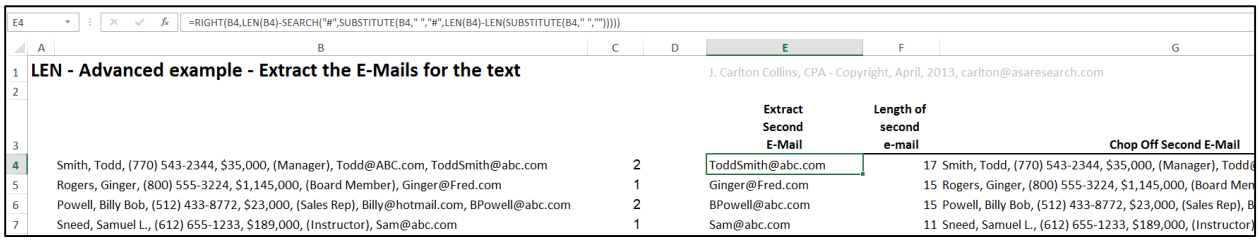
C4 =LEN(B4)

LEN - Returns the number of characters in a text string

	Length	Number of E-Mails
Smith, Todd, (770) 543-2344, $35,000, (Manager), Todd@ABC.com, ToddSmith@abc.com	80	2
Rogers, Ginger, (800) 555-3224, $1,145,000, (Board Member), Ginger@Fred.com	75	1
Powell, Billy Bob, (512) 433-8772, $23,000, (Sales Rep), Billy@hotmail.com, BPowell@abc.com	91	2
Sneed, Samuel L., (612) 655-1233, $189,000, (Instructor), Sam@abc.com	69	1
Johnson, Gretta, (779) 233-4775, $67,000, (Sr. Manager), Gretta@abc.com, GrettaJ@abc.com	88	2
Cook, Jim, (900) 232-6363, $55,000, (Support), Jim@hotmail.com, Jim@Jimcook.com	79	2
Olgesby, Kathy, (212) 444-5766, ($88,000), (Marketing), Kat@abc.com	67	1

Use "Substitute" to remove "@":

Smith, Todd, (770) 543-2344, $35,000, (Manager), ToddABC.com, ToddSmithabc.com	78
Rogers, Ginger, (800) 555-3224, $1,145,000, (Board Member), GingerFred.com	74
Powell, Billy Bob, (512) 433-8772, $23,000, (Sales Rep), Billyhotmail.com, BPowellabc.com	89
Sneed, Samuel L., (612) 655-1233, $189,000, (Instructor), Samabc.com	68

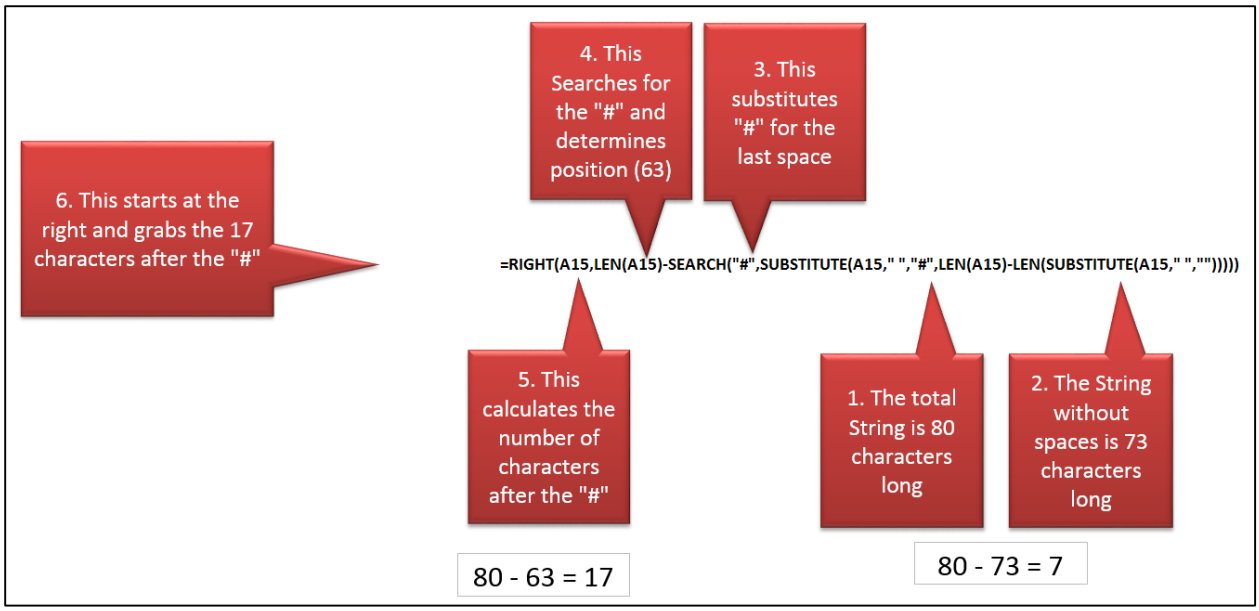


E4 =RIGHT(B4,LEN(B4)-SEARCH("#",SUBSTITUTE(B4," ","#",LEN(B4)-LEN(SUBSTITUTE(B4," ",""))))

LEN - Advanced example - Extract the E-Mails for the text

J. Carlton Collins, CPA - Copyright, April, 2013, carlton@asaresearch.com

		Extract Second E-Mail	Length of second e-mail	Chop Off Second E-Mail
Smith, Todd, (770) 543-2344, $35,000, (Manager), Todd@ABC.com, ToddSmith@abc.com	2	ToddSmith@abc.com	17	Smith, Todd, (770) 543-2344, $35,000, (Manager), Todd
Rogers, Ginger, (800) 555-3224, $1,145,000, (Board Member), Ginger@Fred.com	1	Ginger@Fred.com	15	Rogers, Ginger, (800) 555-3224, $1,145,000, (Board Mem
Powell, Billy Bob, (512) 433-8772, $23,000, (Sales Rep), Billy@hotmail.com, BPowell@abc.com	2	BPowell@abc.com	15	Powell, Billy Bob, (512) 433-8772, $23,000, (Sales Rep), B
Sneed, Samuel L., (612) 655-1233, $189,000, (Instructor), Sam@abc.com	1	Sam@abc.com	11	Sneed, Samuel L., (612) 655-1233, $189,000, (Instructor)



F5 =REPLACE(E5,4,1," ")

REPLACE - Replaces text in a string with alternative text

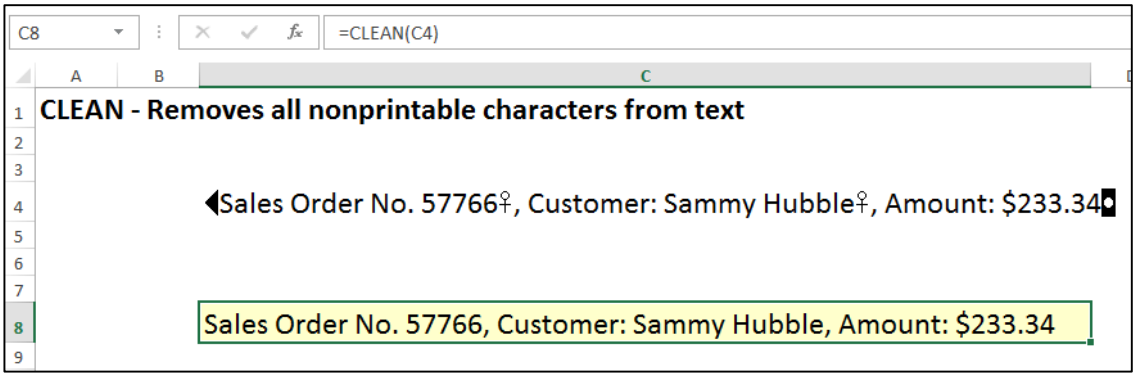
Name	Address	City & State	Phone	Clean Phone
Alan Akers	316 Wild Heron Road	St. Simons Island, GA 31522	912\638-5009	912 638-5009
Robin Allen	269 Old Plantation Trail	Milledgeville, GA	478-968-5313	478 968-5313
Ricky Albright	400 Brewster Lane	Saint Simons Island, GA 31522	904/268-0851	904 268-0851
Tamara Andrews	1231 Greenfield	Nashville, TN 37216	912-265-8716	912 265-8716
Joanna Arbo Brand	111 Stu Daniel Drive	Brunswick, GA 31525	912 369-3354	912 369-3354
Donnie Aspinwall	Rt 2, 375-B, Arrowpoint Rd.	Jackson, GA 30233	912/638-7973	912 638-7973
Kelly Astle	135 Lake View Circle	Brunswick, GA 31520	255\445-6778	255 445-6778
Alphonso J. Atkinson	3787Landgraf Cove	Decatur, GA 30034	404-212-1981	404 212-1981

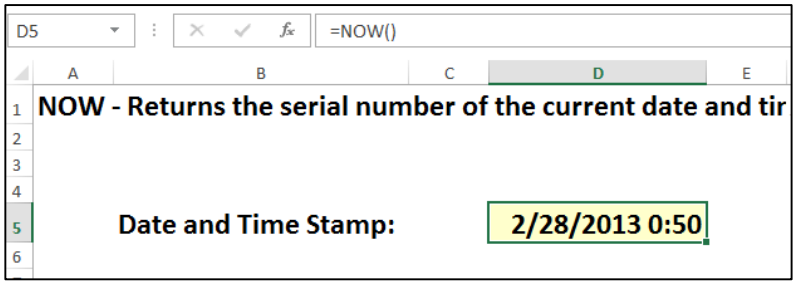
F5 =C5&" "&B5&" has made politcal contributions in the amount of "&TEXT(D5,"$###,###")

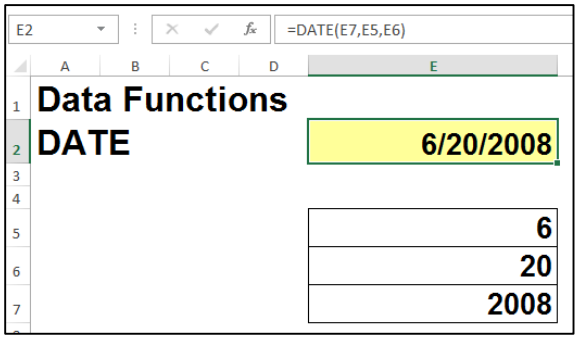
CONCATENATE - Joins several text items into one text item

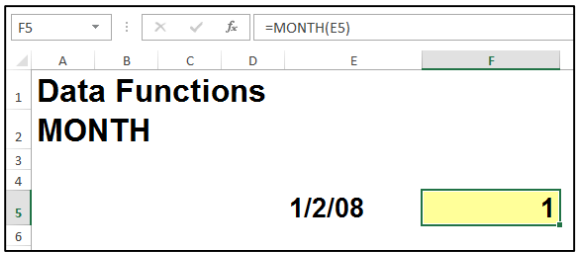
The "&" does the same thing

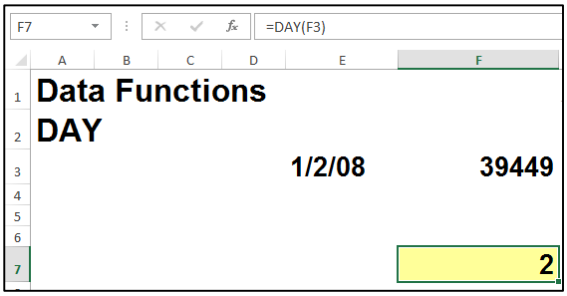
Last Name	First Name	Political Contibutions	
Akers	Alan	72000	Alan Akers has made politcal contributions in the amount of $72,000
Allen	Robin	46000	Robin Allen has made politcal contributions in the amount of $46,000
Albright	Ricky	123700	Ricky Albright has made politcal contributions in the amount of $123,700
Andrews	Tamara	324000	Tamara Andrews has made politcal contributions in the amount of $324,000
Arbo	Joanna	53400	Joanna Arbo has made politcal contributions in the amount of $53,400
Aspinwall	Donnie	189300	Donnie Aspinwall has made politcal contributions in the amount of $189,300
Astle	Kelly	210800	Kelly Astle has made politcal contributions in the amount of $210,800

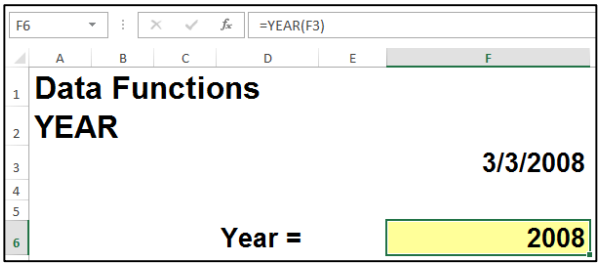


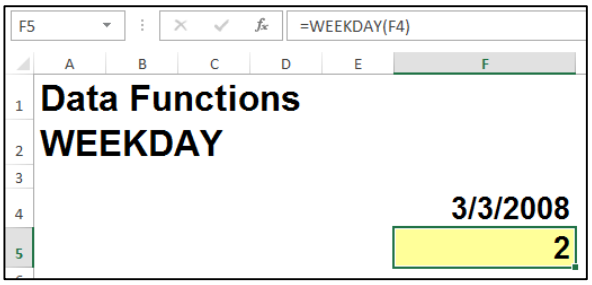








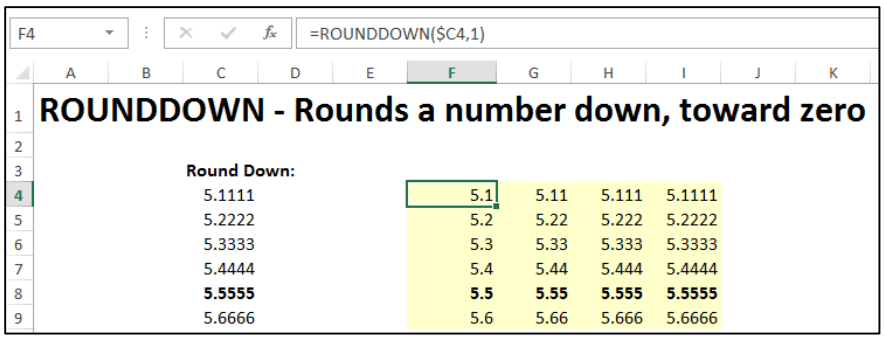


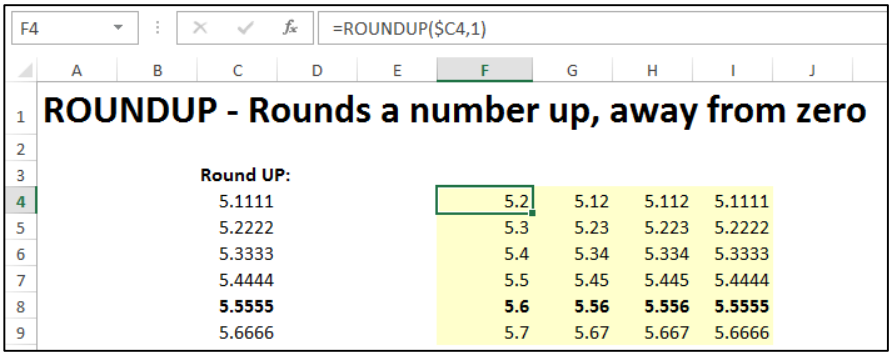


L9 =ROUND(K9,-2)

ROUND - Rounds a number to a specified number of digits

Northwind Traders Profit and Loss	2013	2014	2015 Budget	2015 Budget
Ordinary Income/Expense				
Income				
4010 - Sales	$ 106,124.86	$ 138,510.90	$ 156,362.31	$ 156,400
4020 - Cash Discount Give	-	(213.10)	11.35	-
4210 - Write off	(5.40)	-	(2.70)	-
Total Income	$ 106,119.46	$ 138,297.80	$ 156,370.95	$ 156,400
Cost of Goods Sold				
4510 - Cost of Goods - Ma	74,382.48	93,780.59	105,642.49	105,600
4530 - Cash Discount Take	-	(181.43)	(102.04)	(100)
Total COGS	$ 74,382.48	$ 93,599.16	$ 105,540.45	$ 105,500
Gross Profit	$ 31,736.98	$ 44,698.64	$ 50,830.50	$ 50,800

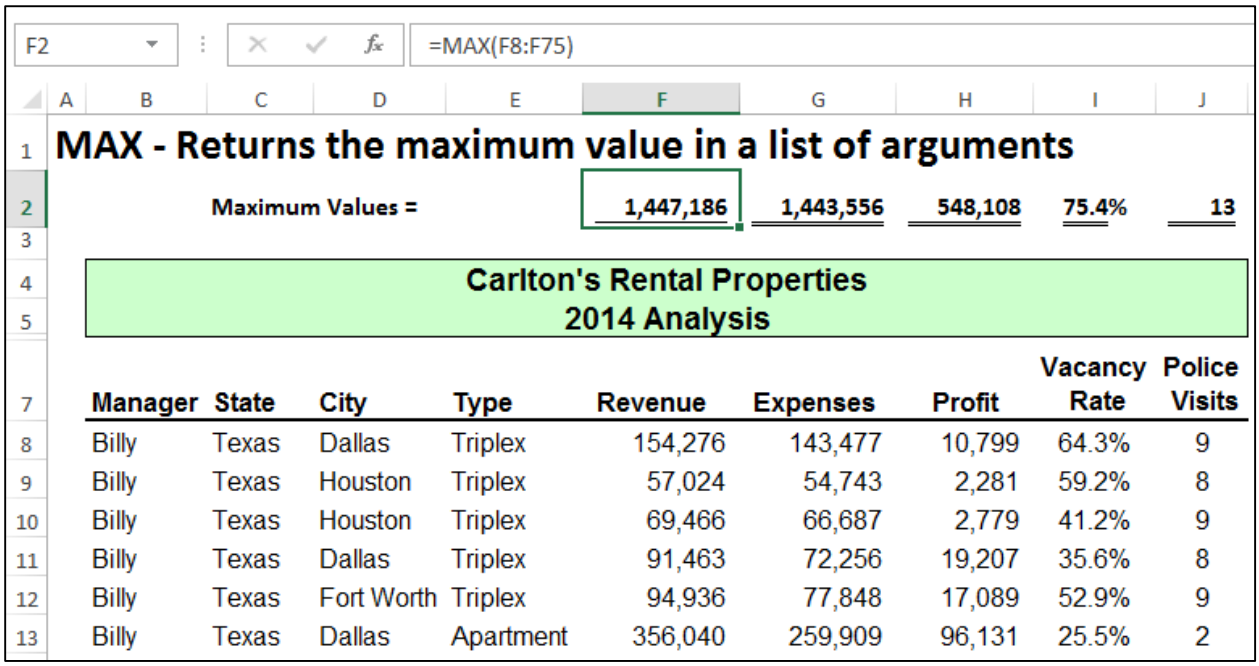




F4 =ROUNDUP($C4,1)

ROUNDUP - Rounds a number up, away from zero

	Round UP:				
4	5.1111	5.2	5.12	5.112	5.1111
5	5.2222	5.3	5.23	5.223	5.2222
6	5.3333	5.4	5.34	5.334	5.3333
7	5.4444	5.5	5.45	5.445	5.4444
8	**5.5555**	**5.6**	**5.56**	**5.556**	**5.5555**
9	5.6666	5.7	5.67	5.667	5.6666



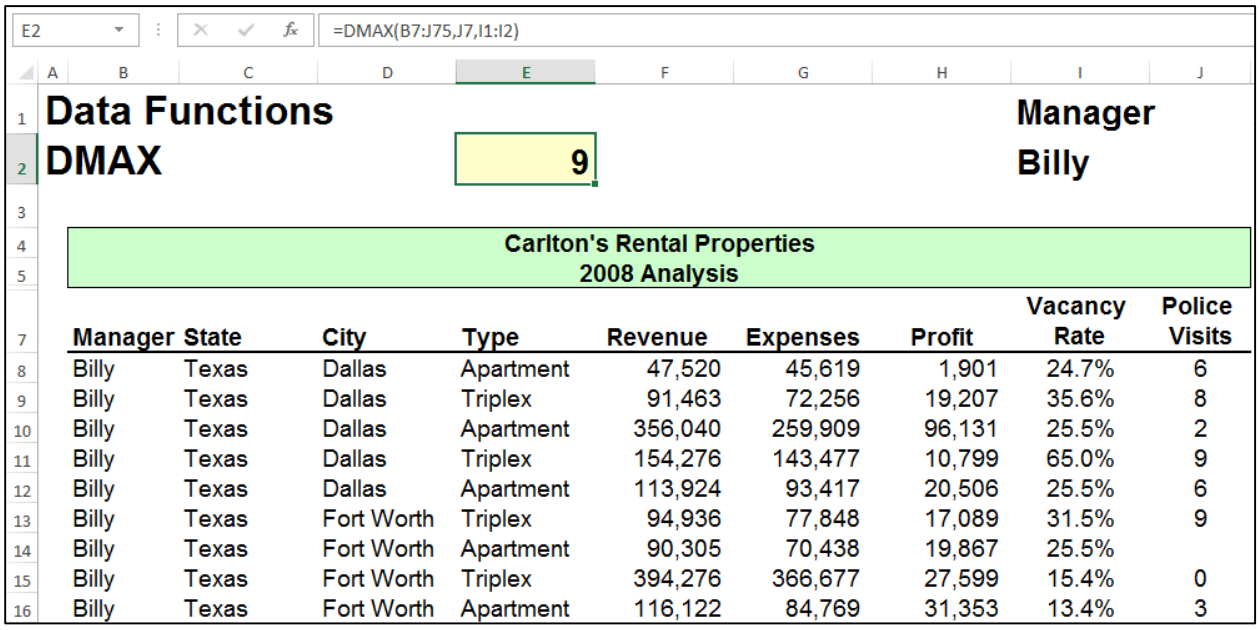
F2 =MAX(F8:F75)

MAX - Returns the maximum value in a list of arguments

Maximum Values =	1,447,186	1,443,556	548,108	75.4%	13

Carlton's Rental Properties
2014 Analysis

Manager	State	City	Type	Revenue	Expenses	Profit	Vacancy Rate	Police Visits
Billy	Texas	Dallas	Triplex	154,276	143,477	10,799	64.3%	9
Billy	Texas	Houston	Triplex	57,024	54,743	2,281	59.2%	8
Billy	Texas	Houston	Triplex	69,466	66,687	2,779	41.2%	9
Billy	Texas	Dallas	Triplex	91,463	72,256	19,207	35.6%	8
Billy	Texas	Fort Worth	Triplex	94,936	77,848	17,089	52.9%	9
Billy	Texas	Dallas	Apartment	356,040	259,909	96,131	25.5%	2



E2 =DMAX(B7:J75,J7,I1:I2)

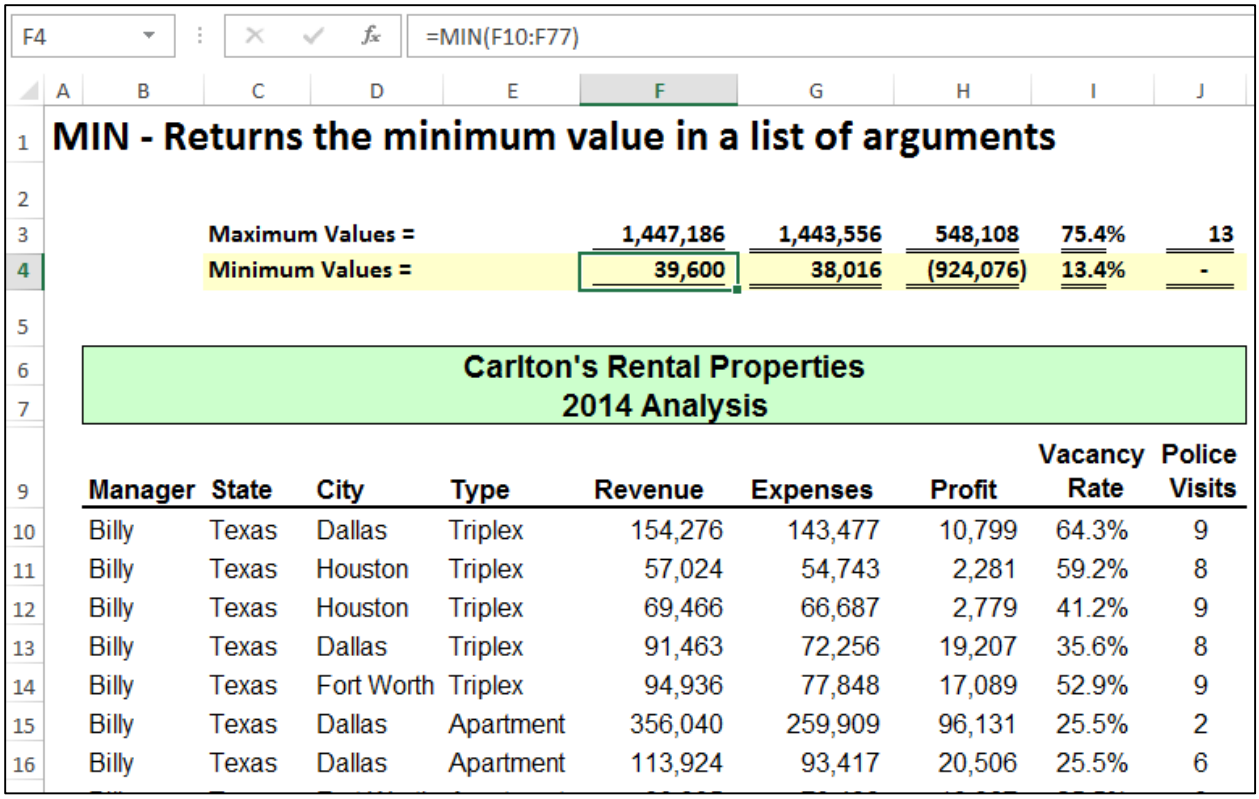
Data Functions

DMAX 9

Manager
Billy

Carlton's Rental Properties
2008 Analysis

Manager	State	City	Type	Revenue	Expenses	Profit	Vacancy Rate	Police Visits
Billy	Texas	Dallas	Apartment	47,520	45,619	1,901	24.7%	6
Billy	Texas	Dallas	Triplex	91,463	72,256	19,207	35.6%	8
Billy	Texas	Dallas	Apartment	356,040	259,909	96,131	25.5%	2
Billy	Texas	Dallas	Triplex	154,276	143,477	10,799	65.0%	9
Billy	Texas	Dallas	Apartment	113,924	93,417	20,506	25.5%	6
Billy	Texas	Fort Worth	Triplex	94,936	77,848	17,089	31.5%	9
Billy	Texas	Fort Worth	Apartment	90,305	70,438	19,867	25.5%	
Billy	Texas	Fort Worth	Triplex	394,276	366,677	27,599	15.4%	0
Billy	Texas	Fort Worth	Apartment	116,122	84,769	31,353	13.4%	3



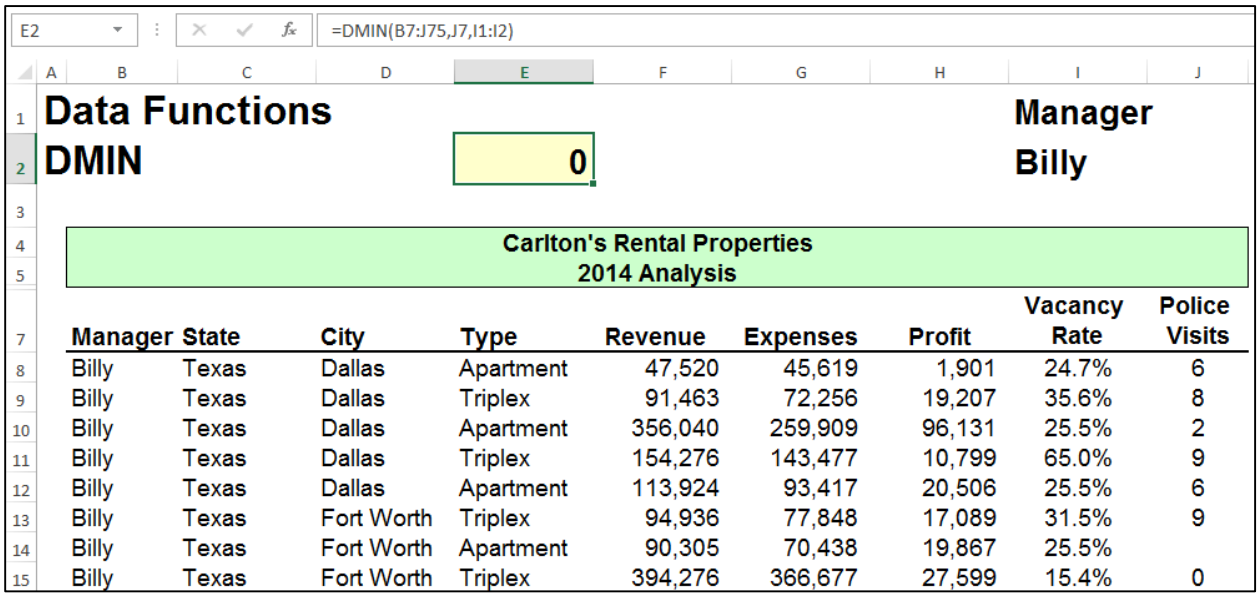
F4 =MIN(F10:F77)

MIN - Returns the minimum value in a list of arguments

Maximum Values =	1,447,186	1,443,556	548,108	75.4%	13
Minimum Values =	39,600	38,016	(924,076)	13.4%	-

Carlton's Rental Properties
2014 Analysis

Manager	State	City	Type	Revenue	Expenses	Profit	Vacancy Rate	Police Visits
Billy	Texas	Dallas	Triplex	154,276	143,477	10,799	64.3%	9
Billy	Texas	Houston	Triplex	57,024	54,743	2,281	59.2%	8
Billy	Texas	Houston	Triplex	69,466	66,687	2,779	41.2%	9
Billy	Texas	Dallas	Triplex	91,463	72,256	19,207	35.6%	8
Billy	Texas	Fort Worth	Triplex	94,936	77,848	17,089	52.9%	9
Billy	Texas	Dallas	Apartment	356,040	259,909	96,131	25.5%	2
Billy	Texas	Dallas	Apartment	113,924	93,417	20,506	25.5%	6



E2 =DMIN(B7:J75,J7,I1:I2)

Data Functions

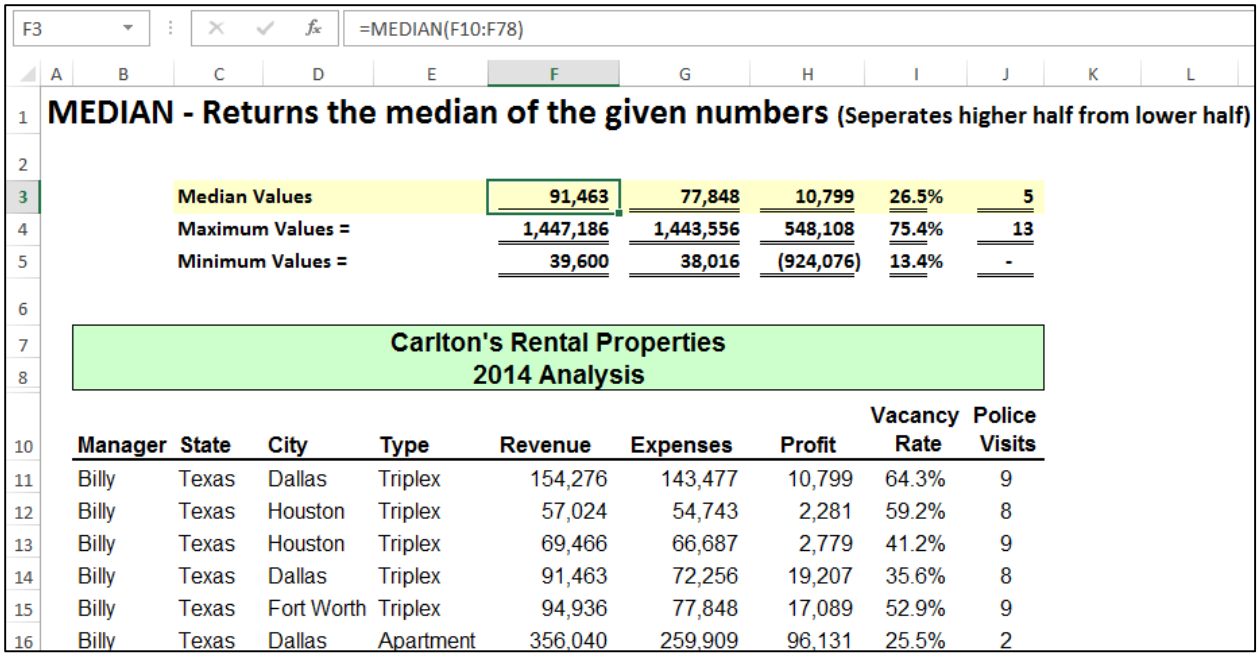
DMIN

0

Manager
Billy

Carlton's Rental Properties
2014 Analysis

Manager	State	City	Type	Revenue	Expenses	Profit	Vacancy Rate	Police Visits
Billy	Texas	Dallas	Apartment	47,520	45,619	1,901	24.7%	6
Billy	Texas	Dallas	Triplex	91,463	72,256	19,207	35.6%	8
Billy	Texas	Dallas	Apartment	356,040	259,909	96,131	25.5%	2
Billy	Texas	Dallas	Triplex	154,276	143,477	10,799	65.0%	9
Billy	Texas	Dallas	Apartment	113,924	93,417	20,506	25.5%	6
Billy	Texas	Fort Worth	Triplex	94,936	77,848	17,089	31.5%	9
Billy	Texas	Fort Worth	Apartment	90,305	70,438	19,867	25.5%	
Billy	Texas	Fort Worth	Triplex	394,276	366,677	27,599	15.4%	0



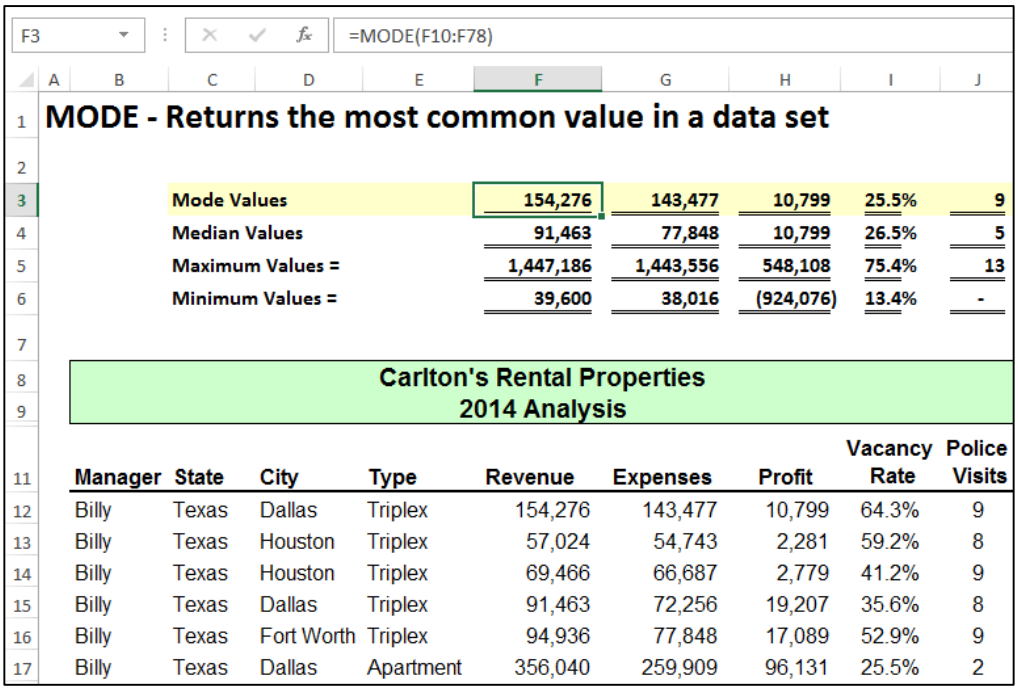
F3 =MEDIAN(F10:F78)

MEDIAN - Returns the median of the given numbers (Seperates higher half from lower half)

Median Values	91,463	77,848	10,799	26.5%	5
Maximum Values =	1,447,186	1,443,556	548,108	75.4%	13
Minimum Values =	39,600	38,016	(924,076)	13.4%	-

Carlton's Rental Properties
2014 Analysis

Manager	State	City	Type	Revenue	Expenses	Profit	Vacancy Rate	Police Visits
Billy	Texas	Dallas	Triplex	154,276	143,477	10,799	64.3%	9
Billy	Texas	Houston	Triplex	57,024	54,743	2,281	59.2%	8
Billy	Texas	Houston	Triplex	69,466	66,687	2,779	41.2%	9
Billy	Texas	Dallas	Triplex	91,463	72,256	19,207	35.6%	8
Billy	Texas	Fort Worth	Triplex	94,936	77,848	17,089	52.9%	9
Billy	Texas	Dallas	Apartment	356,040	259,909	96,131	25.5%	2



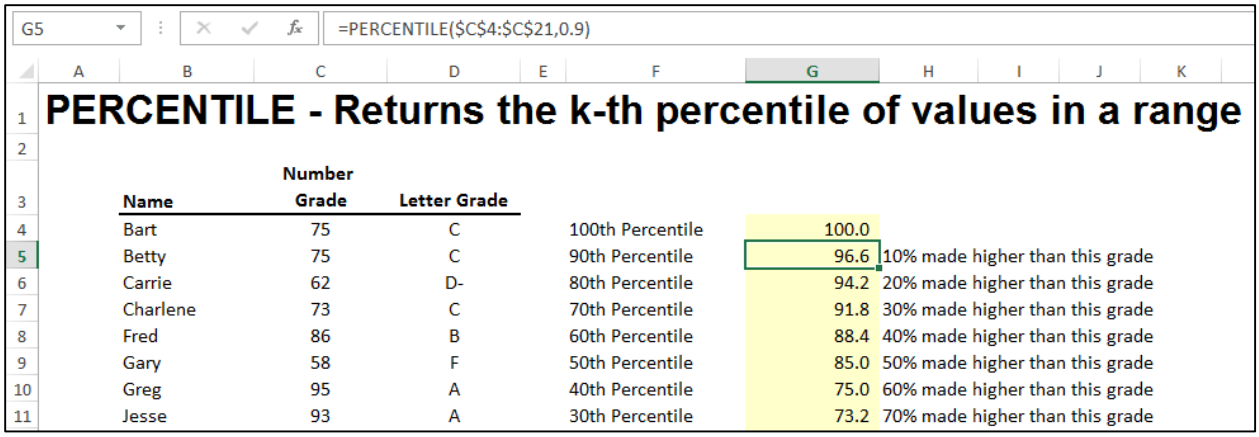
F3 =MODE(F10:F78)

MODE - Returns the most common value in a data set

Mode Values	154,276	143,477	10,799	25.5%	9
Median Values	91,463	77,848	10,799	26.5%	5
Maximum Values =	1,447,186	1,443,556	548,108	75.4%	13
Minimum Values =	39,600	38,016	(924,076)	13.4%	-

Carlton's Rental Properties
2014 Analysis

Manager	State	City	Type	Revenue	Expenses	Profit	Vacancy Rate	Police Visits
Billy	Texas	Dallas	Triplex	154,276	143,477	10,799	64.3%	9
Billy	Texas	Houston	Triplex	57,024	54,743	2,281	59.2%	8
Billy	Texas	Houston	Triplex	69,466	66,687	2,779	41.2%	9
Billy	Texas	Dallas	Triplex	91,463	72,256	19,207	35.6%	8
Billy	Texas	Fort Worth	Triplex	94,936	77,848	17,089	52.9%	9
Billy	Texas	Dallas	Apartment	356,040	259,909	96,131	25.5%	2

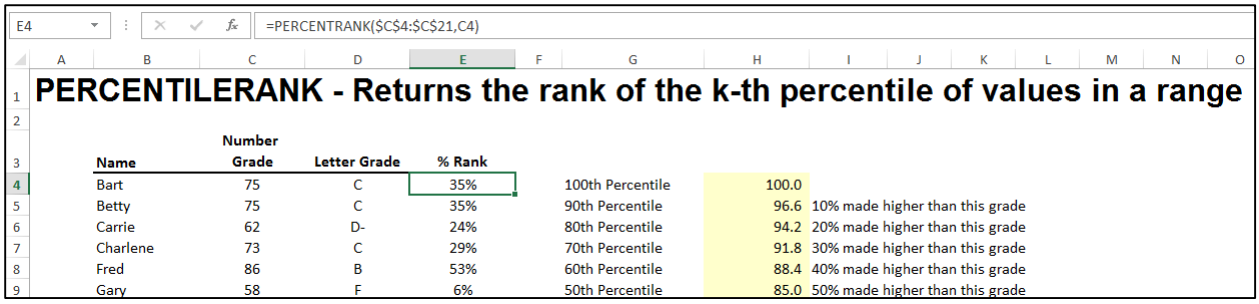


G5 =PERCENTILE($C$4:$C$21,0.9)

PERCENTILE - Returns the k-th percentile of values in a range

Name	Number Grade	Letter Grade
Bart	75	C
Betty	75	C
Carrie	62	D-
Charlene	73	C
Fred	86	B
Gary	58	F
Greg	95	A
Jesse	93	A

100th Percentile	100.0	
90th Percentile	96.6	10% made higher than this grade
80th Percentile	94.2	20% made higher than this grade
70th Percentile	91.8	30% made higher than this grade
60th Percentile	88.4	40% made higher than this grade
50th Percentile	85.0	50% made higher than this grade
40th Percentile	75.0	60% made higher than this grade
30th Percentile	73.2	70% made higher than this grade

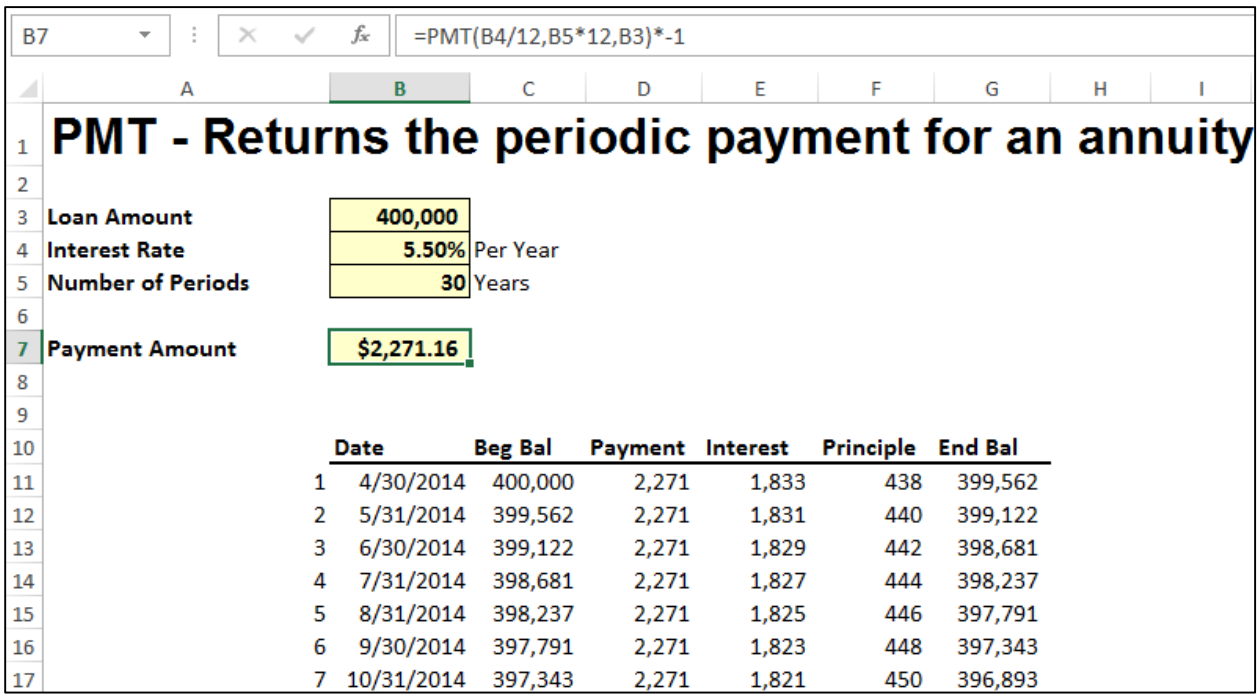


E4 =PERCENTRANK($C$4:$C$21,C4)

PERCENTILERANK - Returns the rank of the k-th percentile of values in a range

Name	Number Grade	Letter Grade	% Rank
Bart	75	C	35%
Betty	75	C	35%
Carrie	62	D-	24%
Charlene	73	C	29%
Fred	86	B	53%
Gary	58	F	6%

100th Percentile	100.0	
90th Percentile	96.6	10% made higher than this grade
80th Percentile	94.2	20% made higher than this grade
70th Percentile	91.8	30% made higher than this grade
60th Percentile	88.4	40% made higher than this grade
50th Percentile	85.0	50% made higher than this grade

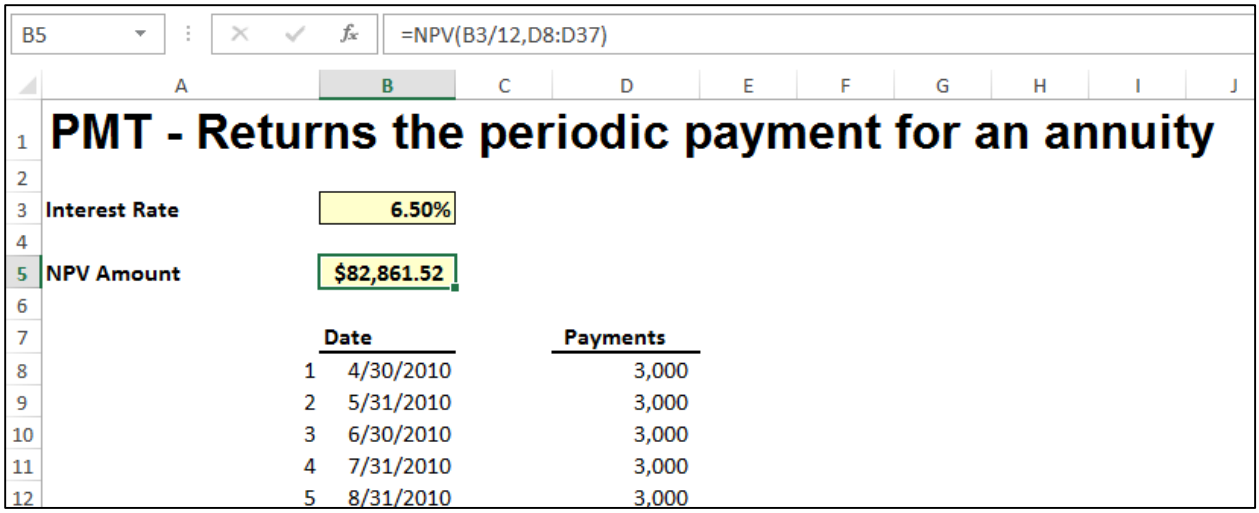


B7 =PMT(B4/12,B5*12,B3)*-1

PMT - Returns the periodic payment for an annuity

Loan Amount	400,000	
Interest Rate	5.50%	Per Year
Number of Periods	30	Years
Payment Amount	$2,271.16	

	Date	Beg Bal	Payment	Interest	Principle	End Bal
1	4/30/2014	400,000	2,271	1,833	438	399,562
2	5/31/2014	399,562	2,271	1,831	440	399,122
3	6/30/2014	399,122	2,271	1,829	442	398,681
4	7/31/2014	398,681	2,271	1,827	444	398,237
5	8/31/2014	398,237	2,271	1,825	446	397,791
6	9/30/2014	397,791	2,271	1,823	448	397,343
7	10/31/2014	397,343	2,271	1,821	450	396,893

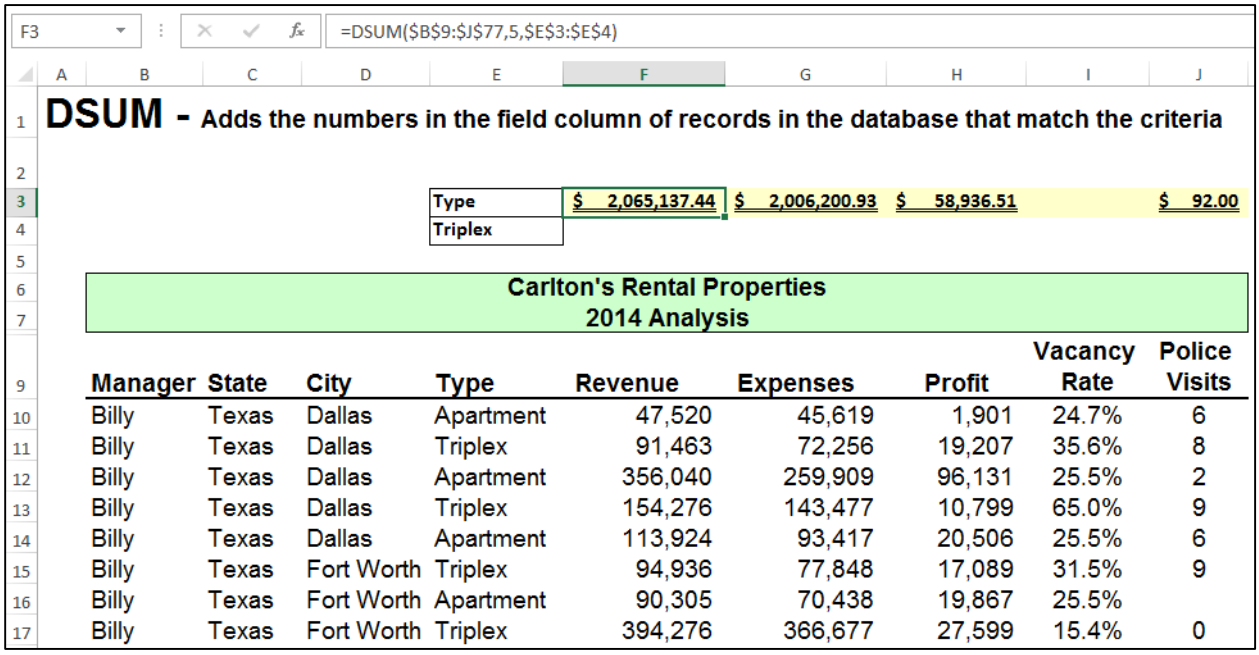


B5 =NPV(B3/12,D8:D37)

PMT - Returns the periodic payment for an annuity

Interest Rate	6.50%
NPV Amount	$82,861.52

	Date	Payments
1	4/30/2010	3,000
2	5/31/2010	3,000
3	6/30/2010	3,000
4	7/31/2010	3,000
5	8/31/2010	3,000



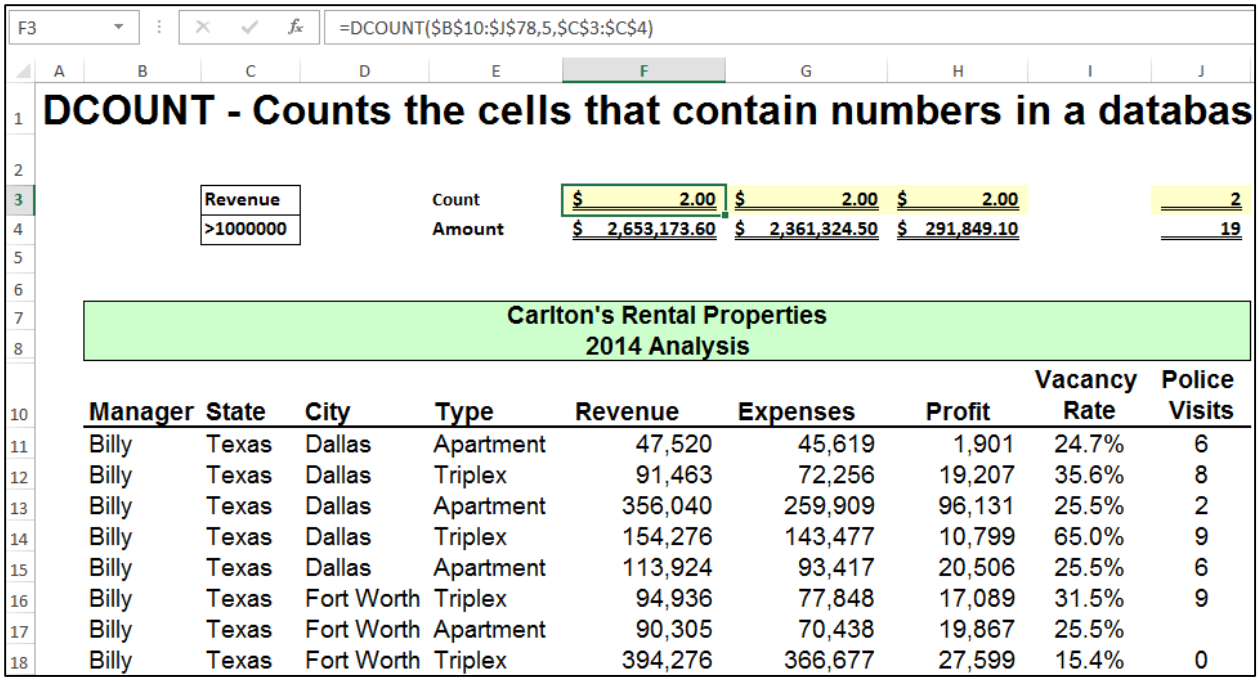
F3 =DSUM($B$9:$J$77,5,$E$3:$E$4)

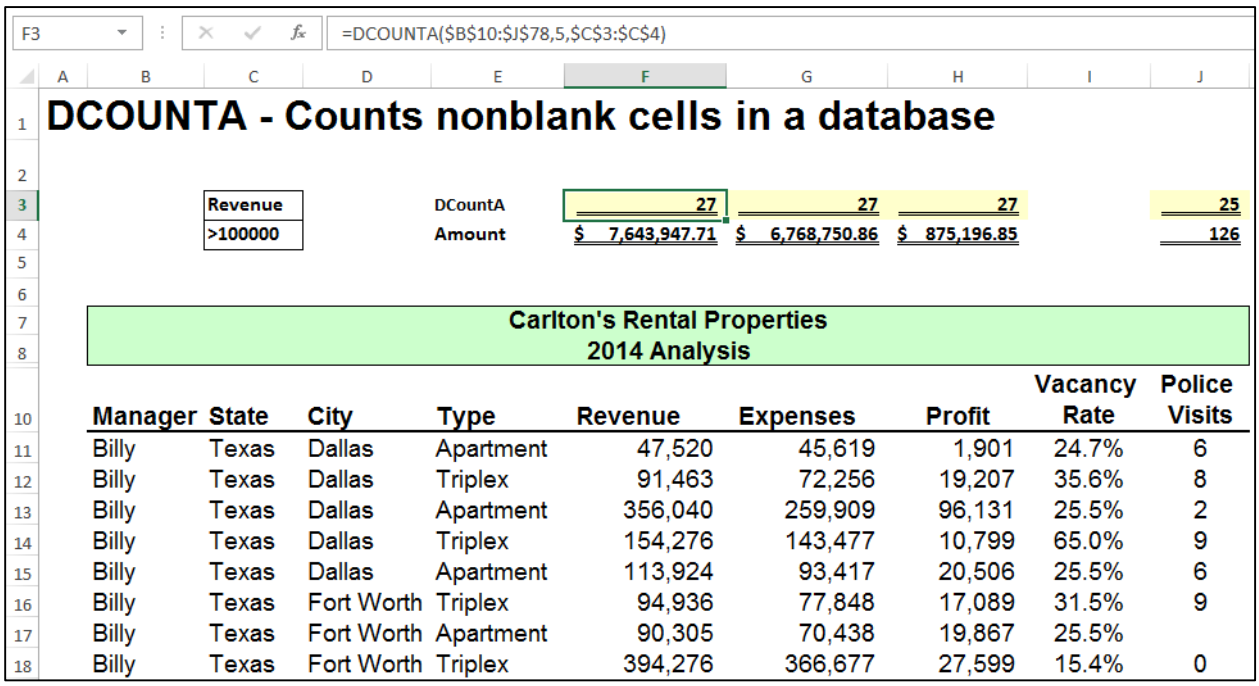
DSUM - Adds the numbers in the field column of records in the database that match the criteria

Type	$ 2,065,137.44	$ 2,006,200.93	$ 58,936.51	$ 92.00
Triplex				

Carlton's Rental Properties
2014 Analysis

Manager	State	City	Type	Revenue	Expenses	Profit	Vacancy Rate	Police Visits
Billy	Texas	Dallas	Apartment	47,520	45,619	1,901	24.7%	6
Billy	Texas	Dallas	Triplex	91,463	72,256	19,207	35.6%	8
Billy	Texas	Dallas	Apartment	356,040	259,909	96,131	25.5%	2
Billy	Texas	Dallas	Triplex	154,276	143,477	10,799	65.0%	9
Billy	Texas	Dallas	Apartment	113,924	93,417	20,506	25.5%	6
Billy	Texas	Fort Worth	Triplex	94,936	77,848	17,089	31.5%	9
Billy	Texas	Fort Worth	Apartment	90,305	70,438	19,867	25.5%	
Billy	Texas	Fort Worth	Triplex	394,276	366,677	27,599	15.4%	0





J10 =IF(AND(C10>2,G10>2),"Target Customer","")

AND - Returns TRUE if all of its arguments are TRUE

Girl Scout Cookie Sales

Boxes Ordered

Customer Name	Tag Alongs	Thin Mints	Daisy Go Rounds	Trefolis	Do-Si-Dos	Samoas	Total	
Alvin Atkinson	4	1	4		1	3	13	
Danette Austin		2	1	2	3		8	
Yvonne Baker Williams	1		1	2			4	
Susan Baker			3		3	4	10	
John Lamar Bakley	3	3			3		6	Target Customer
Teresa Baldwin	1		3	2	1	1	8	
Richard Banks							0	
Charles Banks	3	3		3		4	13	
Sandra Barrs Carter	3	1			6		7	Target Customer
Jacki Barton		2	1		2	3	8	

J6 =IF(OR(C6>2,G6>2),"Target Customer","")

OR - Returns TRUE if any argument is TRUE

Girl Scout Cookie Sales

Boxes Ordered

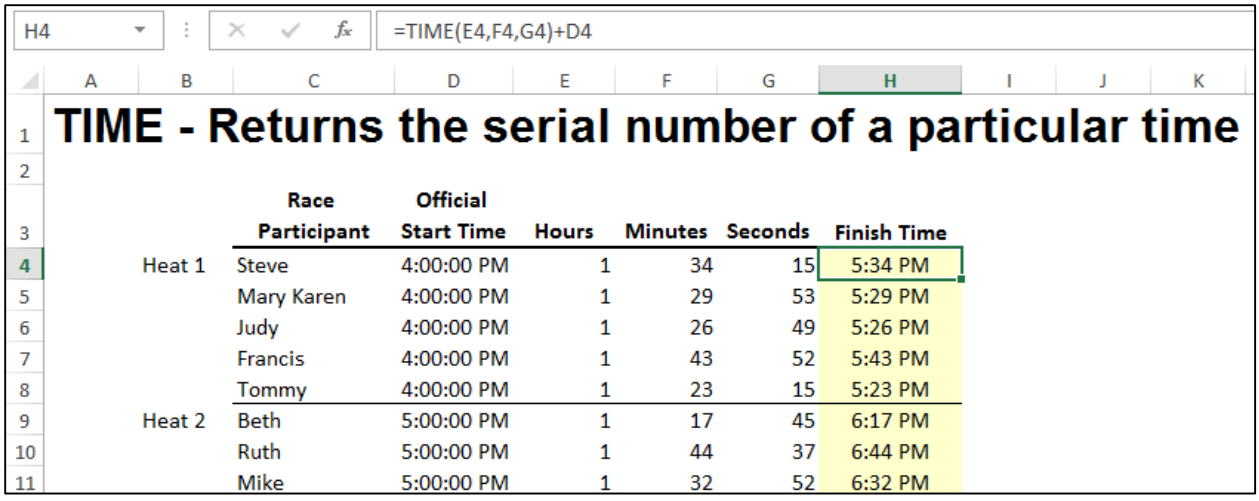
Customer Name	Tag Alongs	Thin Mints	Daisy Go Rounds	Trefolis	Do-Si-Dos	Samoas	Total	
Alvin Atkinson	4	1	4		1	3	13	Target Customer
Danette Austin		2	1	2	3		8	Target Customer
Yvonne Baker Williams	1		1	2			4	
Susan Baker			3		3	4	10	Target Customer
John Lamar Bakley	3	3			3		6	Target Customer
Teresa Baldwin	1		3	2	1	1	8	
Richard Banks							0	
Charles Banks	3	3		3		4	13	Target Customer
Sandra Barrs Carter	3	1			6		7	Target Customer
Jacki Barton		2	1		2	3	8	

E4 =CHOOSE(D4,"Monday","Tuesday","Wednesday","Thursday","Friday","Saturday","Sunday")

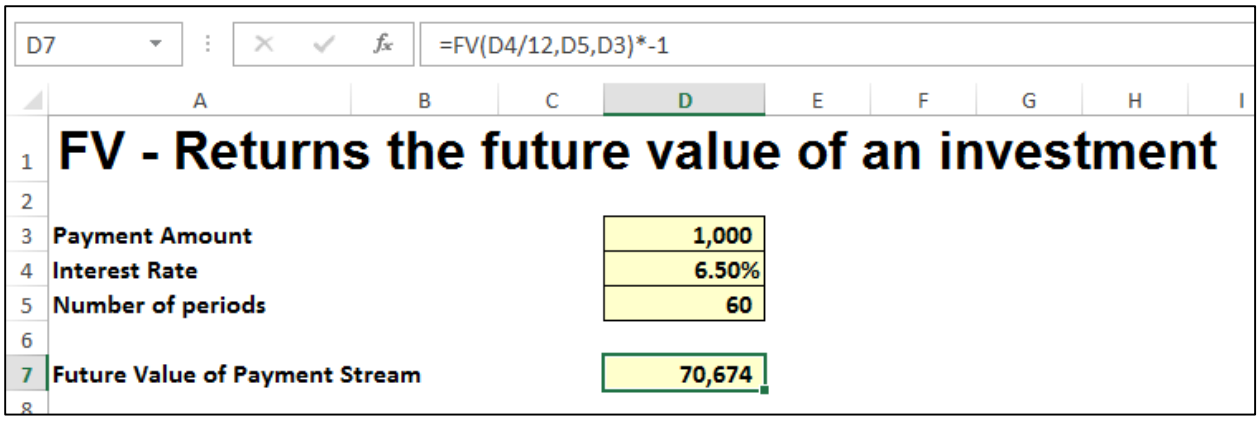
CHOOSE - Chooses a value from a list of values

J. Carlton

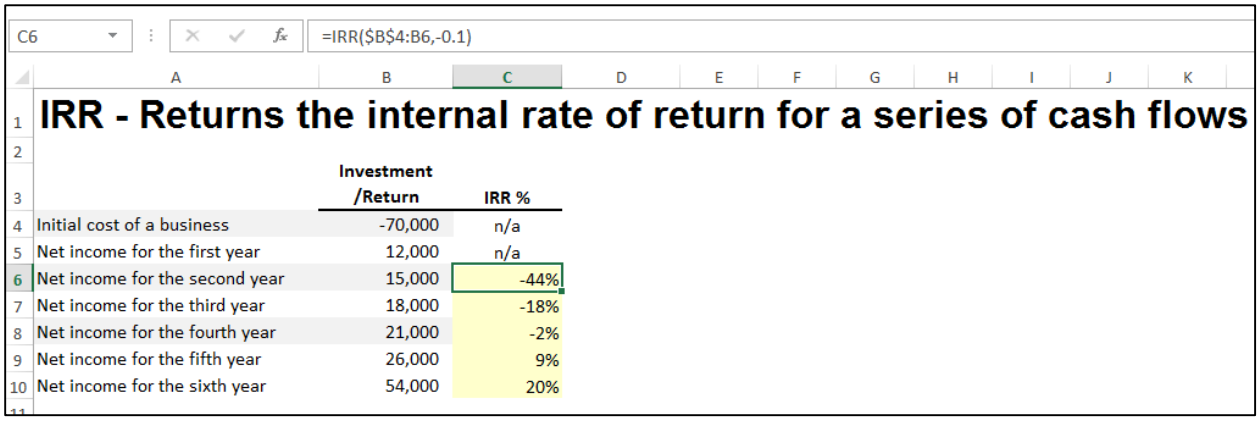
Date	Weekday Number	Weekday Name
3/5/1999	6	Saturday
6/1/1999	3	Wednesday
8/28/1999	7	Sunday
11/24/1999	4	Thursday
2/20/2000	1	Monday
5/18/2000	5	Friday
6/2/2003	2	Tuesday
8/29/2003	6	Saturday
11/25/2003	3	Wednesday



	Race Participant	Official Start Time	Hours	Minutes	Seconds	Finish Time
Heat 1	Steve	4:00:00 PM	1	34	15	5:34 PM
	Mary Karen	4:00:00 PM	1	29	53	5:29 PM
	Judy	4:00:00 PM	1	26	49	5:26 PM
	Francis	4:00:00 PM	1	43	52	5:43 PM
	Tommy	4:00:00 PM	1	23	15	5:23 PM
Heat 2	Beth	5:00:00 PM	1	17	45	6:17 PM
	Ruth	5:00:00 PM	1	44	37	6:44 PM
	Mike	5:00:00 PM	1	32	52	6:32 PM



Payment Amount	1,000
Interest Rate	6.50%
Number of periods	60
Future Value of Payment Stream	70,674



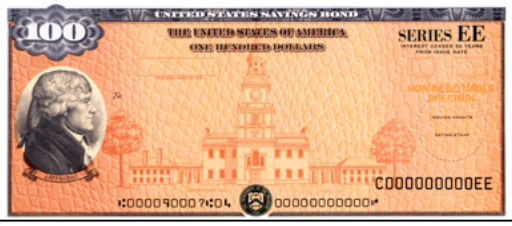
	Investment /Return	IRR %
Initial cost of a business	-70,000	n/a
Net income for the first year	12,000	n/a
Net income for the second year	15,000	-44%
Net income for the third year	18,000	-18%
Net income for the fourth year	21,000	-2%
Net income for the fifth year	26,000	9%
Net income for the sixth year	54,000	20%

B14 =YIELD(B5,B6,B7,B8,B9,B10,B11)

IRR - Returns the internal rate of return for a series of cash

5	Settlement date	2/15/2010
6	Maturity date	11/15/2018
7	Percent coupon	2.75%
8	Price	$ 92.25
9	Redemption value	$100
10	Frequency is semiannual	2
11	30/360 basis	0
14		3.80%

$$YIELD = \frac{(\frac{redemption}{100} + \frac{rate}{frequency}) - (\frac{par}{100} + (\frac{A}{E} \times \frac{rate}{frequency}))}{\frac{par}{100} + (\frac{A}{E} \times \frac{rate}{frequency})} \times \frac{frequency \times E}{DSR}$$

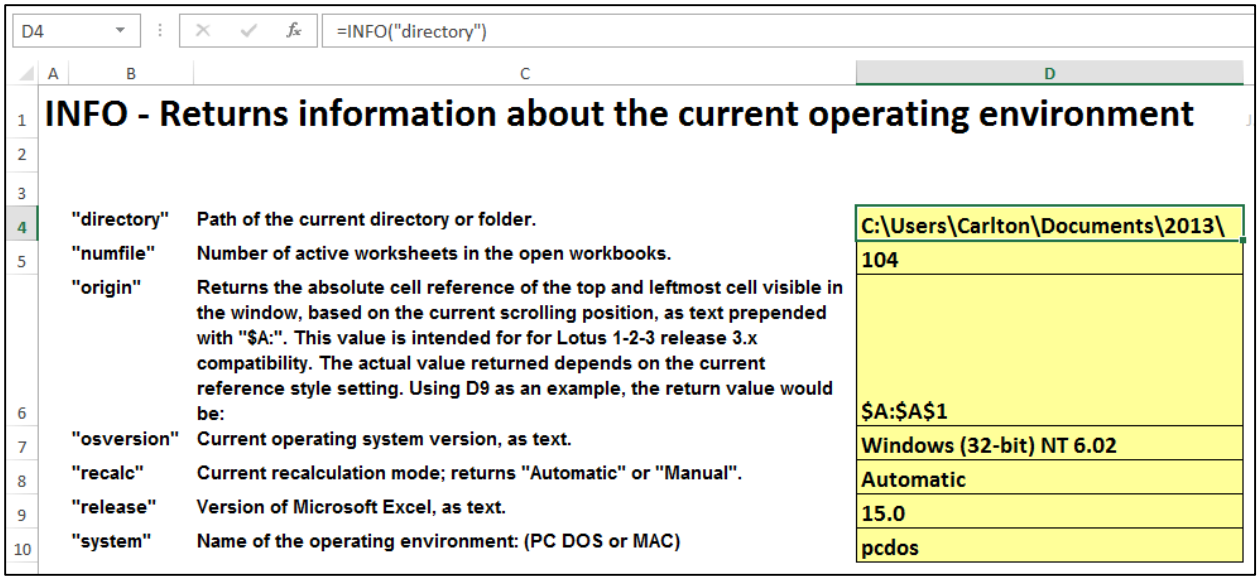


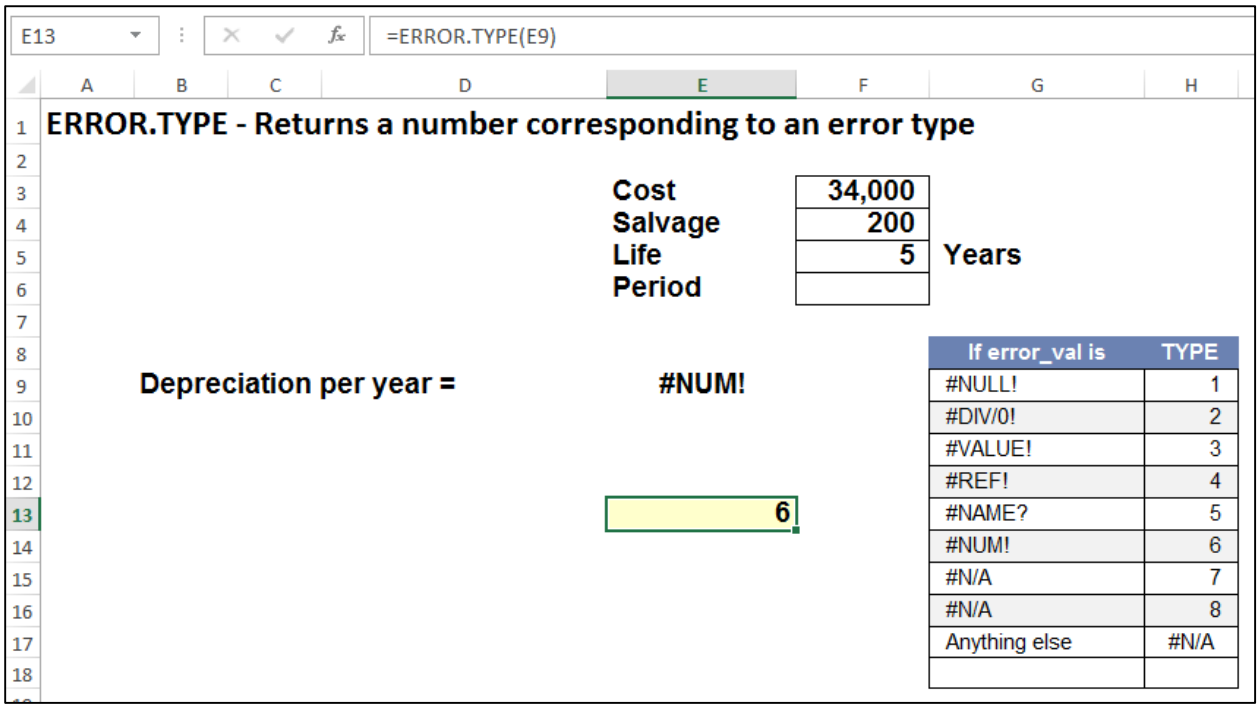
Comment:
If there is more than one coupon period until redemption, YIELD is calculated through a hundred iterations. The resolution uses the Newton method, based on the formula used for the function PRICE. The yield is changed until the estimated price given the yield is close to price.

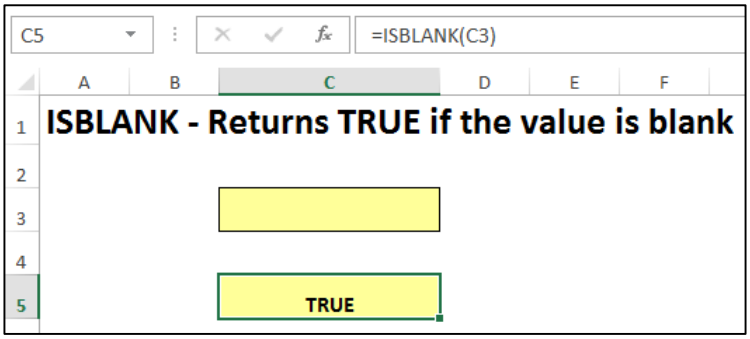
D5 =CELL("address",D3)

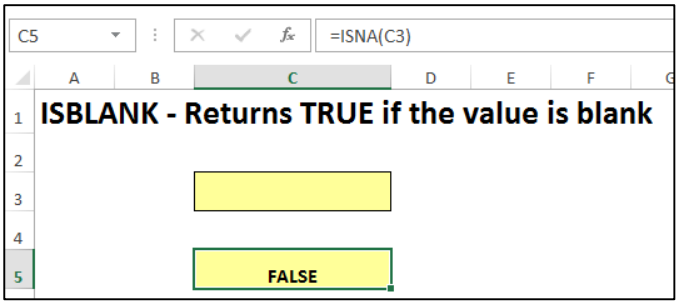
CELL - Returns information about the formatting, location, or contents of a cell

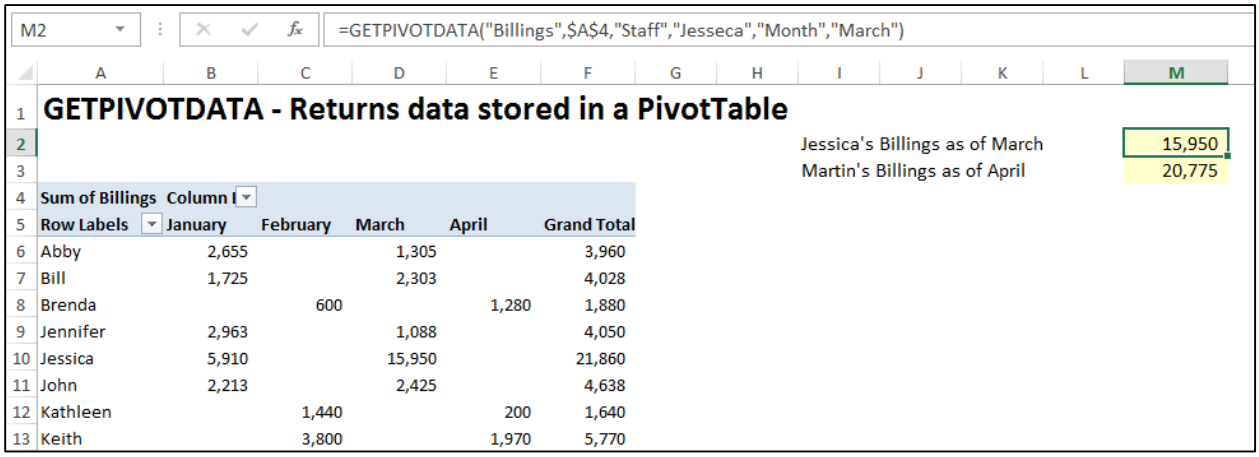
3		Hello
5	"address"	$D$3
6	"col"	4
7	"contents"	Hello
8	"filename"	C:\Users\Carlton\Documents\2013\[5 - Carlton's Top 171 Functions for CPAs.xlsx]60 CELL
9	"format"	D4
10	"parentheses"	0
11	"prefix"	'
12	"protect"	0
13	"row"	3
14	"type"	l
15	"width"	87



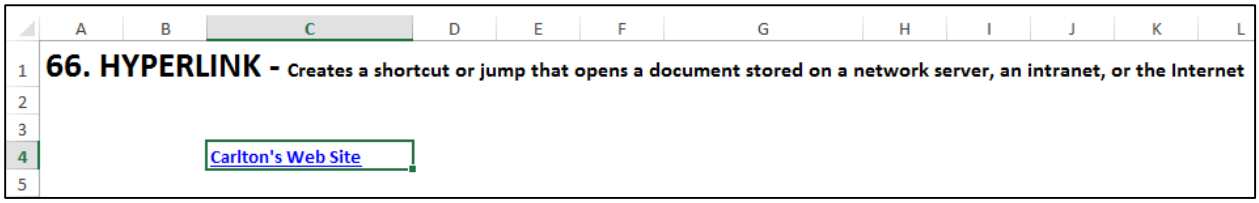


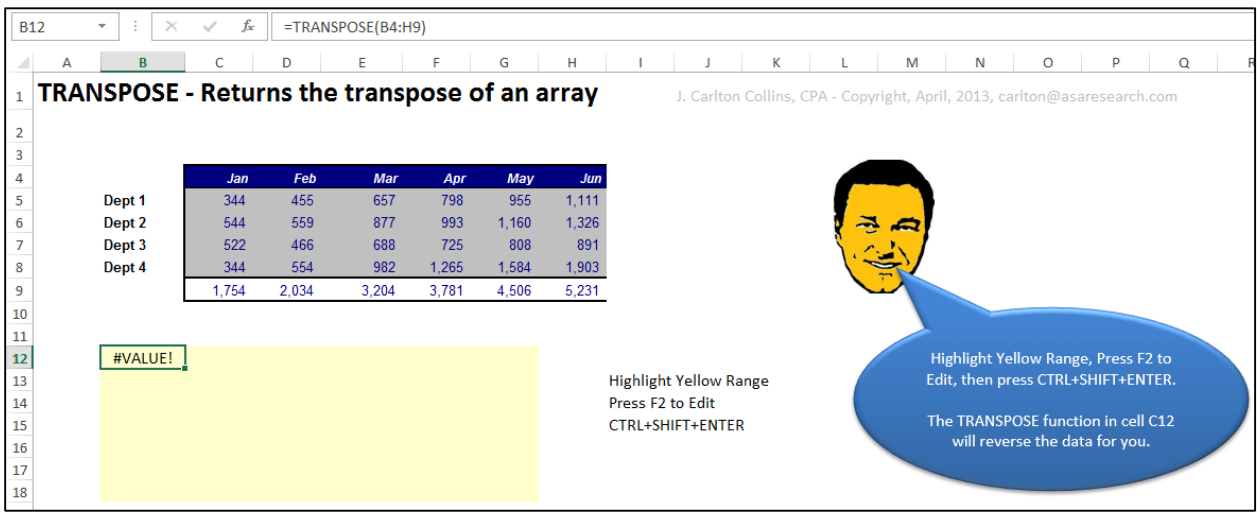




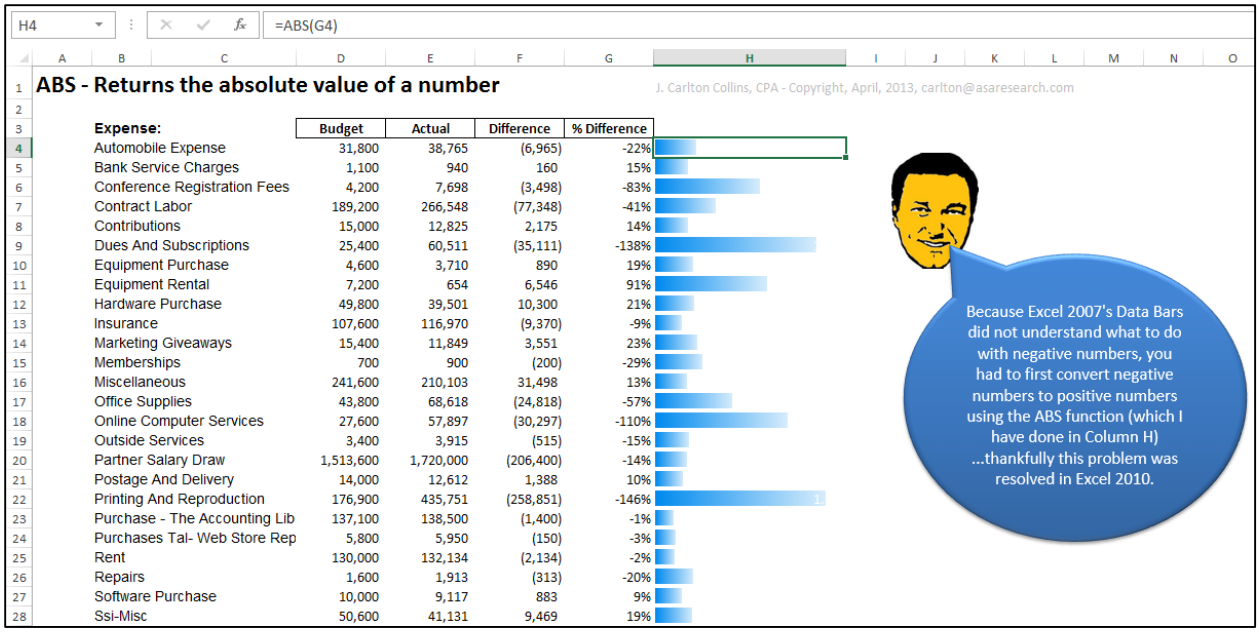


Sum of Billings	Column				
Row Labels	January	February	March	April	Grand Total
Abby	2,655		1,305		3,960
Bill	1,725		2,303		4,028
Brenda		600		1,280	1,880
Jennifer	2,963		1,088		4,050
Jessica	5,910		15,950		21,860
John	2,213		2,425		4,638
Kathleen		1,440		200	1,640
Keith		3,800		1,970	5,770

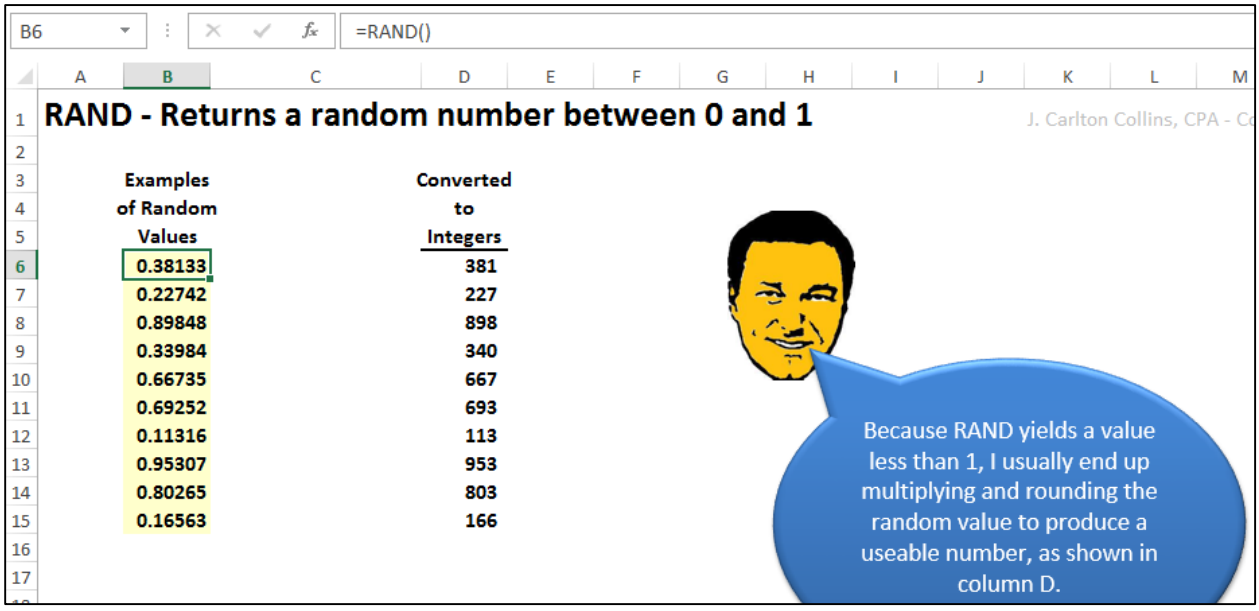




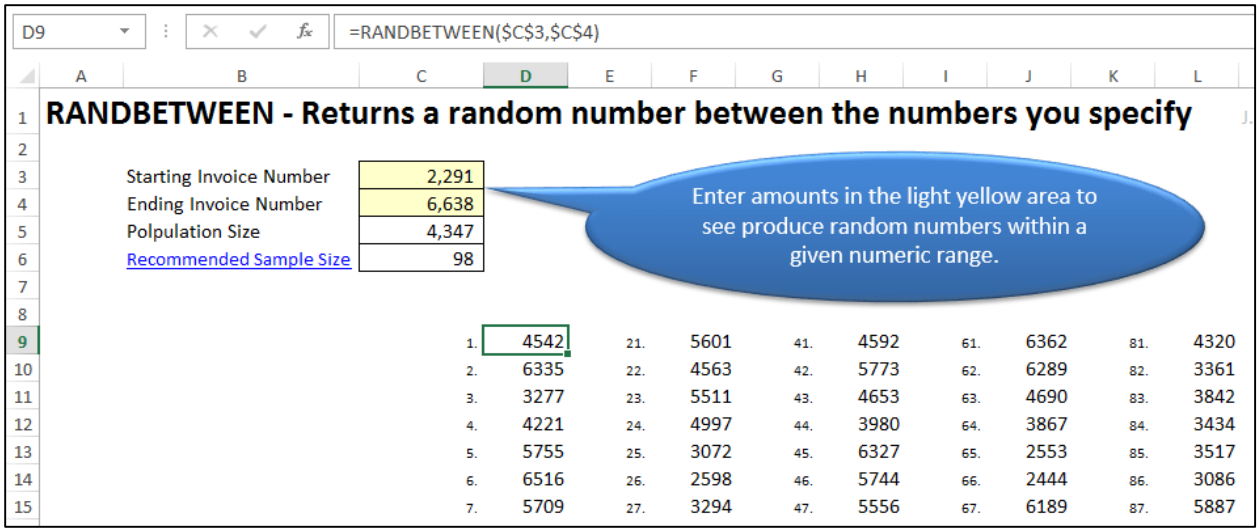
	Jan	Feb	Mar	Apr	May	Jun
Dept 1	344	455	657	798	955	1,111
Dept 2	544	559	877	993	1,160	1,326
Dept 3	522	466	688	725	808	891
Dept 4	344	554	982	1,265	1,584	1,903
	1,754	2,034	3,204	3,781	4,506	5,231

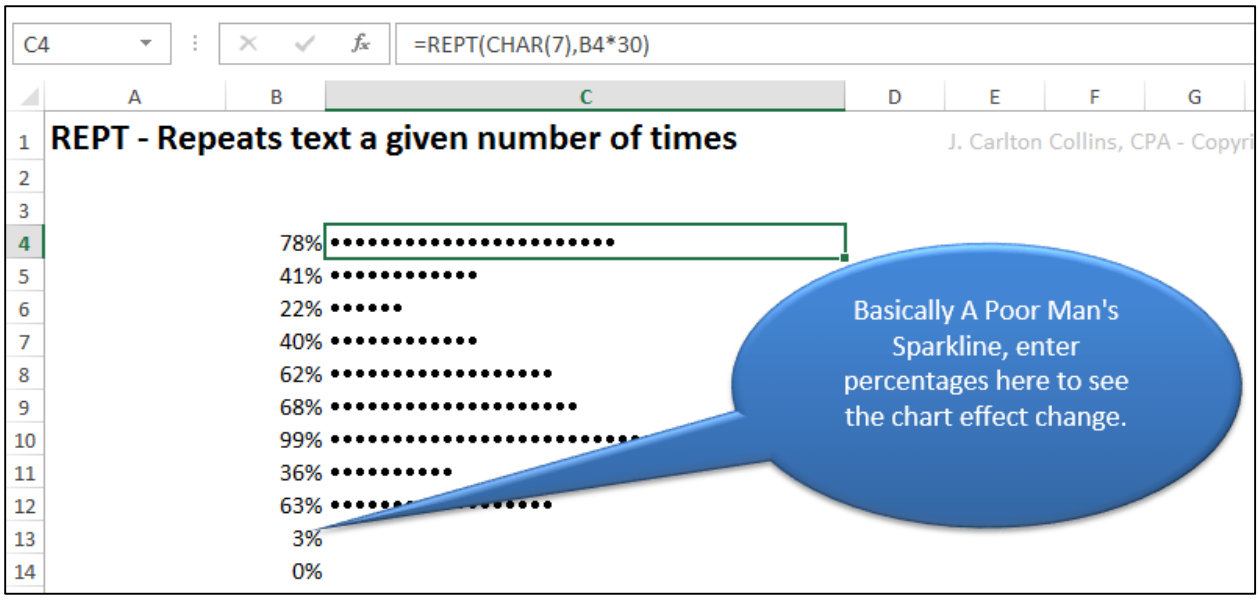


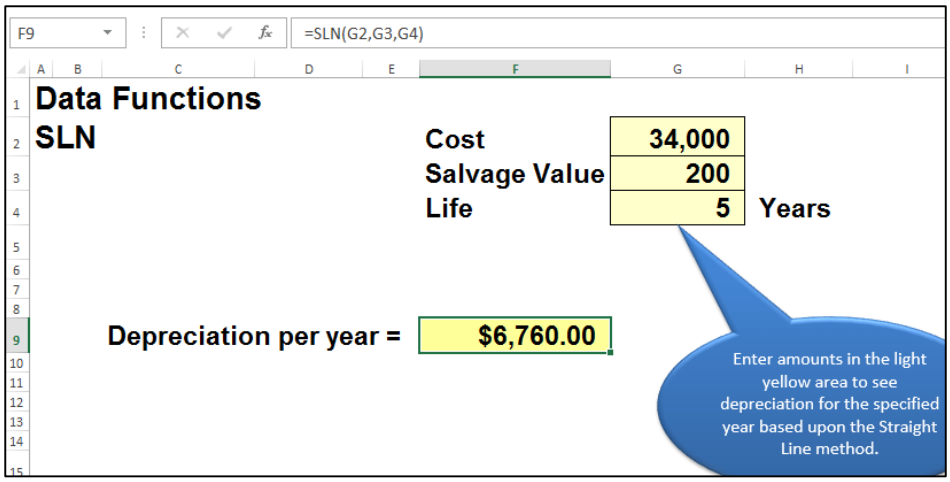
Expense:	Budget	Actual	Difference	% Difference
Automobile Expense	31,800	38,765	(6,965)	-22%
Bank Service Charges	1,100	940	160	15%
Conference Registration Fees	4,200	7,698	(3,498)	-83%
Contract Labor	189,200	266,548	(77,348)	-41%
Contributions	15,000	12,825	2,175	14%
Dues And Subscriptions	25,400	60,511	(35,111)	-138%
Equipment Purchase	4,600	3,710	890	19%
Equipment Rental	7,200	654	6,546	91%
Hardware Purchase	49,800	39,501	10,300	21%
Insurance	107,600	116,970	(9,370)	-9%
Marketing Giveaways	15,400	11,849	3,551	23%
Memberships	700	900	(200)	-29%
Miscellaneous	241,600	210,103	31,498	13%
Office Supplies	43,800	68,618	(24,818)	-57%
Online Computer Services	27,600	57,897	(30,297)	-110%
Outside Services	3,400	3,915	(515)	-15%
Partner Salary Draw	1,513,600	1,720,000	(206,400)	-14%
Postage And Delivery	14,000	12,612	1,388	10%
Printing And Reproduction	176,900	435,751	(258,851)	-146%
Purchase - The Accounting Lib	137,100	138,500	(1,400)	-1%
Purchases Tal- Web Store Rep	5,800	5,950	(150)	-3%
Rent	130,000	132,134	(2,134)	-2%
Repairs	1,600	1,913	(313)	-20%
Software Purchase	10,000	9,117	883	9%
Ssi-Misc	50,600	41,131	9,469	19%

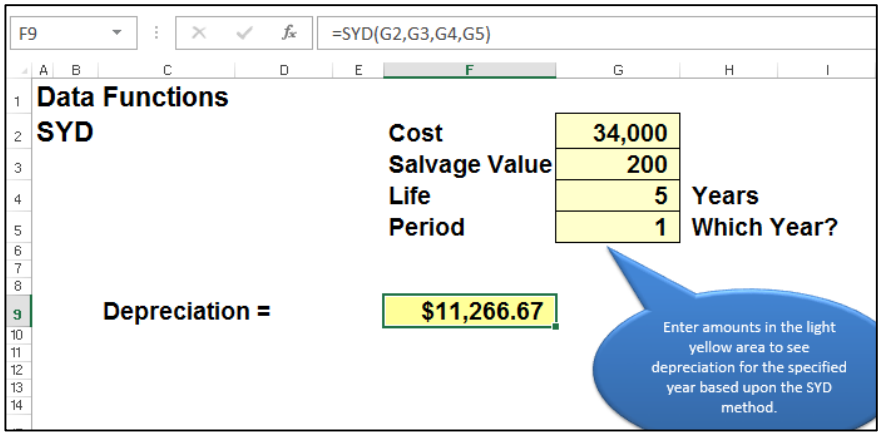


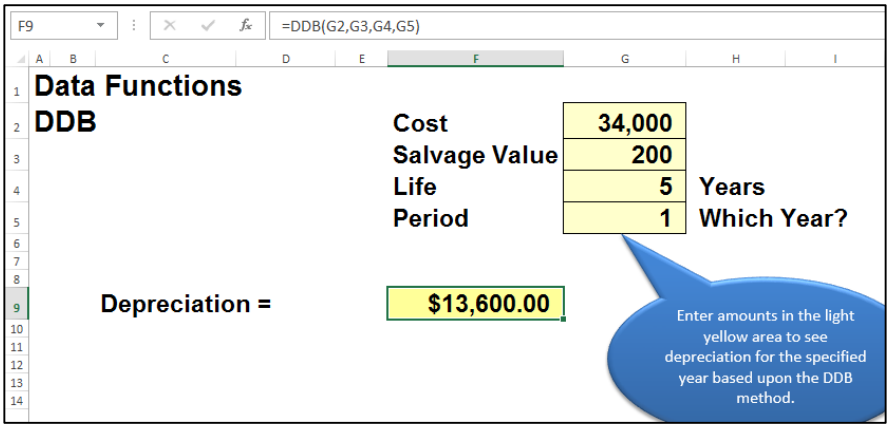
Examples of Random Values	Converted to Integers
0.38133	381
0.22742	227
0.89848	898
0.33984	340
0.66735	667
0.69252	693
0.11316	113
0.95307	953
0.80265	803
0.16563	166

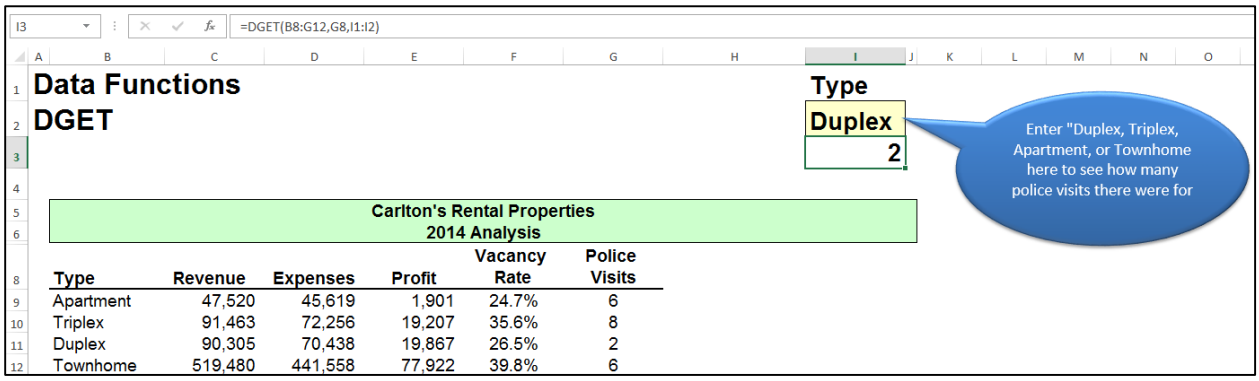

D9
=RANDBETWEEN($C$3,$C$4)
RANDBETWEEN - Returns a random number between the numbers you specify
Starting Invoice Number 2,291
Ending Invoice Number 6,638
Polpulation Size 4,347
Recommended Sample Size 98
Enter amounts in the light yellow area to see produce random numbers within a given numeric range.
1. 4542 21. 5601 41. 4592 61. 6362 81. 4320
2. 6335 22. 4563 42. 5773 62. 6289 82. 3361
3. 3277 23. 5511 43. 4653 63. 4690 83. 3842
4. 4221 24. 4997 44. 3980 64. 3867 84. 3434
5. 5755 25. 3072 45. 6327 65. 2553 85. 3517
6. 6516 26. 2598 46. 5744 66. 2444 86. 3086
7. 5709 27. 3294 47. 5556 67. 6189 87. 5887

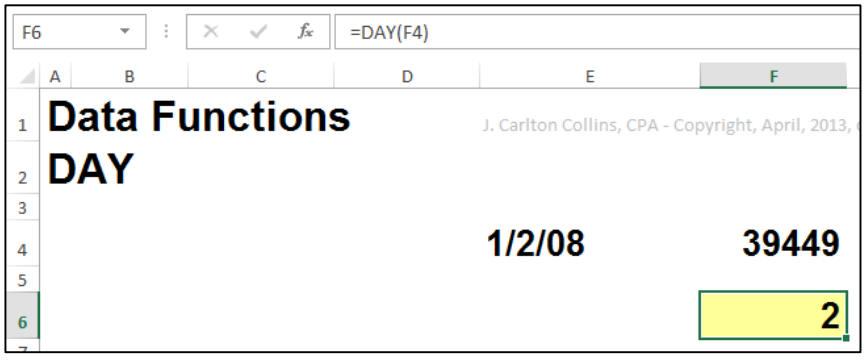

C4
=REPT(CHAR(7),B4*30)
REPT - Repeats text a given number of times
J. Carlton Collins, CPA - Copyri
78%
41%
22%
40%
62%
68%
99%
36%
63%
3%
0%
Basically A Poor Man's Sparkline, enter percentages here to see the chart effect change.

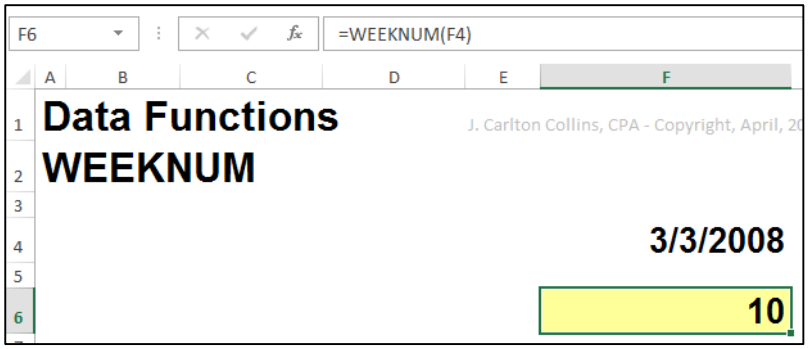

F9
=SLN(G2,G3,G4)
Data Functions
SLN
Cost 34,000
Salvage Value 200
Life 5 Years
Depreciation per year = $6,760.00
Enter amounts in the light yellow area to see depreciation for the specified year based upon the Straight Line method.


F9
=SYD(G2,G3,G4,G5)
Data Functions
SYD
Cost
34,000
Salvage Value
200
Life
5
Years
Period
1
Which Year?
Depreciation =
$11,266.67
Enter amounts in the light yellow area to see depreciation for the specified year based upon the SYD method.


F9
=DDB(G2,G3,G4,G5)
Data Functions
DDB
Cost
34,000
Salvage Value
200
Life
5
Years
Period
1
Which Year?
Depreciation =
$13,600.00
Enter amounts in the light yellow area to see depreciation for the specified year based upon the DDB method.


I3
=DGET(B8:G12,G8,I1:I2)
Data Functions
DGET
Type
Duplex
2
Enter "Duplex, Triplex, Apartment, or Townhome here to see how many police visits there were for
Carlton's Rental Properties
2014 Analysis
Type
Revenue
Expenses
Profit
Vacancy Rate
Police Visits
Apartment
47,520
45,619
1,901
24.7%
6
Triplex
91,463
72,256
19,207
35.6%
8
Duplex
90,305
70,438
19,867
26.5%
2
Townhome
519,480
441,558
77,922
39.8%
6


F6
=DAY(F4)
Data Functions
DAY
J. Carlton Collins, CPA - Copyright, April, 2013,
1/2/08
39449
2


F6
=WEEKNUM(F4)
A
B
C
D
E
F
1
2
3
4
5
6
Data Functions
WEEKNUM
J. Carlton Collins, CPA - Copyright, April, 20
3/3/2008
10

Chapter 4

50 Quick Tips

50 Excel Tips, Tricks & Traps

By J. Carlton Collins

1. Recover an unsaved Workbook (End of **Recent Files**)
2. Recover an Excel File You Forgot to Save (Open a file, then select **File, Info, Versions**)
3. Underlines that don't touch Excel (Use **Accounting Format**, then apply **Font Underlines**)
4. Five Tips Using Excel's Fill Handle:
    a. Copy by dragging the Fill Handle
    b. Autofill by dragging the Fill Handle
    c. Hold Ctrl key when dragging Fill Handle to disable AutoFill effect
    d. Double-click the Fill handle to copy down
    e. Drag the Fill Handle to number a range
5. Sparklines (Excel 2010 & 2013 only, select **Insert**, **Sparklines**)
6. Unlock 219 Hidden Excel Commands
7. Using **Speak Cells** in a macro
8. Use Excel's **Exact Function** to compare upper or lower character case
9. Suggested default settings for Excel
10. Using transparency in Excel's Area Charts
11. Printing Charts (select the chart, not the chart range)
12. Formula Auditing:
    a. Auditing Formulas with **Trace Precedent Arrows**
    b. Auditing Formulas with **Show Formulas** (or press CTRL + ` (Accent Mark))
    c. Auditing Formulas with **Evaluate Formula**
13. Managing Links in Excel (Use **Data, Links** and Search for a "[")
14. Controlling the green error tick marks in Excel (Select **Formulas, Error Checking, Options**)
15. Use Superscript Font to improve appearance of footnote reference in Excel
16. Footing your financials in Excel (Embed Word as an Object in Excel)
17. Displaying two-digit Years as the default date format (**Control Panel, Region** or **Regional**)
18. Duplicate a worksheet by dragging
19. Excel **print scaling** tip for fitting all columns on a single page
20. Using Excel's **Split Screen Tool**
21. Grouping tip – Use **Auto Outline** instead of **Grouping**
22. Using the Calibri for text and numbers in Excel
23. Different approaches to using **AutoSum**
24. Controlling **Precision** in Excel (**File, Options, Advanced, When Calculating…, Set Precision…**)
25. Helpful working examples of all Excel functions (**Formulas, Insert Function, Help…**)
26. Customizing the **Status Bar** (Right-click the **Status Bar**)
27. Zoom in and out of Excel using **Ctrl + Scroll Wheel**
28. Make the **Format Painter** tool stick (by double-clicking)
29. Replace formatting with **Find and Replace, Options**
30. Creating **Custom Lists** in Excel
31. Using **Scroll Tips** in Excel
32. Click the edge of a cell to navigate that direction
33. Using the Indent Icon
34. Creating a Drop Down with **Alt + Down Arrow**
35. Use **F4** to repeat your last command
36. Using **F11** to produce a Quick Chart

37. Excel trick for filling in missing labels
38. **AutoFilter**
39. Using the **REPT** function – a poor man's sparkline
40. The **INFO** function
41. The **CELL** function
42. A list of all 455 functions
43. The **AGGREGATE** function

Some New Stuff in Excel 2013:

44. **Flash Fill** - watches you work and applies logic to help you complete your tasks.
45. **Quick Analysis** - helps you analyze data more quickly by offering data layouts.
46. **Timeline Slicer** - helps you slice and dice Pivot data containing dates.
47. **PowerView** - enables you to create new report types, such as the interactive map charts.
48. **Get A Link** – Send Excel workbooks links instead of workbooks via email.
49. **Excel Compare tool** - similar to Word's Compare tool.
50. **Touch-Screen Enabled** – Makes excel accessible on touch-screen mobile devices.
51. **Windows 8 Style Tiles** – For easy launching and navigation.

Chapter 5

Data Analysis

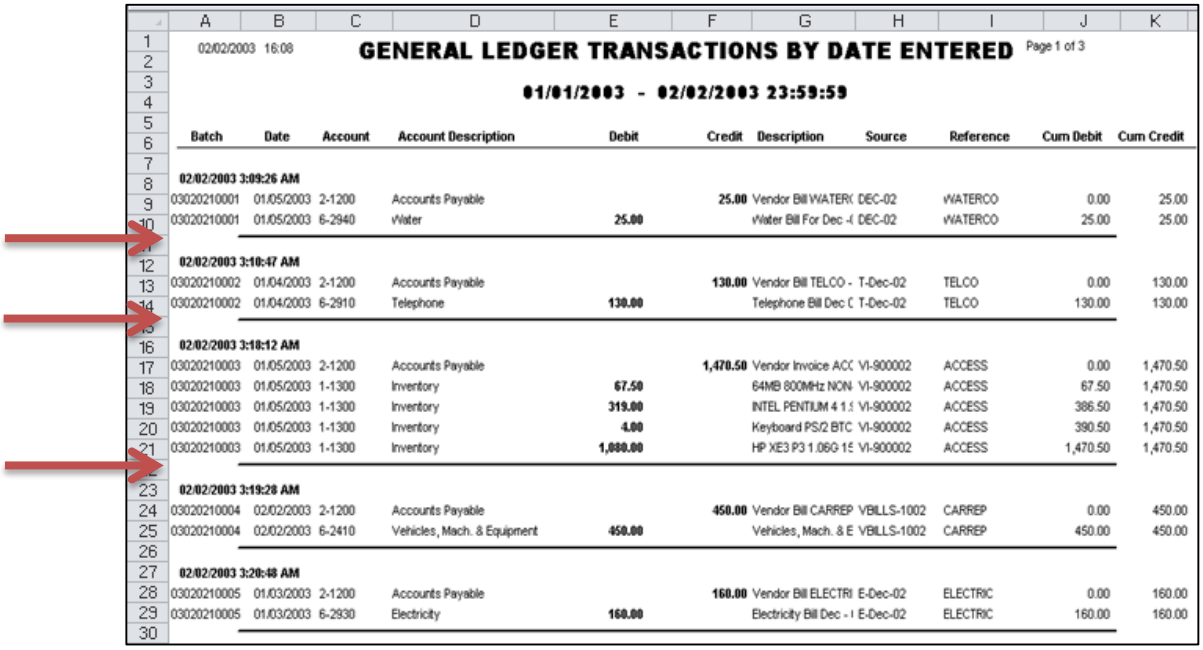
The Heart & Soul of Excel

Data Analysis Tools

Preparing Data for Data Analysis

Before you start to analyze data using Excel's various data commands such as **Sort**, **Autofilter**, **Subtotal**, **Grouping**, **Consolidate**, or **PivotTable**, you should first inspect your data to determine if it is in ***Analysis-Ready*** condition. In general, this means that the data must meet the following criteria:

a. **Contiguous Data** – The data should contain no blank rows or blank columns. For example, the screen below shows blank rows (with solid lines). These rows should first be removed before proceeding with the creation of a PivotTable.

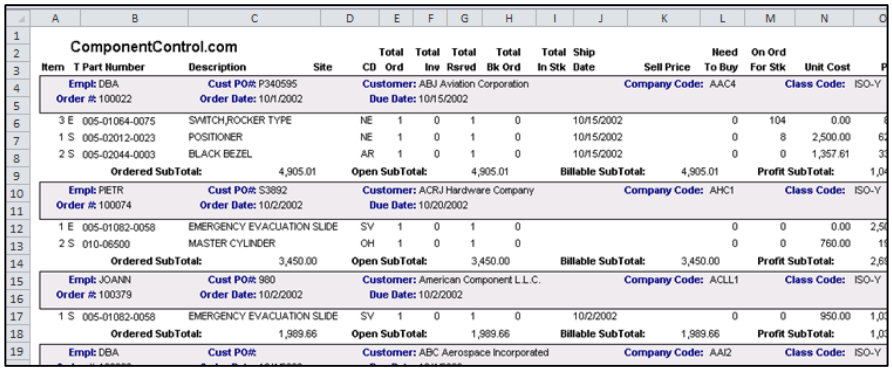


02/02/2003 16:08 **GENERAL LEDGER TRANSACTIONS BY DATE ENTERED** Page 1 of 3

01/01/2003 - 02/02/2003 23:59:59

Batch	Date	Account	Account Description	Debit	Credit	Description	Source	Reference	Curn Debit	Curn Credit
02/02/2003 3:09:26 AM										
03020210001	01/05/2003	2-1200	Accounts Payable		**25.00**	Vendor Bill WATER(	DEC-02	WATERCO	0.00	25.00
03020210001	01/05/2003	6-2940	Water	**25.00**		Water Bill For Dec -(	DEC-02	WATERCO	25.00	25.00
02/02/2003 3:10:47 AM										
03020210002	01/04/2003	2-1200	Accounts Payable		**130.00**	Vendor Bill TELCO -	T-Dec-02	TELCO	0.00	130.00
03020210002	01/04/2003	6-2910	Telephone	**130.00**		Telephone Bill Dec (	T-Dec-02	TELCO	130.00	130.00
02/02/2003 3:18:12 AM										
03020210003	01/05/2003	2-1200	Accounts Payable		**1,470.50**	Vendor Invoice ACC	VI-900002	ACCESS	0.00	1,470.50
03020210003	01/05/2003	1-1300	Inventory	**67.50**		64MB 800MHz NON	VI-900002	ACCESS	67.50	1,470.50
03020210003	01/05/2003	1-1300	Inventory	**319.00**		INTEL PENTIUM 4 1.5	VI-900002	ACCESS	386.50	1,470.50
03020210003	01/05/2003	1-1300	Inventory	**4.00**		Keyboard PS/2 BTC	VI-900002	ACCESS	390.50	1,470.50
03020210003	01/05/2003	1-1300	Inventory	**1,080.00**		HP XE3 P3 1.06G 1!	VI-900002	ACCESS	1,470.50	1,470.50
02/02/2003 3:19:28 AM										
03020210004	02/02/2003	2-1200	Accounts Payable		**450.00**	Vendor Bill CARREP	VBILLS-1002	CARREP	0.00	450.00
03020210004	02/02/2003	6-2410	Vehicles, Mach. & Equipment	**450.00**		Vehicles, Mach. & E	VBILLS-1002	CARREP	450.00	450.00
02/02/2003 3:20:48 AM										
03020210005	01/03/2003	2-1200	Accounts Payable		**160.00**	Vendor Bill ELECTRI	E-Dec-02	ELECTRIC	0.00	160.00
03020210005	01/03/2003	6-2930	Electricity	**160.00**		Electricity Bill Dec - I	E-Dec-02	ELECTRIC	160.00	160.00

b. **Single Row Data** – Some accounting systems produce data that spans two or more rows per transaction. If this is the case, your will need to clean that data so that all related information for a single transaction or data is contained on a single row. For example, the following data contains multiple rows of data related to a single sales order. In this case, the user must move and paste the data to fall on a single row. This is an example of data that requires a great deal of clean up.



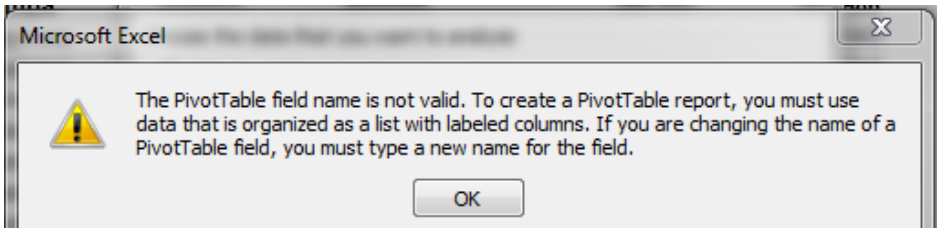
ComponentControl.com

Item	T	Part Number	Description	Site	CD	Total Ord	Total Inv	Total Rsrvd	Total Bk Ord	Total In Stk	Ship Date	Sell Price	Need To Buy	On Ord For Stk	Unit Cost
Empl: DBA		Cust PO#: P340595			Customer: ABJ Aviation Corporation							Company Code: AAC4			Class Code: ISO-Y
Order #: 100022		Order Date: 10/1/2002			Due Date: 10/15/2002										
3	E	005-01064-0075	SWITCH,ROCKER TYPE		NE	1	0	1	0		10/15/2002		0	104	0.00
1	S	005-02012-0023	POSITIONER		NE	1	0	1	0		10/15/2002		0	8	2,500.00
2	S	005-02044-0003	BLACK BEZEL		AR	1	0	1	0		10/15/2002		0	0	1,357.61
Ordered SubTotal:			4,905.01		Open SubTotal:			4,905.01			Billable SubTotal:	4,905.01		Profit SubTotal:	
Empl: PIETR		Cust PO#: S3892			Customer: ACRJ Hardware Company							Company Code: AHC1			Class Code: ISO-Y
Order #: 100074		Order Date: 10/2/2002			Due Date: 10/20/2002										
1	E	005-01082-0058	EMERGENCY EVACUATION SLIDE		SV	1	0	1	0				0	0	0.00
2	S	010-06500	MASTER CYLINDER		OH	1	0	1	0				0	0	760.00
Ordered SubTotal:			3,450.00		Open SubTotal:			3,450.00			Billable SubTotal:	3,450.00		Profit SubTotal:	
Empl: JOANN		Cust PO#: 980			Customer: American Component L.L.C.							Company Code: ACLL1			Class Code: ISO-Y
Order #: 100379		Order Date: 10/2/2002			Due Date: 10/2/2002										
1	S	005-01082-0058	EMERGENCY EVACUATION SLIDE		SV	1	0	1	0		10/2/2002		0	0	950.00
Ordered SubTotal:			1,989.66		Open SubTotal:			1,989.66			Billable SubTotal:	1,989.66		Profit SubTotal:	
Empl: DBA		Cust PO#:			Customer: ABC Aerospace Incorporated							Company Code: AAI2			Class Code: ISO-Y

c. **Column Headers** - <u>The data should contain a unique header atop each column</u>. For example, the following screen contains two columns labeled **Date**, while columns D and E contain no heading. These are both cases of data that should be cleaned before creating a PivotTable.

	A	B	C	D	E	F	G	H
1	Year	Date	Date			State	Attendanc	Type
2	2010	10	5-Oct	Tech Savvy CPA	Acworth, GA	GA	13	Course
3	2009	6	3-Jun	Excel Advanced	Alpharetta, GA	GA	19	Course
4	2011	11	9-Nov	QuickBooks for CPAs	Alpharetta, GA	GA	33	Course
5	2010	12	14-Dec	Communicating with Computers	Buckhead, GA	GA	29	Course
6	2010	6	10-Jun	Excel Functions, Macros and Data	Buckhead, GA	GA	29	Course
7	2010	9	24-Sep	Microsoft Office 2010 and Windov	Buckhead, GA	GA	0	Course
8	2010	6	8-Jun	Excel Hands On	Cobb Galleria, GA	GA	8	Course
9	2010	5	20-May	Accounting Software Expo	Atlanta, GA	GA	100	Conferen
10	2010	4	30-Apr	Property Management Conferenc	Atlanta, GA	GA	100	Conferen
11	2010	8	18-Aug	SEAS Conference	Atlanta, GA	GA	100	Conferen
12	2009	8	13-Aug	Excel Functions	Birmingham, AL	AL	63	Course
13	2009	9	8-Sep	Information Security	Birmingham, AL	AL	24	Course
14	2009	7	15-Jul	QuickBooks for CPAs	Birmingham, AL	AL	45	Course
15	2009	7	16-Jul	Tech Savvy CPA	Birmingham, AL	AL	42	Course
16	2010	4	23-Apr	Communicating with Computers	Bloomington, MN	MN	20	Course
17	2009	4	29-Apr	Excel for Intermediate	Bloomington, MN	MN	46	Course

<u>If you attempt to analyze data that does not contain a column heading atop all columns, you will sometimes receive an error message, such as the example shown below</u>.



If you have data with the same column heading used more than once, Excel will sometimes alter the column headings, for example when you create a PivotTable, so all headings will be unique.

d. **Row Descriptions** – Generally, your data should repeat row descriptions for each row. For example, the screen below shows that the state and city descriptions are not repeated for each row in columns A & B.

	A	B	C	D	E	F	G	H
3	**Carlton's Rental Properties**							
4	**2012 Analysis**							
5								
6	**State**	**City**	**Type**	**Manager**	**Revenue**	**Expenses**	**Profit**	**Vacancy Rate**
7	Florida	Daytona	Duplex	Steve	75,254	58,698	16,556	25.5%
8			Duplex	Steve	77,184	87,218	(10,034)	56.4%
9			Duplex	Steve	77,184	68,694	8,490	25.5%
10			Duplex	Steve	76,219	60,213	16,006	54.4%
11			Townhome	Steve	52,140	41,191	10,949	35.6%
12			Townhome	Steve	52,800	59,664	(6,864)	25.5%
13			Townhome	Steve	52,140	41,191	10,949	27.6%
14			Triplex	Ginger	110,772	94,156	16,616	39.8%
15			Triplex	Ginger	121,198	112,714	8,484	45.0%
16			Triplex	Ginger	121,198	112,714	8,484	23.3%
17		Tampa	Apartment	Ginger	128,563	119,564	8,999	39.8%
18			Apartment	Ginger	217,504	184,878	32,626	53.3%
19			Duplex	Steve	79,114	64,873	14,240	25.5%

A solutio for quickly filling in the missing row descriptions is presented later in these materials.

e. **Transposing Headers and Rows** – In some cases, data may need to be transposed because many of Excel's Data tools use the column headings, not the row headings to crunch the data. To do this, copy the data, then select **Paste Special, Transpose, OK** to flip the data around.

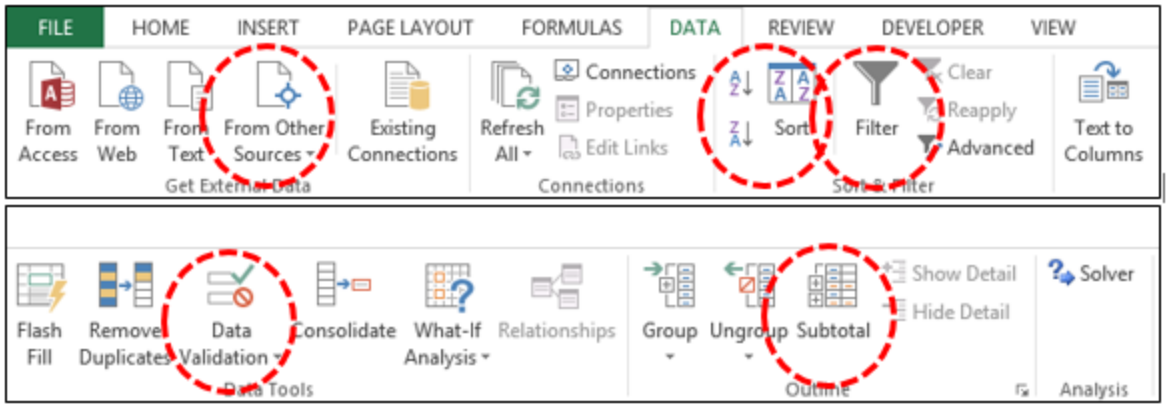
f. **Clean Data** – The data must be clean of empty text cells containing spaces, special characters, extra spaces within data, trailing spaces, trailing zeros, leading zeros, etc.

Data Analysis Tools

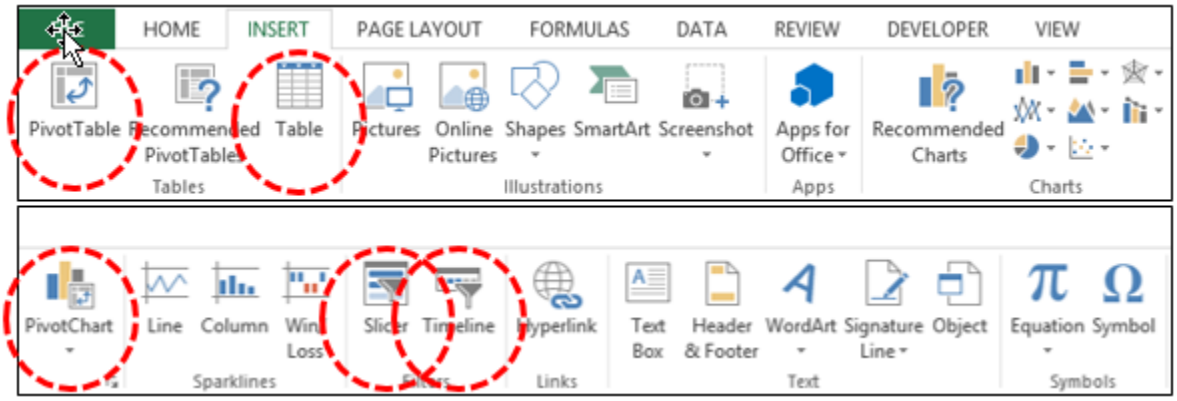
Excel provides specialized tools for analyzing data and generating financial reports, yet most CPAs are unaware of these tools or haven't tried using them before. Specifically useful are the Subtotaling, Grand Totaling, Filtering, Consolidating, Grouping & Outlining, Drilling, OLAP Data Cubes, PivotTables, Sparklines, Data Bar Reporting, Conditional Formatting, Charting, Foot Notes and End Notes, Formula Auditing Tools, Error Checking, Functions, and Data Analysis Tools.

The concepts discussed are intended to directly aide the CPA in summarizing, slicing, dicing and analyzing data, and generating related financial reports.

2013 Data Ribbon:



2013 Insert Ribbon:



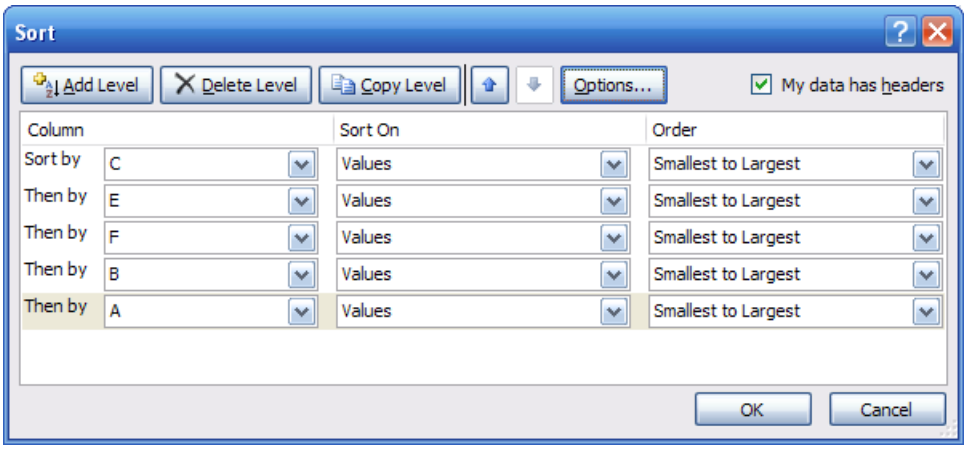
Data Sort

You would think that every Excel user would already know all about sorting data in Excel, but I am frequently surprised to find that many users have missed a few key points related to using this tool. I don't mean to belittle you are talk beneath you, but humor me a copy of paragraphs and let's make sure you are fully up to speed on the following key sorting points:

1. **Contiguous Data** - The "A to Z" sorting tool can sort a large matrix of data without having to highlight the area as long as the data is contiguous; that is to say that your data should contain no blank columns, no blank rows, and the columns must all be labeled with a column heading. When data is contiguous, all you need to do is place your cursor in a single cell in a given column and click the **Sort A to Z** or **Sort Z to A** buttons, and Excel will automatically select the entire matrix for sorting. Surprisingly many users waste a great deal of time highlighting sort ranges prior to sorting, but this step is often unnecessary.

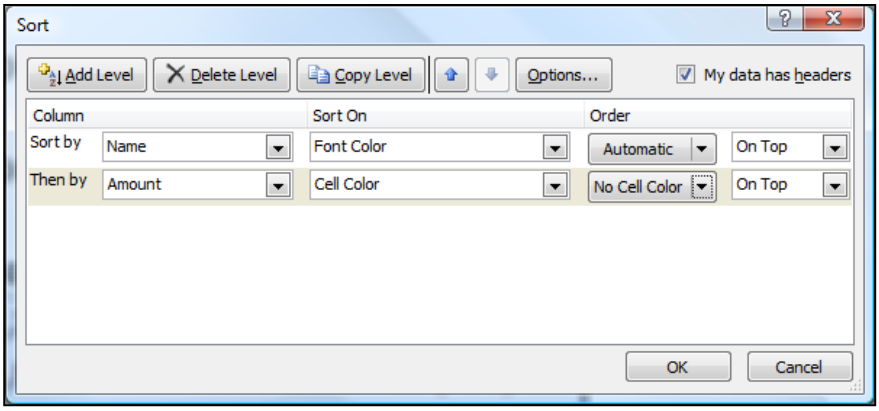
2. **A to Z Button** - Simply place the cursor in the desired column for sorting, and press the A to Z or Z to A button as the case may be. Excel will automatically sort all continuous columns that have headings and all contiguous rows from the top row under the heading labels down to the last row in the selected column that contains data. *(Note - If you accidently select 2 cells instead of just one, your results will not be correct.)*

3. **Sort by 64 Columns -** The "Sort" tool was enhanced beginning in Excel 2007 as it now provides the ability to sort by up to 64 columns, instead of just 3 columns. Presented below is a dialog box which shows this expanded functionality.



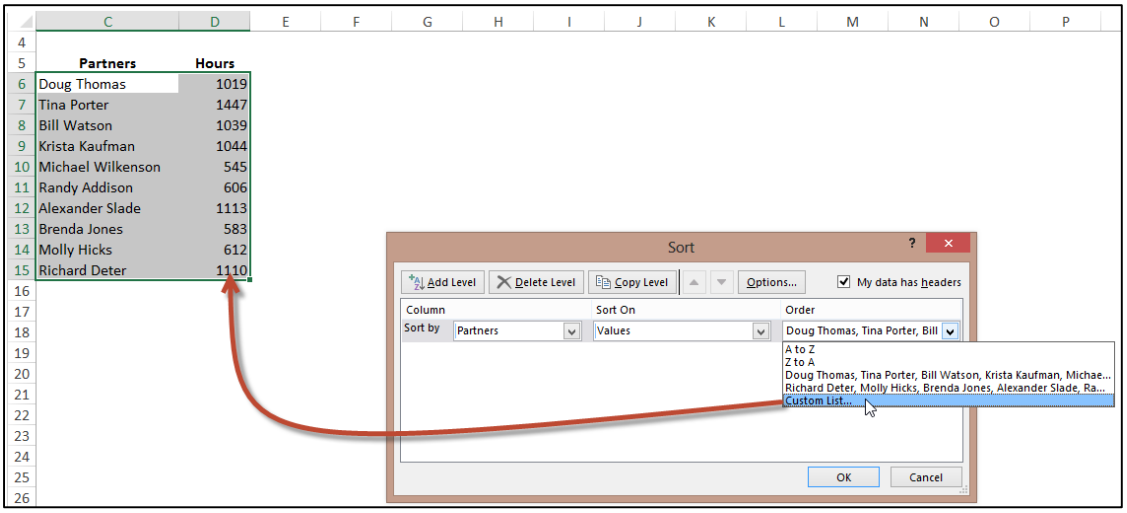
4. **Sort Left to Right** – Excel has always provided the ability to sort left to right. To do so, select the **Sort Options** box in the **Sort** dialog box and click the check box labeled **Sort Left to Right** as pictured below.

5. **Sort by Color** – beginning with Excel 2007, you can also sort by font color or by cell color, or both. This is handy in many ways. Sometimes CPAs use color to tag or mark certain cells - and later find it useful to be able to sort by those markings. In other situations CPAs use conditional formatting to apply color to cells using a wide variety of rules; and thereafter they can sort the data based on the resulting conditional colors. The two sort-by-color options are pictured below.



To be fair, it was sort of possible to sort by color in Excel 2003. To accomplish this task, you needed to use the **CELL** function in order to identify information about a given cell such as the cell color or font color. Thereafter, the results of that function could be used to sort rows – which effectively means that you can sort by color in Excel 2003 – but it takes a bit more effort.

6. **Sort By Custom List** – Another sorting capability in Excel is the ability to sort by **Custom List**. For example, assume a CPA firm has ten partners, and the Managing partner prefers to be shown at the top of the list, and the remaining Partners based on seniority. In this case, you could create a Custom List in the Excel Options dialog box listing the partners in the desired order, and then sort future reports based on that order.



To access the Custom List settings:

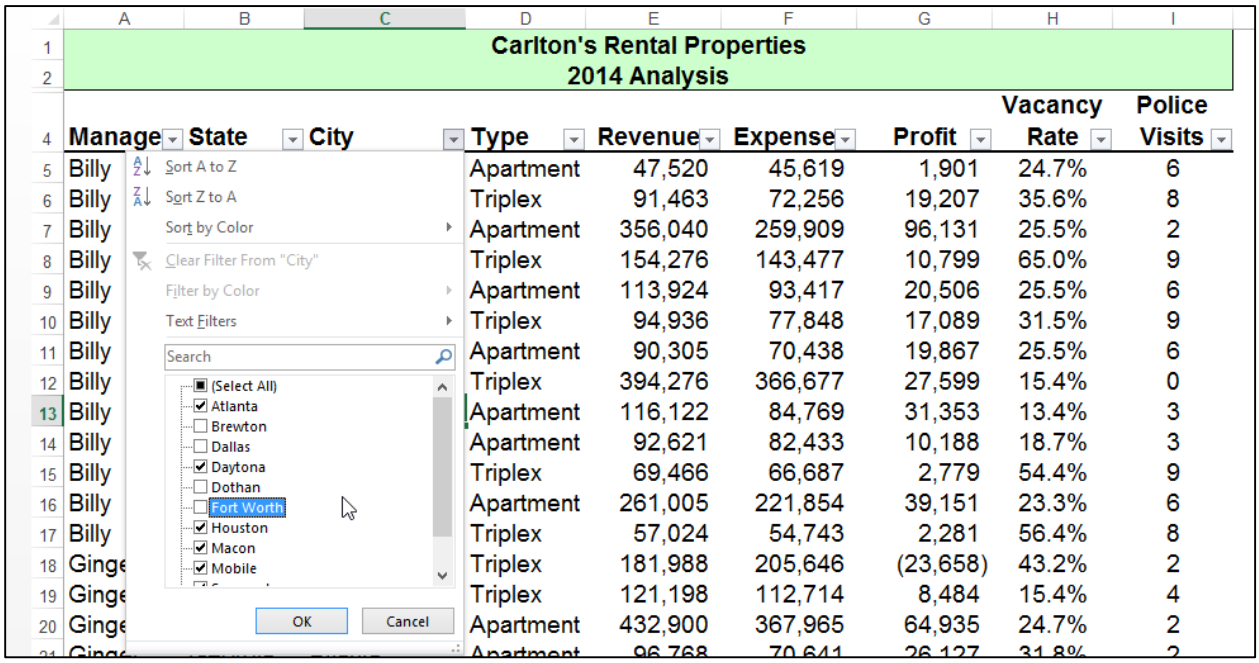
1. In Excel 2013 & 2010, select **File, Options, Advanced**, and scroll to the bottom, and then select **Edit Custom List**.

2. In Excel 2007, select **File, Options**, select **Edit Custom List** option a few inches down from the top.

3. In Excel 2003, select **Tools, Options**, and click the **Custom Lists** tab.

Filtering Data

AutoFilter allows you to view a subset of your data and when you are done, you can clear the filters to once again redisplay all of your data. To use this tool, start with any list of data and turn on the AutoFilter tool. Then position your cursor in the column you want to filter and use the drop down arrows to apply your filters as suggested in the screen below.



Once the filters are applied, you will see a subset of your data. For example, the screen presented below shows filtered data for only Macon and Savannah properties.

	A	B	C	D	E	F	G	H	I
1	Carlton's Rental Properties								
2	2014 Analysis								
4	Manage	State	City	Type	Revenue	Expense	Profit	Vacancy Rate	Police Visits
25	Ginger	Georgia	Macon	Apartment	128,563	119,564	8,999	39.8%	8
26	Ginger	Georgia	Macon	Apartment	128,563	119,564	8,999	23.3%	1
27	Ginger	Georgia	Savannah	Apartment	76,032	75,272	760	65.0%	0
64	Steve	Georgia	Macon	Townhome	52,800	46,992	5,808	18.7%	9
65	Steve	Georgia	Macon	Duplex	76,219	60,213	16,006	26.5%	7
66	Steve	Georgia	Macon	Duplex	75,254	58,698	16,556	35.6%	5
67	Steve	Georgia	Macon	Apartment	296,700	216,591	80,109	23.3%	1
118	Jim	Georgia	Macon	Triplex	82,427	62,444	19,983	53.3%	1
121	Jim	Georgia	Macon	Duplex	90,981	57,088	33,892	27.6%	0
125	Jim	Alabama	Macon	Townhome	60,720	52,504	8,216	25.5%	8
126	Jim	Alabama	Macon	Townhome	59,961	36,248	23,713	35.6%	5

As filters are applied, a small funnel icon appears in the drop down arrow button to indicate that a filter has been applied to that particular column.

Key Points Concerning the AutoFilter Command:

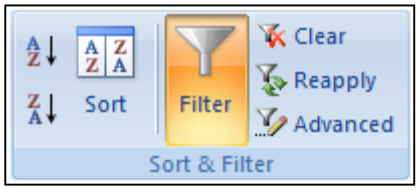
1. **Contiguous Data** – The AutoFilter tools works best when you are working with data that is contiguous. In other words, your data should contain no blank columns, no blank rows, and the columns must all be labeled.

2. **Column Headings** –Your columns need unique column headings in and single row, and if the column headings are not in row 1, then the row above the column headings should be blank so Excel will auto detect the correct range.

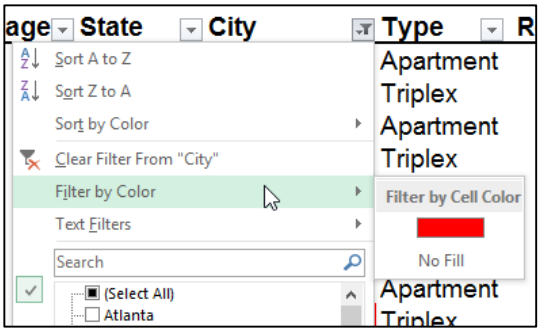
3. **Filter by Multiple Columns** - You can filter by more than one column.

4. **Filters are Additive** - Each additional filter is based on the current filter and further reduces the subset of data.

5. **Removing Filters** – In all editions of Excel, a fast way to remove multiple filters is to turn **AutoFilter** off and then turn **AutoFilter** back on. In Excel 2007 and later editions, you can also click the **Clear** button in the **Sort & Filter Group** as pictured below.



6. **Filter by Color** – You can filter based on colors. For example, you can filter by cell color or by a list of numbers, you can filter by icon or by a custom filter.

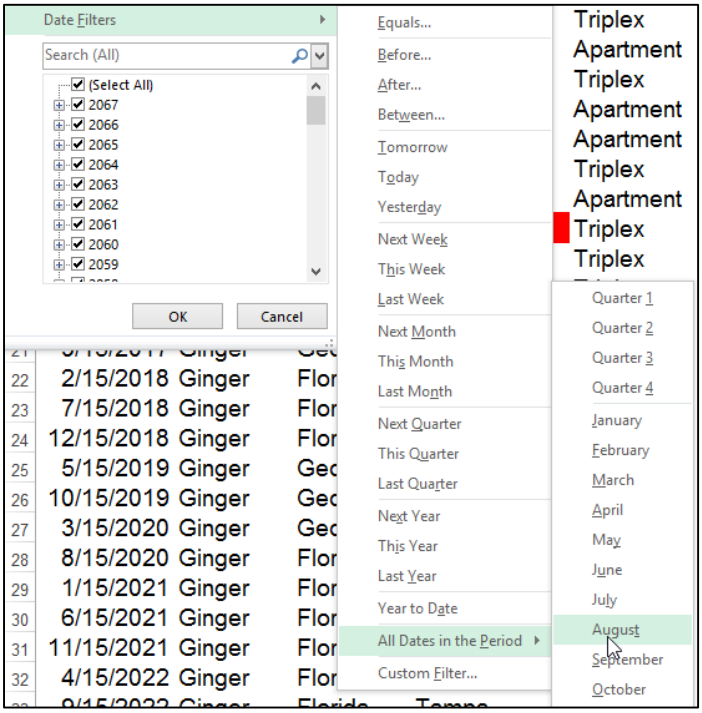


Note that the Color Filter is mutually exclusive as you cannot also filter by value or text when filter by color is applied, and vice versa.

7. **Filters Enabled -** A drop-down arrow means that filtering is enabled but not applied.

8. **Filter Applied -** A Filter button means that a filter is applied.

9. **Filter Spanning** - The commands under the **All Dates** in the **Date Filters** menu, such as January or Quarter 2 filter by the period no matter what the year. This can be useful, for example, to compare sales by a period across several years.

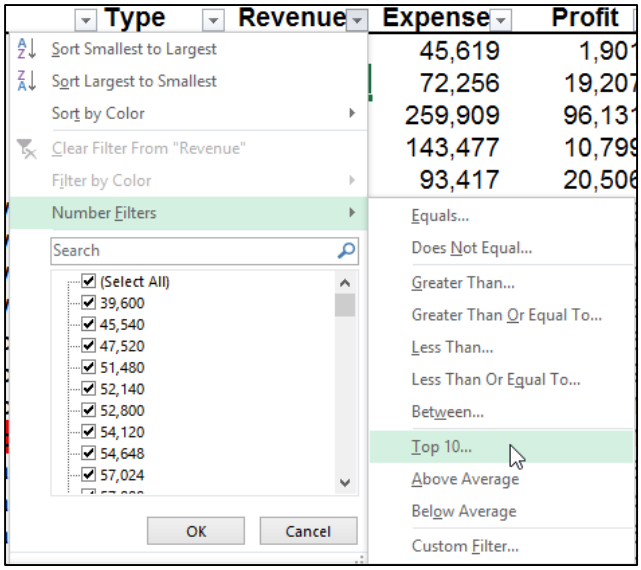


10. **This Year vs. Year-to-Date** - **This Year** and **Year-to-Date** are different in the way that future dates are handled. **This Year** filtering can return dates in the future for the current year, whereas **Year-to-Date** only returns dates up to and including the current date based on the computer's time clock.

11. **Filtering Dates** - All date filters are based on the Gregorian calendar as decreed by Pope Gregory XIII, after whom the calendar was named, on 24 February 1582. The Gregorian calendar modifies the Julian calendar's regular four-year cycle of leap years as follows: Every year that is exactly divisible by four is a leap year, except for years that are exactly divisible by 100; the centurial years that are exactly divisible by 400 are still leap years. For example, the year 1900 is not a leap year; the year 2000 is a leap year.

12. **Filtering By Days of Week -** If you want to filter by days of the week, simply format the cells to show the day of the week, or insert a new column and use the **WEEKDAY** function to calculate the week day, and then apply filters using this new column.

13. **Top & Bottom Filtering** - On the **Data** tab, in the **Sort & Filter** group, click **Filter**. Point to **Number Filters** and then select **Top 10**. To filter by number, click **Items**. To filter by percentage, click **Percent**. Note - Top and bottom values are based on the original range of cells or table column and not the filtered subset of data.

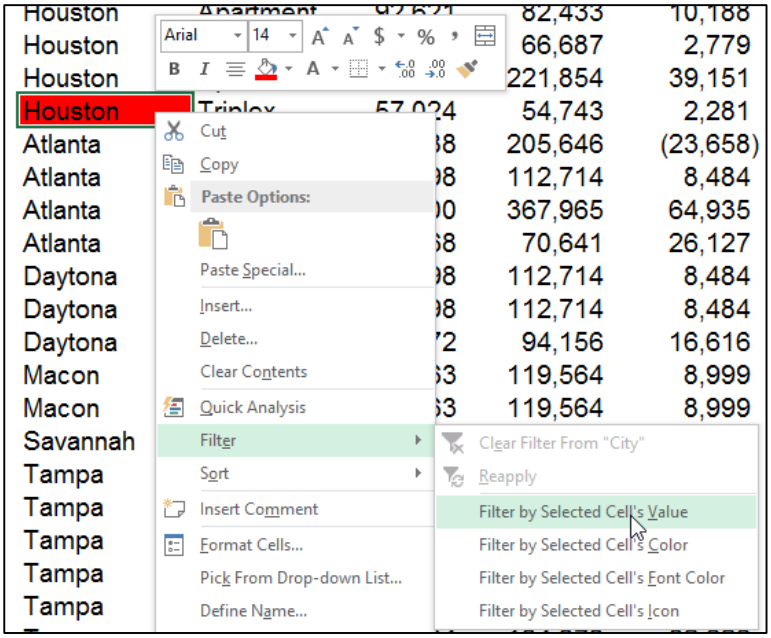


14. **Above & Below Average Filtering** - On the **Data** tab, in the **Sort & Filter** group, click **Filter**. Select **Number Filters, Above/Below Average**. Note – These values are based on the original range of cells or table column and not the filtered subset of data.

15. **Filtering Out Blanks** - To filter out blanks, in the **AutoFilter** menu at the bottom of the list of values, de-select the check box labeled **Blanks**.

16. **Filtering By Color** - Select **Filter by Color**, and then depending on the type of format, select **Filter by Cell Color**, **Filter by Font Color**, or **Filter by Cell Icon**. Note that these filter options only show up when there are actual cell colors, font colors or icons included in the data range.

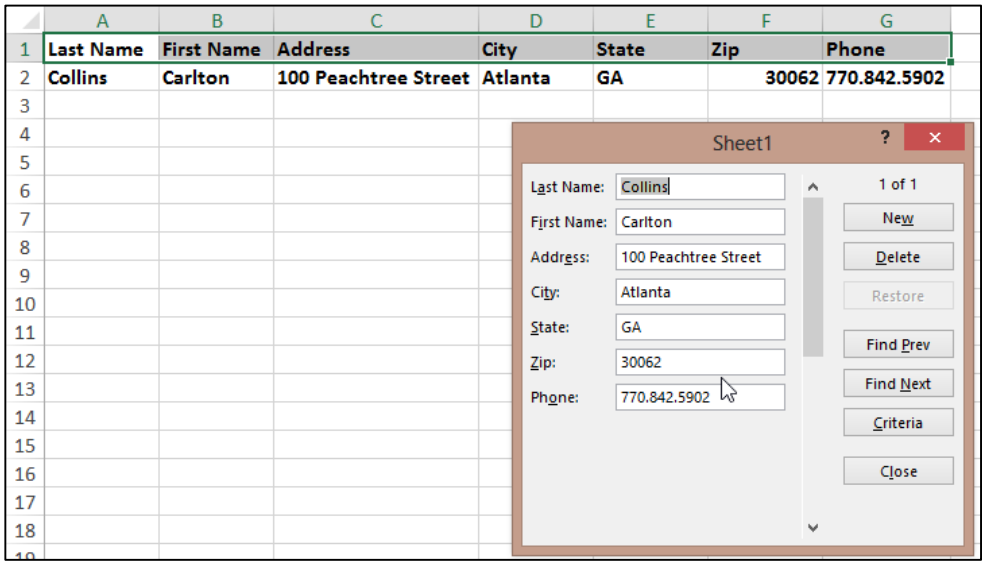
17. **Filter by Selection** - To filter by text, number, date, time, or color for selected cell(s), select the cells to be used as a filter basis and then right-click that selection, and from the popup menu select **Filter, Filter by Selected Cell's Value,** (or **Filter by Selected Cell's Color**, **Filter by Selected Cell's Font Color**, or **Filter by Selected Cell's Icon**).



18. **Refreshing Filters -** To reapply a filter after the data changes, click a cell in the range or table, and then on the **Data** tab, in the **Sort & Filter** group, click **Reapply**.

Data Form

Excel's Data Form tool provides a data input window which makes Excel look and behave more like a database, such as Microsoft Access. (Note that in Excel 2013, 2010 and 2007, the Form tool button has not been included on the Ribbon, so to use it you will first need to add the Form tool 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. Some people, especially those who are used to using databases, 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.

Key Points using Data Form:

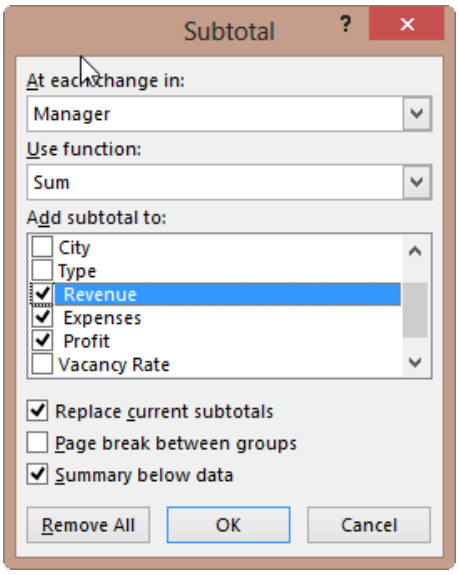
1. You cannot print data from a data form.

2. Because a data form is a modal dialog box, you cannot use either the Excel Print command or Print button until you close the data form.

3. You might consider using the Windows Print Screen key to make an image of the form, and then paste it into Microsoft Word for printing.

Data Subtotals

Excel's **Subtotal** command automatically calculates and inserts subtotals and grand totals in your list or table. Once inserted, Excel recalculates subtotal and grand totals 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. Examples of the **Subtotal** dialog box and a resulting subtotaled table are shown below.



	Manager	State	Revenue	Expenses	Profit	Police Visits
	Carlton's Rental Properties 2014 Analysis					
18	**Billy Total**		1,938,977	1,640,126	298,851	75
36	**Ginger Total**		2,340,914	2,211,002	129,912	78
50	**Jacob Total**		3,128,030	2,763,405	364,625	79
53	**Kathy Total**		1,534,551	1,378,893	155,658	13
77	**Steve Total**		1,679,088	1,439,202	239,886	117
108	**Erin Total**		4,921,875	3,388,993	1,532,882	153
133	**Jim Total**		5,984,923	4,093,049	1,891,874	131
148	**Ellen Total**		1,307,997	818,672	489,325	78
149	**Grand Total**		22,836,355	17,733,341	5,103,014	724

To display subtotals and grand totals at the top instead of the bottom, deselect the checkbox labeled **Summary below data**.

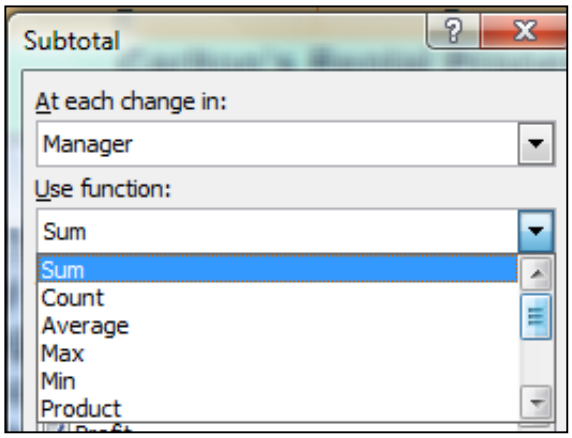
	Manager	State	City	Type	Revenue	Expenses	Profit
5	**Grand Total**				22,836,355	17,733,341	5,103,014
6	**Billy Total**				1,938,977	1,640,126	298,851
7	Billy	Texas	Dallas	Apartment	47,520	45,619	1,901
8	Billy	Texas	Dallas	Triplex	91,463	72,256	19,207
9	Billy	Texas	Dallas	Apartment	356,040	259,909	96,131

Key points to Consider When Using Subtotaling are as follows:

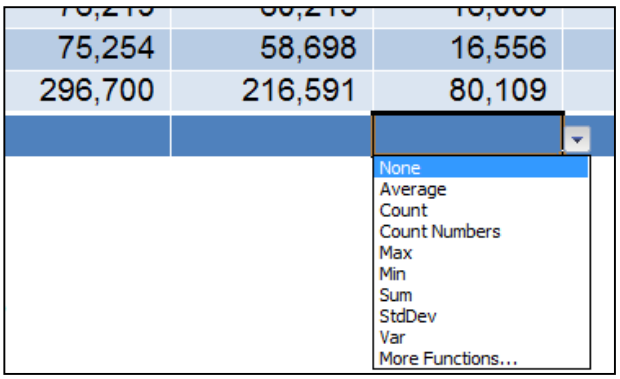
1. **Contiguous Data** – The Subtotal tools works best when you are working with data that is contiguous. In other words, your data should contain no blank columns, no blank rows, and the columns must all be labeled.

2. **Sort Before You Subtotal** - You must sort the data by the column you wish to subtotal by, else you will receive erroneous results.

3. **Other Mathematical Applications -** The Subtotal tool not only calculates subtotals, but it can also calculate minimums, maximums, averages, standard deviations, and other functions.



4. **Subtotals in 2013, 2010 & 2007 Tables** – Excel 2007 added a new **Table** tool which enables **Subtotals** a little differently; the Subtotal tool appears at the bottom of each column in each **Table**, as shown in the screen below.

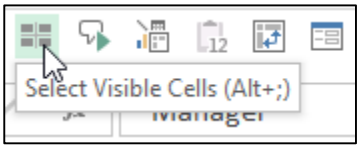


5. **Automatic Outlining** – The **Subtotal** tool automatically inserts **Outlines**, which allows you to collapse or expand your data.

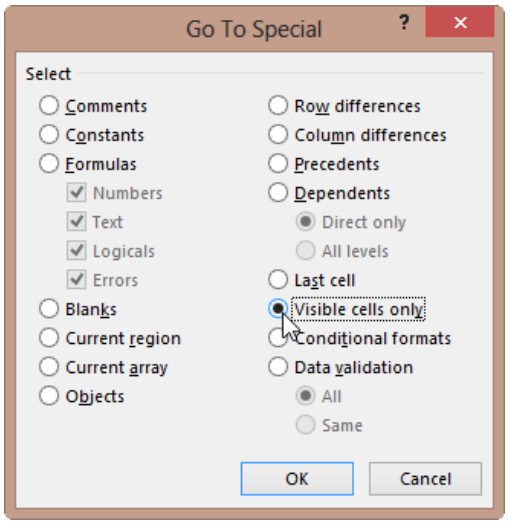
6. **Copying Outline Data** - Some CPAs also like to copy and paste collapsed subtotal data to another location, but they find this process copies and pastes all of the data – not just the summary data they desire. In this situation, there are two ways to achieve a clean copy and paste without grabbing all the hidden data as follows:

    a. **CTRL key** – Hold the **Control Key** down while you individually click to select individual rows; this action will enable you to copy and paste selected data. However, this approach can sometimes be problematic because if you miss-click, you have to start over.

    b. **Select Visible Cells** – A better approach is to use the **Select Visible Cells** tool. This tool will select on the data you can see, after which the copy and paste routine will yield the desired results. This option is better because it is faster and less error prone.



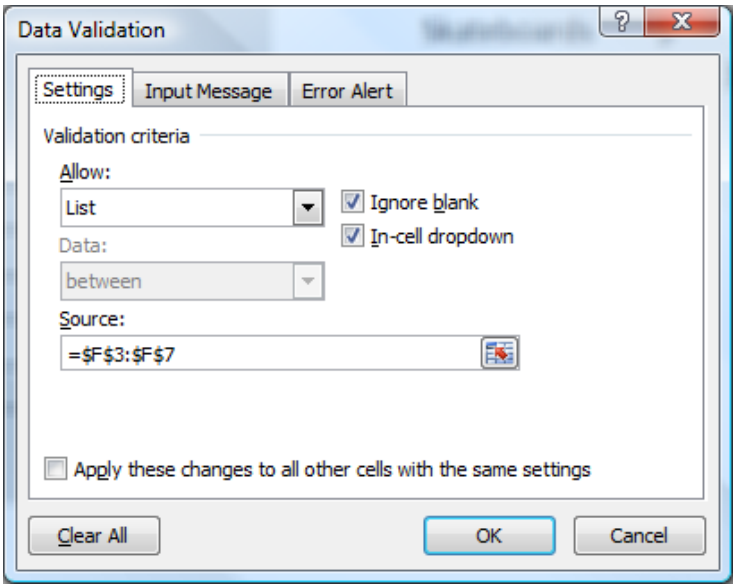
    c. **Go To** – You can also select visible cells using **Go To**. To do this**,** press **F5** to launch the **Go To** tool and then click **Special**. In the **Go To Special** dialog box, select the radio button labeled **Select Visible cells** and press **OK**.



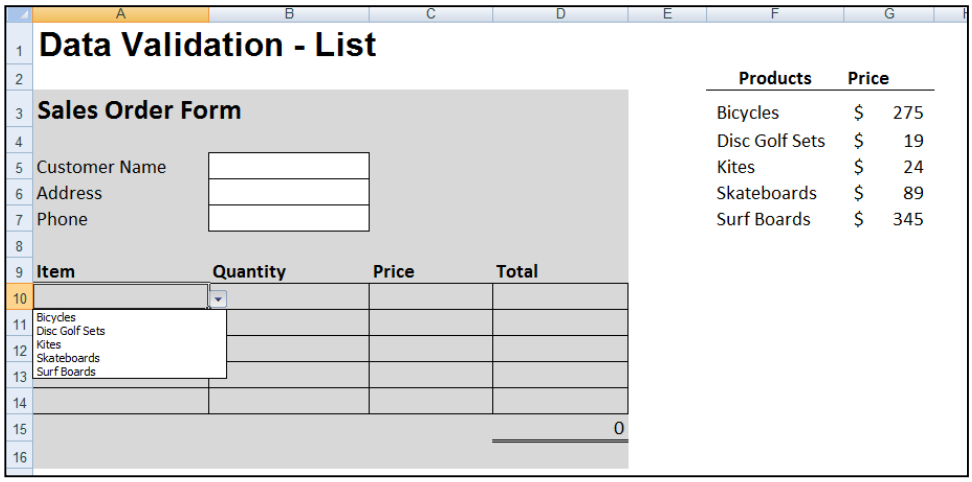
    d. **ALT + ;** - The **Alt + ;** key combination is the shortcut to using the Select Visible Cells Tool.

Data Validation

Data Validation can be used to limit the data that can be entered into a cell. For example, you might want the user to enter only values between 1% and 99%. You might also use this tool to enable data input to a drop down list which offers two advantages in that it can be faster and more accurate. To create a dropdown list, enter a list into sequentially cells in Excel. Next, from the **Data** tab select **Data Validation**, **Data Validation** (yes, again), then in the dialog box (as shown below) select **List** from the **Allow** dropdown box and then indicate the data range for your list in the **Source** box.

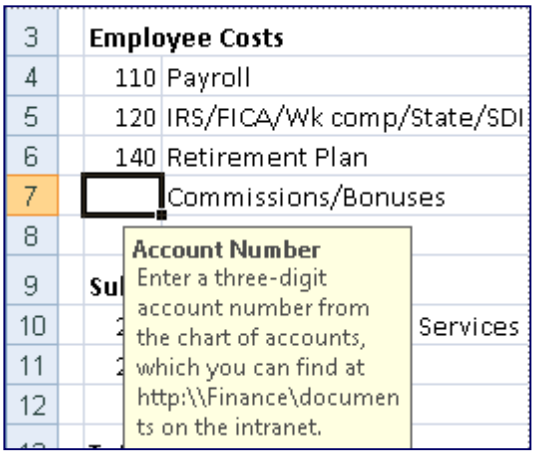


After making all the necessary selections in the validation list dialog box, your worksheet will produce a cell containing a drop down list (shown in cell A10 below) that behaves as shown.

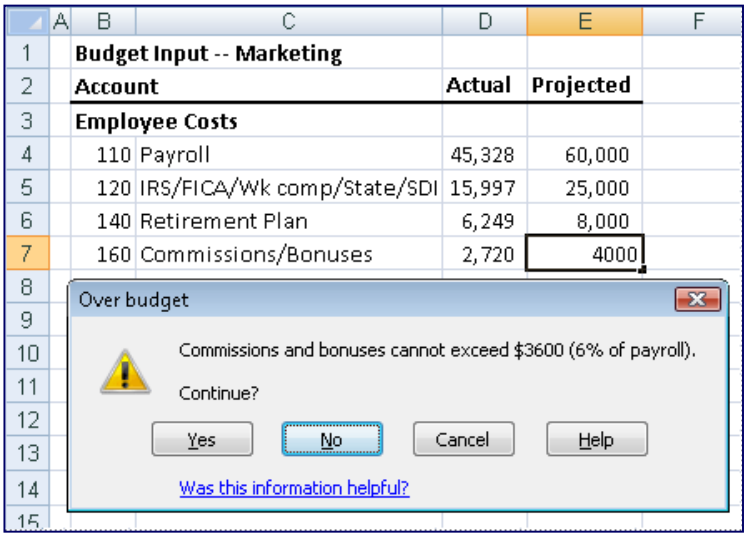


You can also provide messages to define what input you expect for the cell, and instructions to help users correct any errors. For example, on a worksheet, you can set up a cell to allow

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 display 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 the collection of what-if analysis commands, which include:

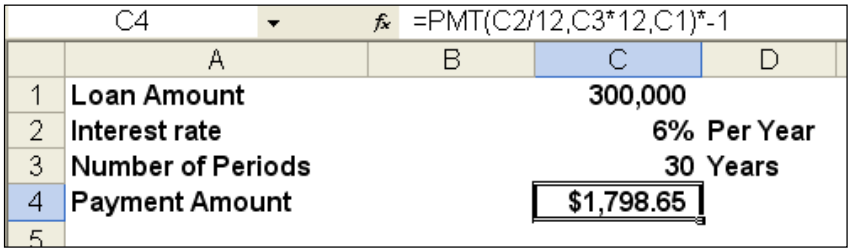
1. Data Tables
2. Goal Seek
3. Scenarios

The **Data Table** command enables the process of changing values in cells to see how those changes will affect the outcome. For example, you can use a data table to vary the interest rate and term length used in a loan to determine possible monthly payment amounts.

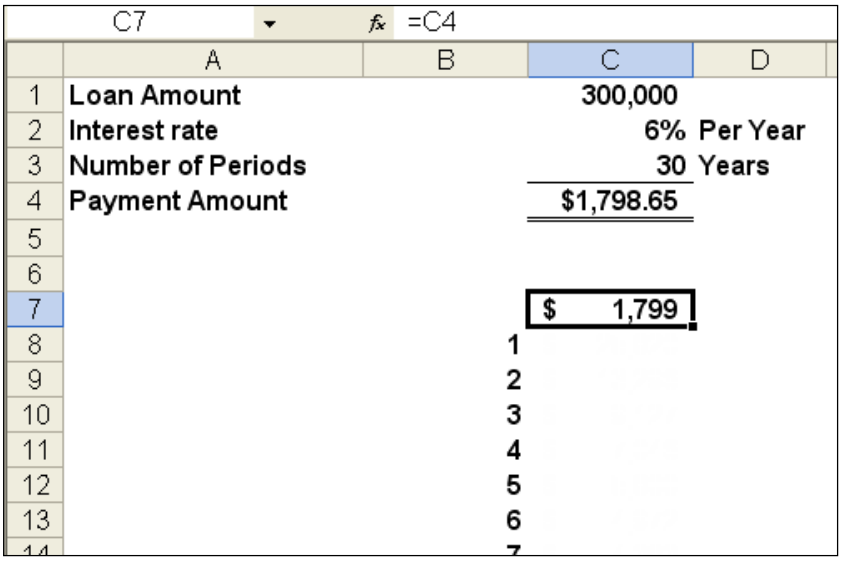
There are two types of **Data Tables** – **One Way** and **Two Way**. A data table cannot accommodate more than two variables. If you want to analyze more than two variables, you should use scenarios. Although it is limited to only one or two criterion (one for the row input cell and one for the column input cell), each criterion can include as many different variable values as you want. (In contrast, a **Scenario** can have a maximum of 32 different criterion, but you can create as many **Scenarios** as you want.)

Loan Analysis Example

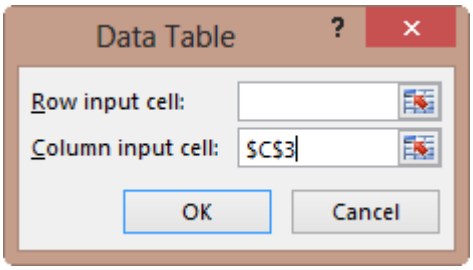
In this exercise, we start by creating a simple Payment function to calculate the payment amount of a loan given a loan amount, interest rate and number of periods.



The next step is to create a **Two-Way Data Table** displaying the resulting payment amount given a variety of lengths of the loan. This process is started by creating a list of the alternative loan amounts, as shown below in **B8, B9, B10**, etc. Cell **C7** must reference the results you want to be displayed in the table.



Next, highlight the data table range and use the **Data Table** command on the **Data** tab (as shown below) to generate the desired table.

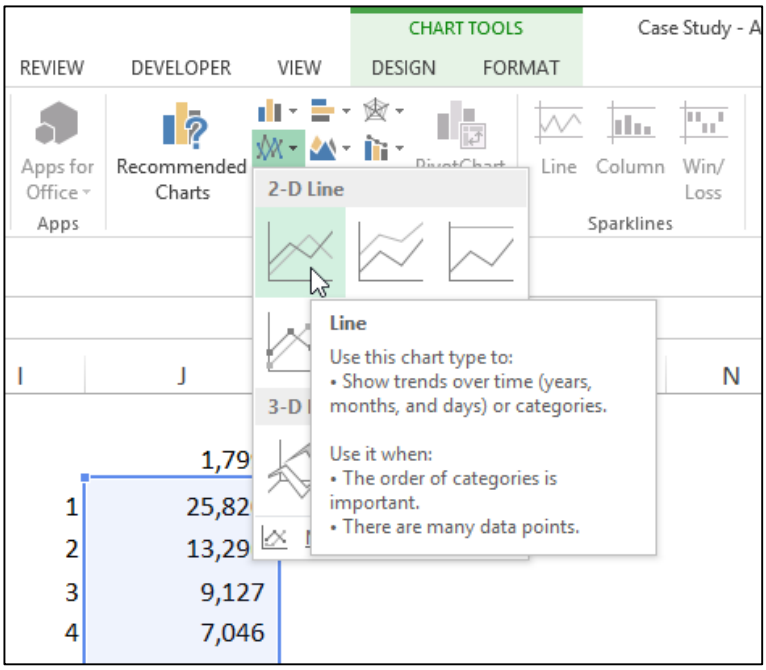


This process will generate the following table:

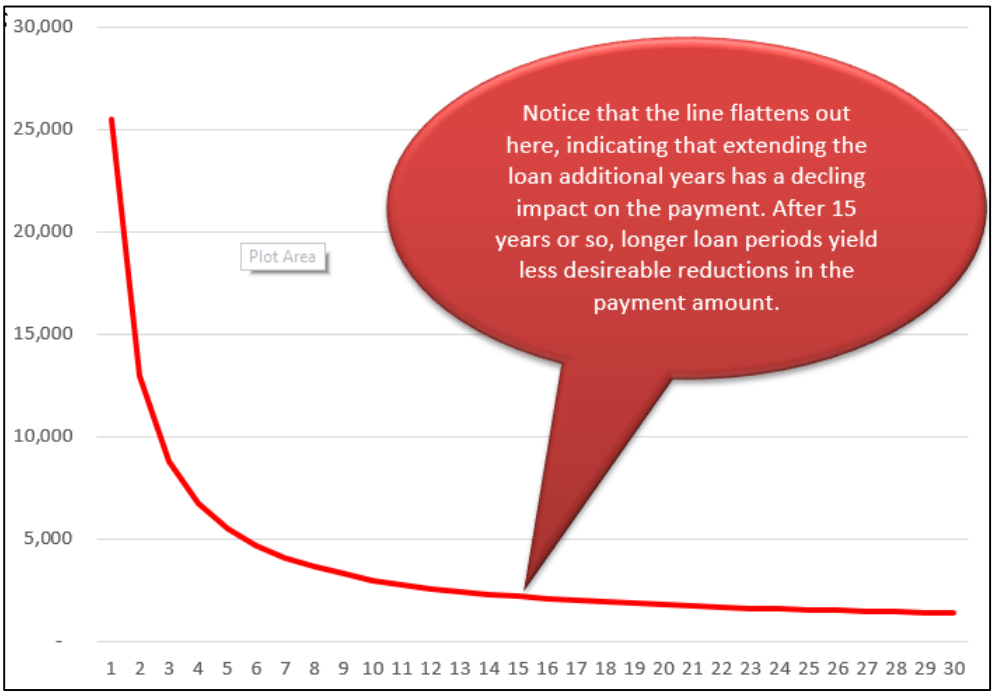
	A	B	C	D
1	Loan Amount		300,000	
2	Interest rate		6%	Per Year
3	Number of Periods		30	Years
4	Payment Amount		$1,798.65	
5				
6				
7			$ 1,799	
8		1	$ 25,820	
9		2	$ 13,296	
10		3	$ 9,127	
11		4	$ 7,046	
12		5	$ 5,800	
13		6	$ 4,972	

This table tells us that the same loan amount will require a monthly payment of $4,972 to pay the loan off in just 6 years, or a monthly payment of $5,800 to repay the loan in just 5 years.

To carry this case study a little further, the next step in this exercise is to generate a line chart based on the data table we just created. This line chart will provide some interesting observations regarding the benefits and detriments of paying off loans over longer periods.



The resulting chart is shown as follows:



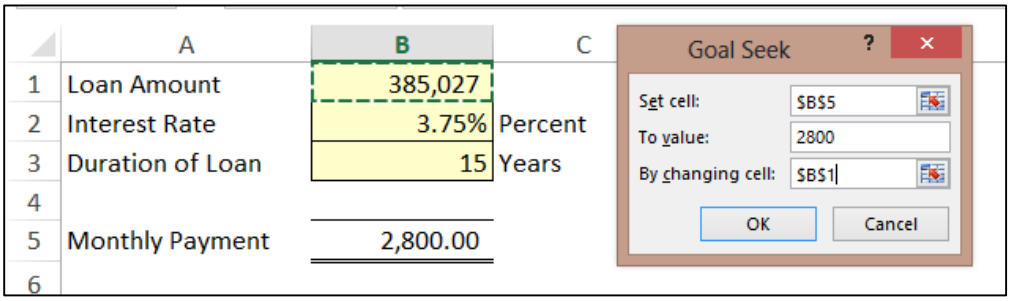
Based on this, no one should ever obtain a fair market loan for more than 15 years, the reduction in payments simply aren't worth the additional length of the loan. This same basic behavior is seen whether the interest rate is 1% or 100%, or whether the loan amount is $1,000 or $10,000,000. The only time you might be justified in obtaining a loan longer than 15 years might be when you are extended a favorable interest rate (perhaps from a rich uncle), better than a fair market interest rate.

Goal Seek

If you know the result that you want from a formula, but are not sure what input values are needed to produce your desired results, use **Goal Seek**. For example, suppose that you have decided to purchase a house, but you don't know how much house you can afford. In this case, know how the interest rate (3.75%) and how long you want to take to pay off the loan (15 years), and the amount you can afford to pay each month ($2,800). In this case, you can use **Goal Seek** to work backwards to figure out how much house you can afford. Start by calculating the monthly payment based on any random home loan amount as pictured below.

	A	B	C	D	E
1	Loan Amount	300,000			
2	Interest Rate	3.75%	Percent		
3	Duration of Loan	15	Years		
4					
5	Monthly Payment	2,181.67			

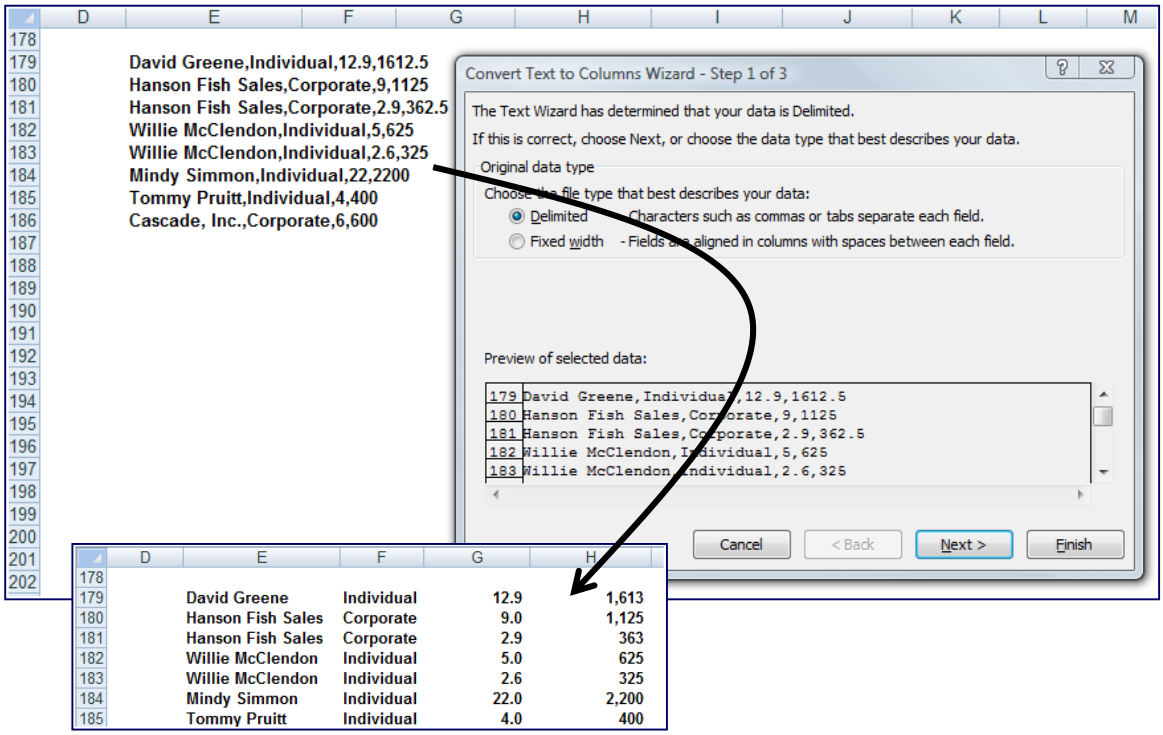
Next, from the **Data** tab, select **What-If Analysis, Goal Seek**. Fill in the parameters to set the payment amount to $2800 by adjusting the Loan Amount, as shown, and then click OK.



The result is that a person with $2,800 available to make monthly payments can afford to purchase a home costing up to $385,027 (assuming a 15 year loan and 3.75% interest rate) – as pictured above. (Keep in mind that anyone actually following this scenario would need to consider that homes also come with other monthly obligations including real estate taxes, insurance maintenance, etc.)

Data - Text to Columns

CPAs sometimes 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 cells. To use this tool, select the cell, range or entire column that contains the text values that you want to split.



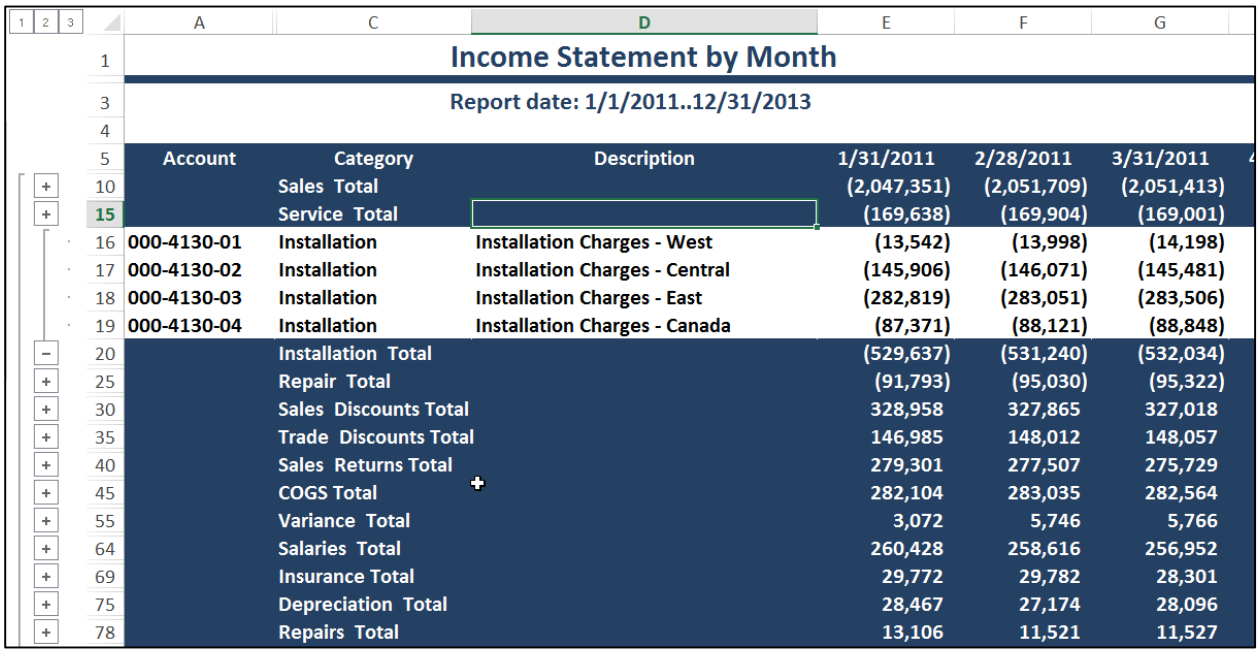
Notes:

1. A range that you want to split can include any number of rows, but it can include no more than one column.

2. You also should make sure there are enough blank columns to the right of the selected column to prevent overwriting existing data in those adjacent columns.

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. Each inner level (represented by a higher number in the outline symbols) displays detailed 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.



	A	C	D	E	F	G
1	Income Statement by Month					
3	Report date: 1/1/2011..12/31/2013					
4						
5	Account	Category	Description	1/31/2011	2/28/2011	3/31/2011
10		Sales Total		(2,047,351)	(2,051,709)	(2,051,413)
15		Service Total		(169,638)	(169,904)	(169,001)
16	000-4130-01	Installation	Installation Charges - West	(13,542)	(13,998)	(14,198)
17	000-4130-02	Installation	Installation Charges - Central	(145,906)	(146,071)	(145,481)
18	000-4130-03	Installation	Installation Charges - East	(282,819)	(283,051)	(283,506)
19	000-4130-04	Installation	Installation Charges - Canada	(87,371)	(88,121)	(88,848)
20		Installation Total		(529,637)	(531,240)	(532,034)
25		Repair Total		(91,793)	(95,030)	(95,322)
30		Sales Discounts Total		328,958	327,865	327,018
35		Trade Discounts Total		146,985	148,012	148,057
40		Sales Returns Total		279,301	277,507	275,729
45		COGS Total		282,104	283,035	282,564
55		Variance Total		3,072	5,746	5,766
64		Salaries Total		260,428	258,616	256,952
69		Insurance Total		29,772	29,782	28,301
75		Depreciation Total		28,467	27,174	28,096
78		Repairs Total		13,106	11,521	11,527

Queries

Excel 2010, 2007 & 2003 include pre-designed "queries" that can import commonly used data such as stock quotes for updating a stock portfolio. All you need is a connection to the internet and of course, some stock ticker symbols. In Excel 2010 or 2007 select **Data, Existing Connections, MSN MoneyCentral Stock Quotes** (or in Excel 2003 select **Data**, **Import External Data**, **Import Data Existing Connections, MSN MoneyCentral Stock Quotes)** and then walk through the web query wizard for importing stock quotes. In just a few seconds, Excel will retrieve Real-Time data for NYSE, NASDAQ & AMEX, and 20 minute delayed stock prices from other exchanges (during the hours when the stock market is open) and display a grid of complete up-to-date stock 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

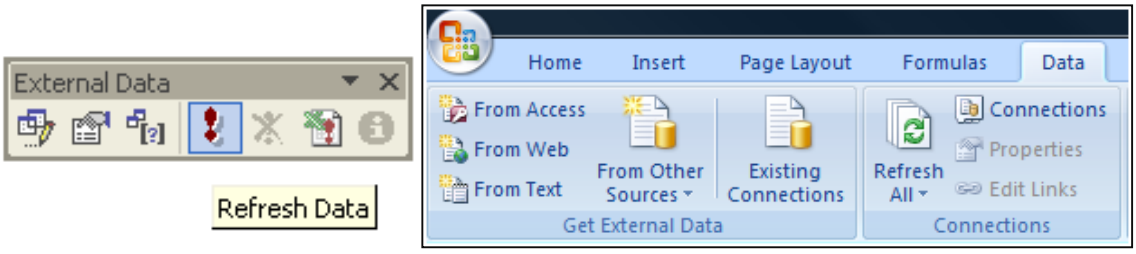
Completing the Stock Portfolio – Next link the grid data to another worksheet, and insert new columns containing the number of shares owned, as wells as an additional column to compute the total value based on shares owned, as shown below.

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 2010 & 2007 shown below to update the current value of your Portfolio.



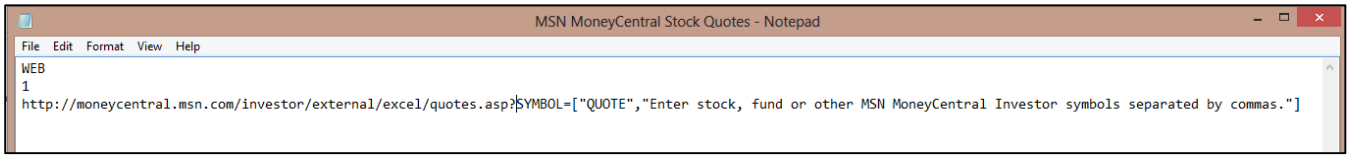
Query Parameters **-** There are numerous options to help you extract exactly the data you want the way you want it. The "Web Query Parameters Box", "Web Query Options box" and "External Data Properties Box" provide numerous options for controlling your web query.

Excel 2013 Stock Quote Queries

In Excel 2013, for unknown reasons Microsoft has removed the stock quote query option, therefore below are instructions for restoring this option.

1. Launch Notepad (**Start, Programs, Windows Accessories, Notepad**)

2. Enter the following information exactly:

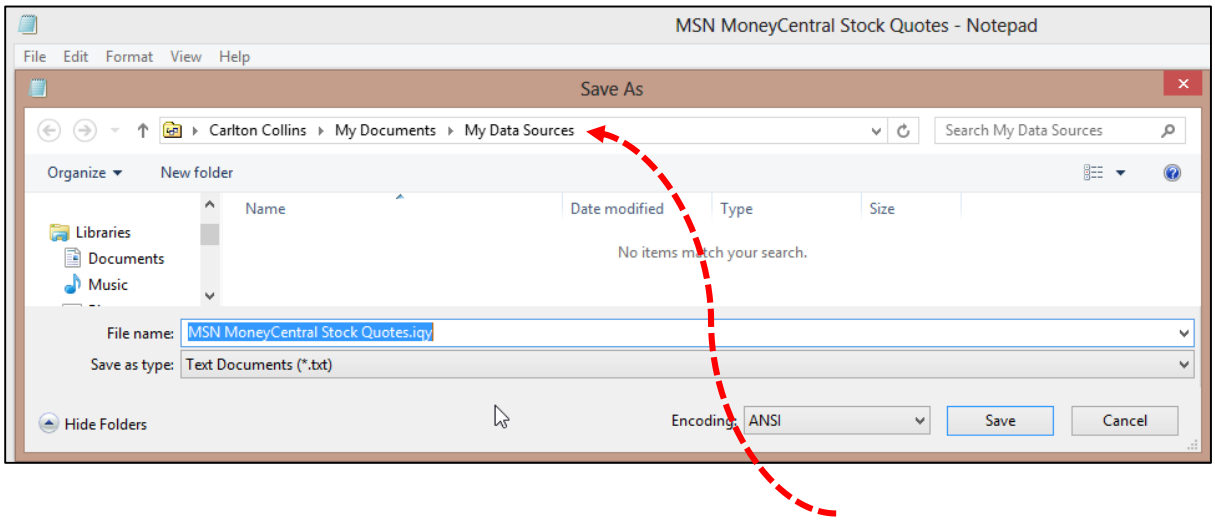


Web
1
http://moneycentral.msn.com/investor/external/excel/quotes.asp?SYMBOL=["QUOTE","
Enter stock, fund or other MSN MoneyCentral Investor symbols separated by commas."]

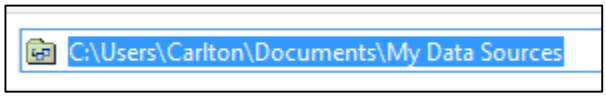
Or if you prefer, use this to query Yahoo's stock prices:

```
WEB
1
http://finance.yahoo.com/q?
s=["stock1","Please enter a stock symbol:"]
```

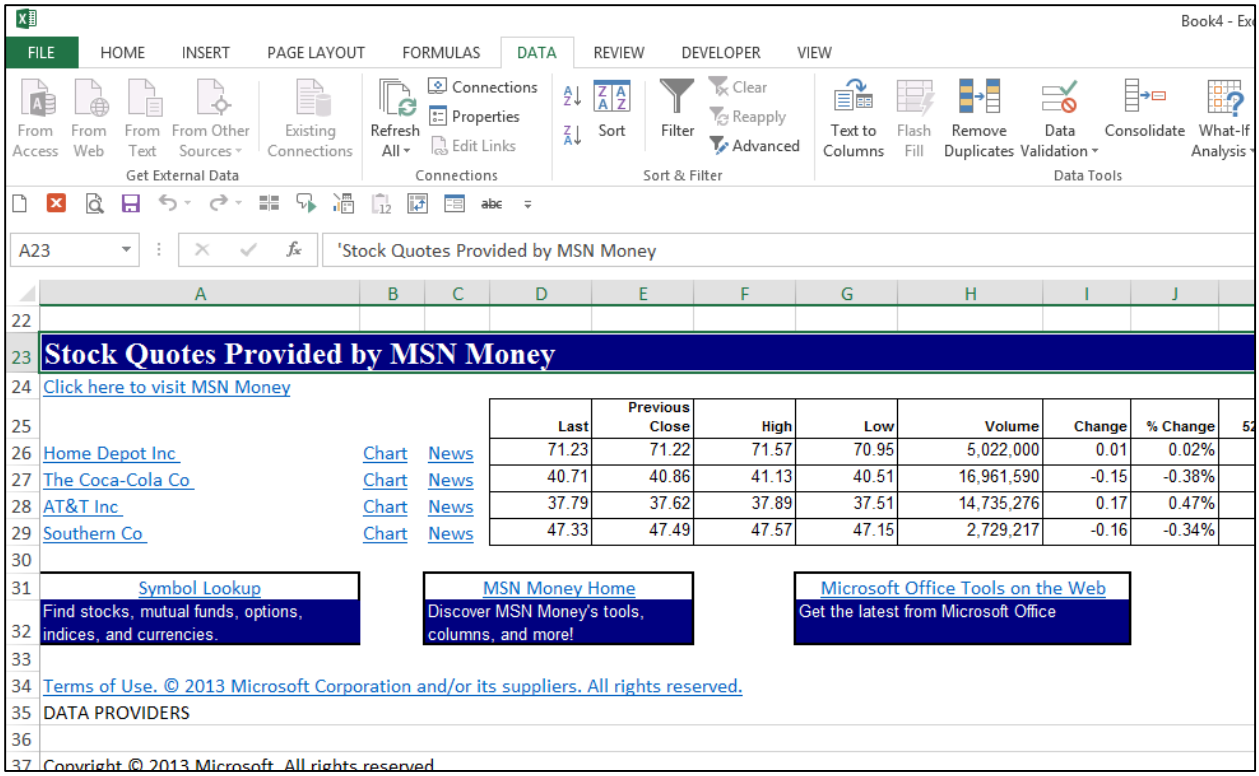
3. Save the file using any name you want, but be sure to include the extension **.igy** as pictured.



4. Make sure to save this file to the folder labeled **My Data Sources**.



5. Now in Excel, from the **Data** tab select **Existing Queries**, then scroll to and launch the new query you just created – it should work just like it did in Excel 2010, 2007 and 2003.


Book4 - Ex
FILE
HOME
INSERT
PAGE LAYOUT
FORMULAS
DATA
REVIEW
DEVELOPER
VIEW
From Access
From Web
From Text
From Other Sources
Existing Connections
Get External Data
Refresh All
Connections
Properties
Edit Links
Connections
Sort
Filter
Clear
Reapply
Advanced
Sort & Filter
Text to Columns
Flash Fill
Remove Duplicates
Data Validation
Consolidate
What-If Analysis
Data Tools
A23
'Stock Quotes Provided by MSN Money
Stock Quotes Provided by MSN Money
Click here to visit MSN Money
Last
Previous Close
High
Low
Volume
Change
% Change
Home Depot Inc
Chart
News
71.23
71.22
71.57
70.95
5,022,000
0.01
0.02%
The Coca-Cola Co
Chart
News
40.71
40.86
41.13
40.51
16,961,590
-0.15
-0.38%
AT&T Inc
Chart
News
37.79
37.62
37.89
37.51
14,735,276
0.17
0.47%
Southern Co
Chart
News
47.33
47.49
47.57
47.15
2,729,217
-0.16
-0.34%
Symbol Lookup
Find stocks, mutual funds, options, indices, and currencies.
MSN Money Home
Discover MSN Money's tools, columns, and more!
Microsoft Office Tools on the Web
Get the latest from Microsoft Office
Terms of Use. © 2013 Microsoft Corporation and/or its suppliers. All rights reserved.
DATA PROVIDERS
Copyright © 2013 Microsoft. All rights reserved.

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.

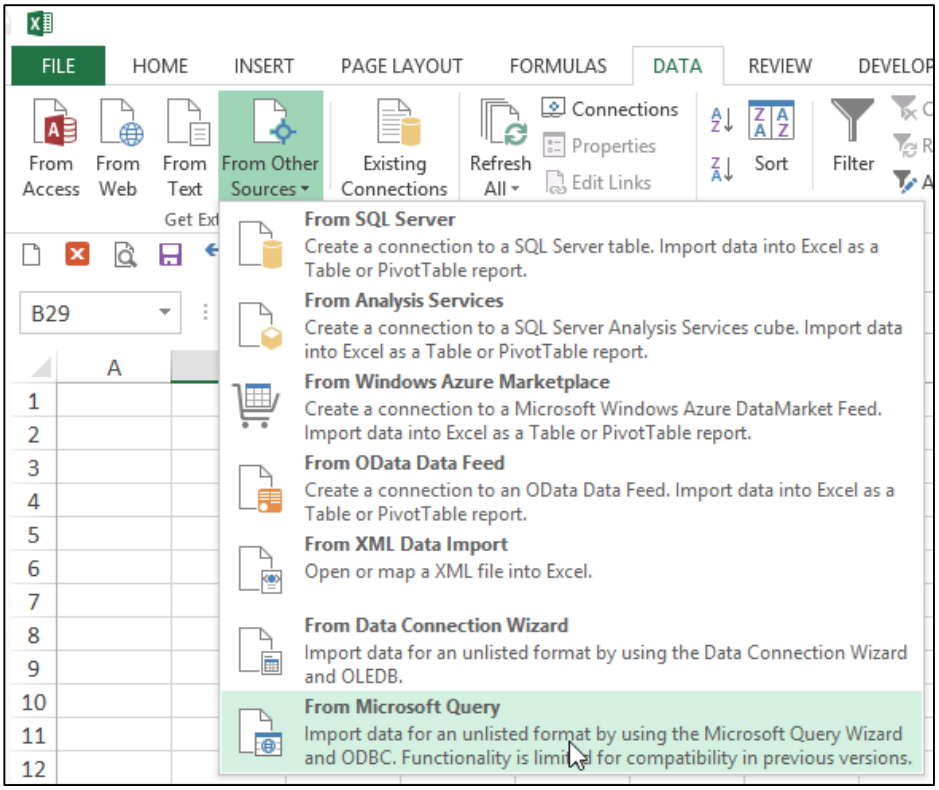
To use Microsoft Query to retrieve external data, you must:

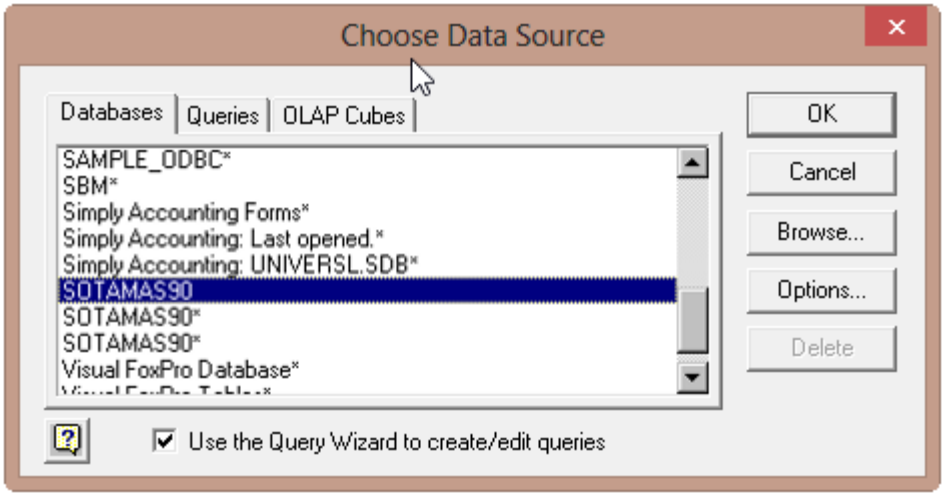
4. **Have access to an external data source -** If the data is not on your local computer, you may need to see the administrator of the external database for a password, user permission, or other information about how to connect to the database.

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

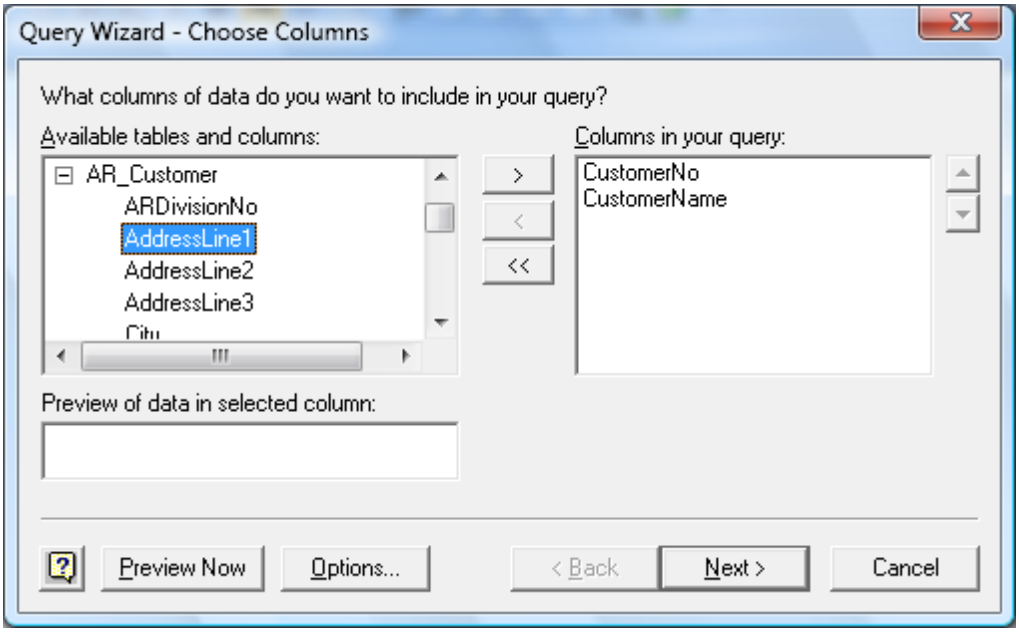
6. **Specify a source to retrieve data from, and then start using Microsoft Query** - For example, if you want to insert database information, display the Database toolbar, click Insert Database, click Get Data, and then click MS Query.

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, as follows.

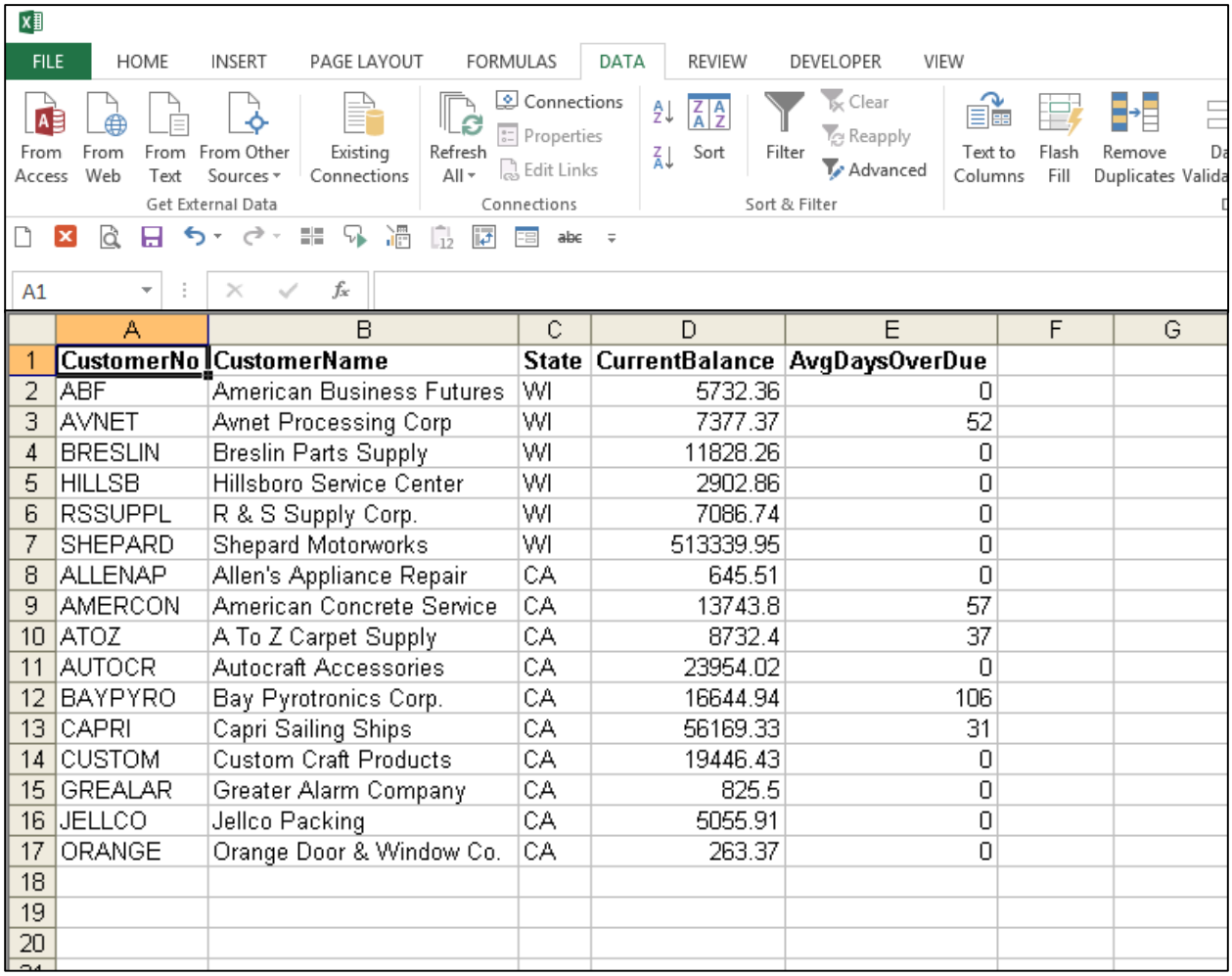




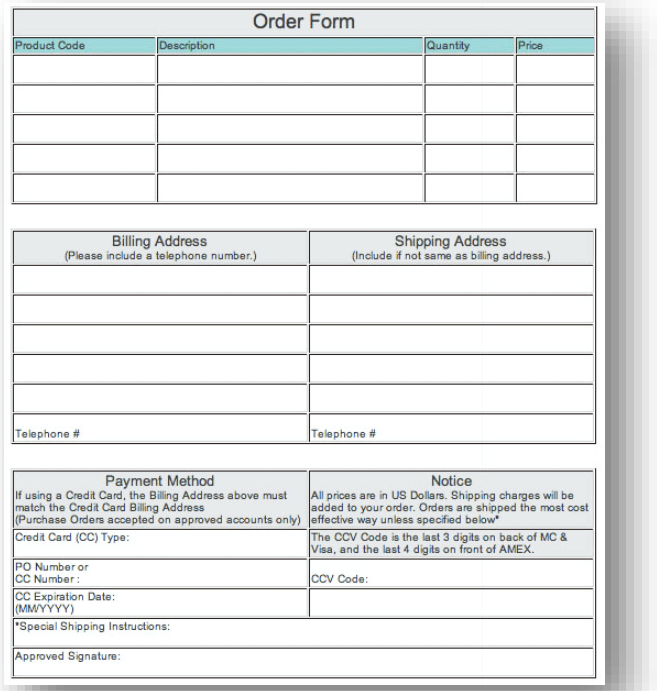
The first step is to select the type of database you want to query and to select the specific database.



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 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							



Order Form

Product Code	Description	Quantity	Price

Billing Address (Please include a telephone number.)	Shipping Address (Include if not same as billing address.)
Telephone #	Telephone #

Payment Method If using a Credit Card, the Billing Address above must match the Credit Card Billing Address (Purchase Orders accepted on approved accounts only)	Notice All prices are in US Dollars. Shipping charges will be added to your order. Orders are shipped the most cost effective way unless specified below*
Credit Card (CC) Type:	The CCV Code is the last 3 digits on back of MC & Visa, and the last 4 digits on front of AMEX.
PO Number or CC Number :	CCV Code:
CC Expiration Date: (MM/YYYY)	
*Special Shipping Instructions:	
Approved Signature:	

Chapter 6

Copy Shop Sales Order Case Study

As an accounting software installer, I've learned from experience that most businesses can pick blindly from among the top accounting systems in the world and pretty much get the job done. From one business to the next, accounts payable needs, payroll needs, trial balance needs, reporting needs, and even inventory needs are similar and well covered by today's top accounting systems. However, there is one area which differs dramatically - and that area is in the sales order. It turns out that each company sells differing kinds of products and services with options so varied, that few accounting systems are prepared to handle those needs. In this situation, I make a bold claim that an Excel template can be easily used to fill in the missing gaps and supplement any accounting software system to provide excellent order taking capabilities.

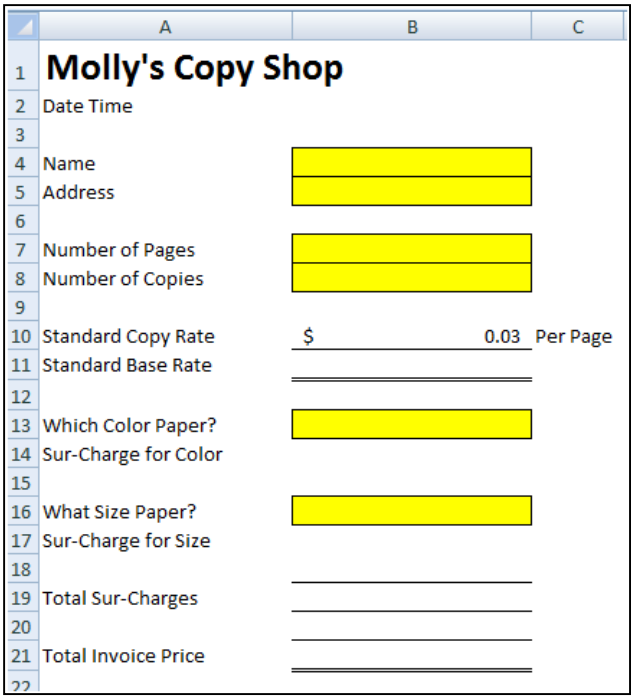
In this case study, let us assume that we are working with a small copy shop – a small family owned company with about $300,000 in revenue. In this case they have determined that QuickBooks meets all of there needs, except for order taking. Therefore our goal will be to build a Sales Order system using Excel in only a few minutes. Listed below are the key elements that you will learn in this case study:

1. Neat and Organized Worksheet Design
2. =NOW()
3. Data Validation Lists
4. =VLOOKUP
5. Creating Macro Buttons
6. Creating Macros
7. Relative versus Absolute Macros
8. Worksheet Protection

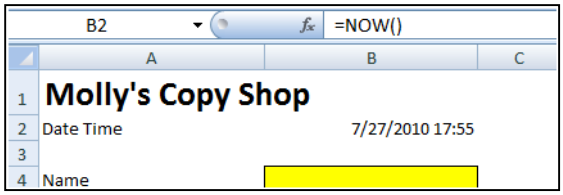
Think about a copy shop for a minute, what is so difficult about taking an order in a copy shop? It is the options. How many copies would you like? Do you want that printed on front and back? Stapled or Bound? What kind of binding? What size paper? What color paper? What pound paper? Do you want regular or fast delivery? These are all standard questions asked by a copy shop, yet QuickBooks, nor any high end accounting system is able to take such an order. Even the million dollar solutions aren't equipped to take such an order. These companies must instead resort to purchasing a software application called a "product configurator", solutions which can costs $75,000 to $750,000 or more. To make matters more difficult, there are often rules associated with various options – for example, when ordering a car, if you order the sun roof option, you can not also order the T-Top option. Product configurators must account for and accommoate these types of situations.

1. Let us begin by simply labeling our sales order form. As you can see in the screen to the right, we've added some labels and highlighted some data input fields with yellow background and gridline borders.

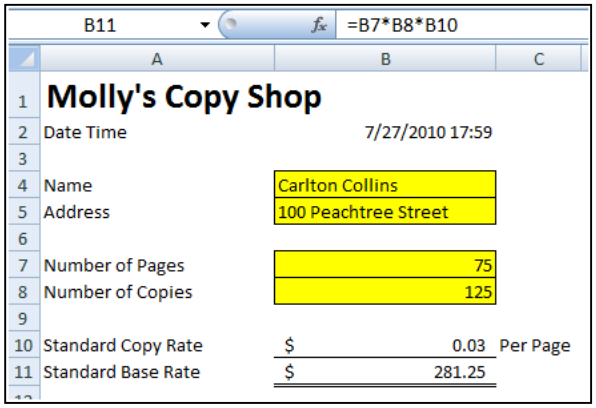
   (For purposes of this case study, we will only build in options for color and size, but once you get the hang of it, adding in additional options for paper weight, binding, duplex printing, etc is a rather simple matter.)



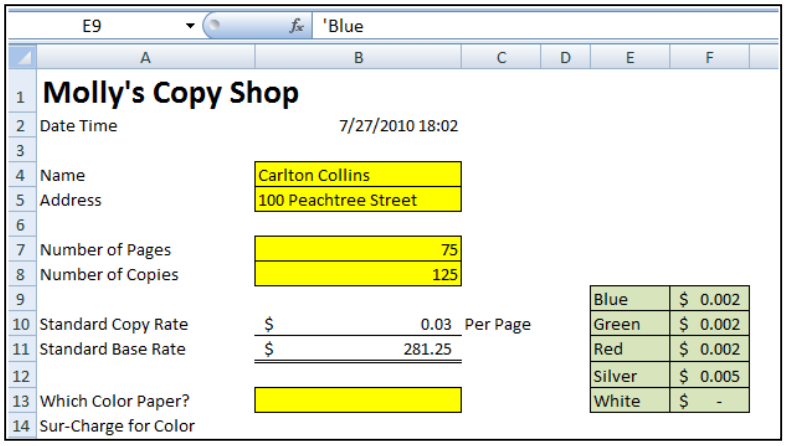
2. **=NOW()** – Next we type in the Excel Function =NOW(). This will cause Excel to display the computer's date and time each time an order is produced. You can see the =NOW() function in the formula bar and the results displayed in cell B2 below.



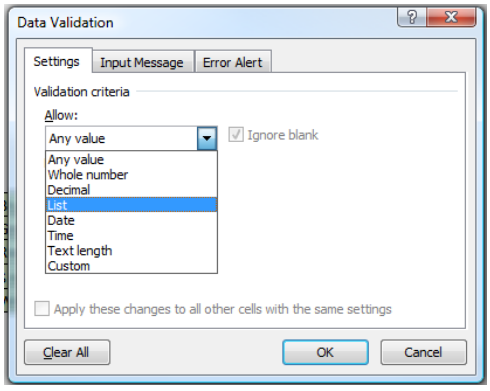
3. **Calculations for Base Rate** – Next we add simple calculations to multiply the total number of pages to be copied by the total number of copies and the base rate per copy. To make it easier to visualize, I have added some customer data. (The formula contained in cell B11 is displayed in the formula bar.)

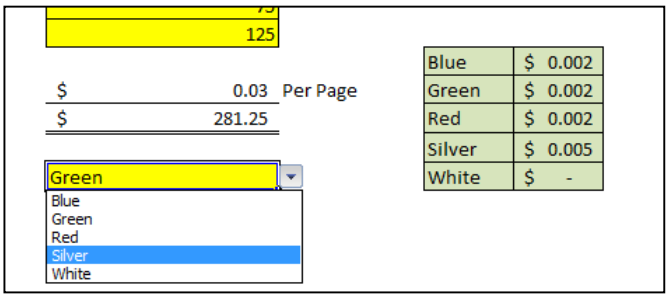


4. **Color Options** – Next I created a table of the color options along with a sur-charge rate per page for each color. Notice that there is a "zero" sur-charge when selecting white paper. Make sure to sort your table in descending order because we plan to refer to that table via a Lookup function – and as we all know, lookup functions do not work properly unless the table array is sorted in descending order. To make the table of options more readable, I applied gridlines and a greenish background.

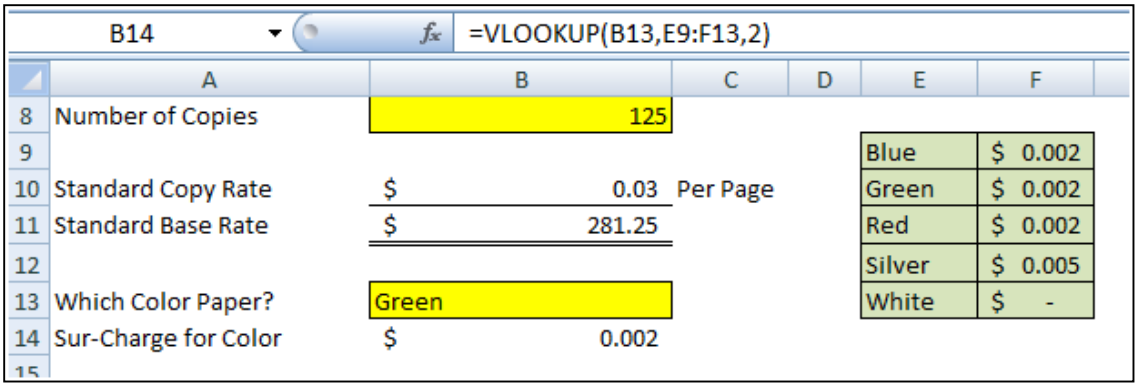


5. **Data List Validation** – Now this is where the excitement begins. Next I create a data validation list in cell B13 using column one of my options table. To do this, select B13, and choose Data validation from the Data Ribbon. Next select List and use the Cell Chooser to highlight the options in column one of your color options table.



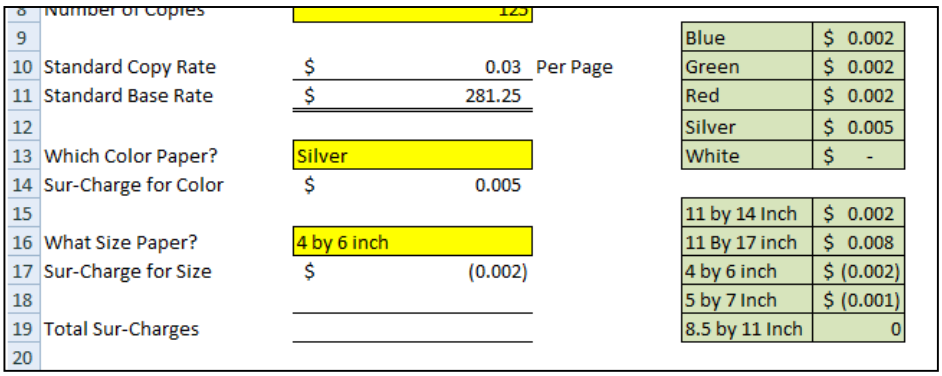


6. **=VLOOKUP** – Next I inserted a =VLOOKUP function in cell B14 to return the Sur-Charge rate based on the Color Selected.



Notice that when you select different colors in cell B13, the rate in Cell B14 changes according to the Color Option table.

7. **Size Options -** Repeat steps 4,5 & 6 above to also create Size Options.



8. **Invoice Total** – From here it is an easy step to add calculations to total the invoice. Of course your complete invoice would also include sales tax calculations as well. Our example is kept as simple as possible to make sure that the key points come across as easy as possible. Here's what we have so far:

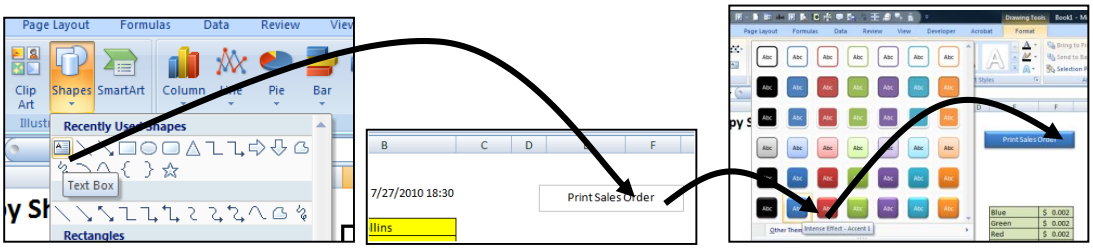
B19 =(B14+B17)*B8*B7

	A	B	C	D	E	F
1	**Molly's Copy Shop**					
2	Date Time	7/27/2010 18:30				
3						
4	Name	Carlton Collins				
5	Address	100 Peachtree Street				
6						
7	Number of Pages	75				
8	Number of Copies	125				
9						
10	Standard Copy Rate	$ 0.03	Per Page			
11	Standard Base Rate	$ 281.25				
12						
13	Which Color Paper?	Silver				
14	Sur-Charge for Color	$ 0.005				
15						
16	What Size Paper?	8.5 by 11 Inch				
17	Sur-Charge for Size	$ -				
18						
19	Total Sur-Charges	$ 46.875				
20						
21	Total Invoice Price	$ 328.13				
22						

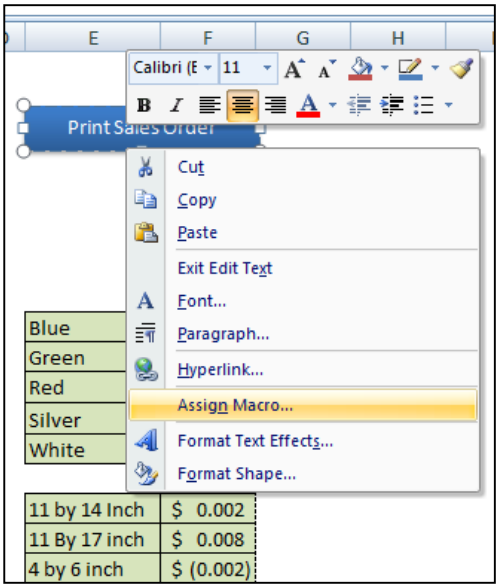
Blue	$ 0.002
Green	$ 0.002
Red	$ 0.002
Silver	$ 0.005
White	$ -

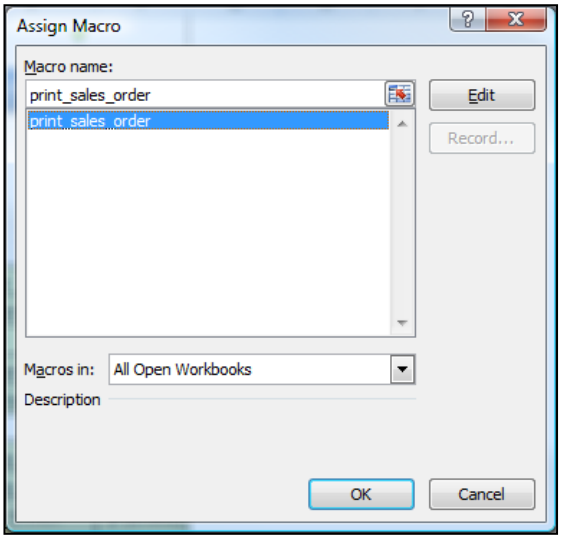
11 by 14 Inch	$ 0.002
11 By 17 inch	$ 0.008
4 by 6 inch	$ (0.002)
5 by 7 Inch	$ (0.001)
8.5 by 11 Inch	0

9. **Macro Buttons** – To make the Sales Order form easier to use, next we will add three macro buttons. We start this process by creating a single text box, and use the Drawing Tools to make it look fancy. Here are steps:



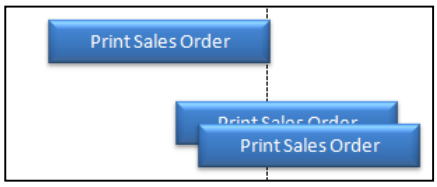
10. **Create the Print Macro** – Next create a print macro by selecting "Macro, Record Macro" from the "View Ribbon" *(make sure that no spaces are used in your macro name and save the macro to "This Workbook)*. Set the "Print Area" appropriately to display your Sales Order Form. Next simply highlight your Sales Order Form and print three copies, then stop recording your macro by selecting "Macro, Stop Recording" from the "View Ribbon". Once completed assign the Macro to the Print Sales Order Button by right mouse clicking and selecting "Assign Macro". The right click menu and the Assign Macro Dialog box are shown in the two screens below.



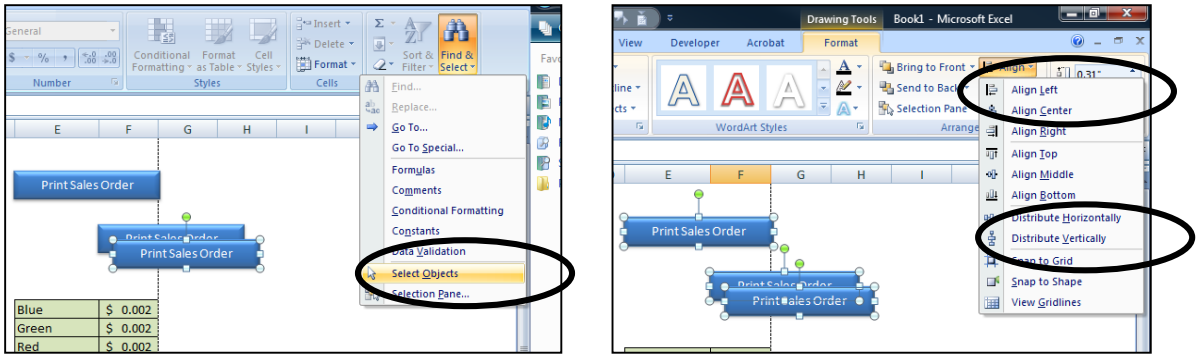


You want to print three copies of the Sales Order as follows: One for your customer's records; One for your product people to follow when making the copies, and one for bookkeeper to use when entering the invoice amount into QuickBooks.

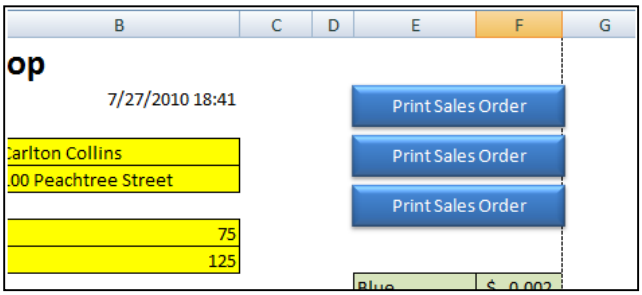
11. **Additional Macro Buttons** – Next right click on the edge of the existing macro button twice, and choose "Copy"; then click away from the button and Paste twice. This will create two exact copies of your macro button. (You must right click twice on the edge of the button to display the second menu of options.)



Next select the "Select Objects" menu option from the "Home" Ribbon's "Find and Select" menu in the "Edit" Group. Then lasso the three buttons and from the "Drawing Tools", use the Alignment tools to left justify and Distribute Vertically the three buttons.



The results will appear as follows:



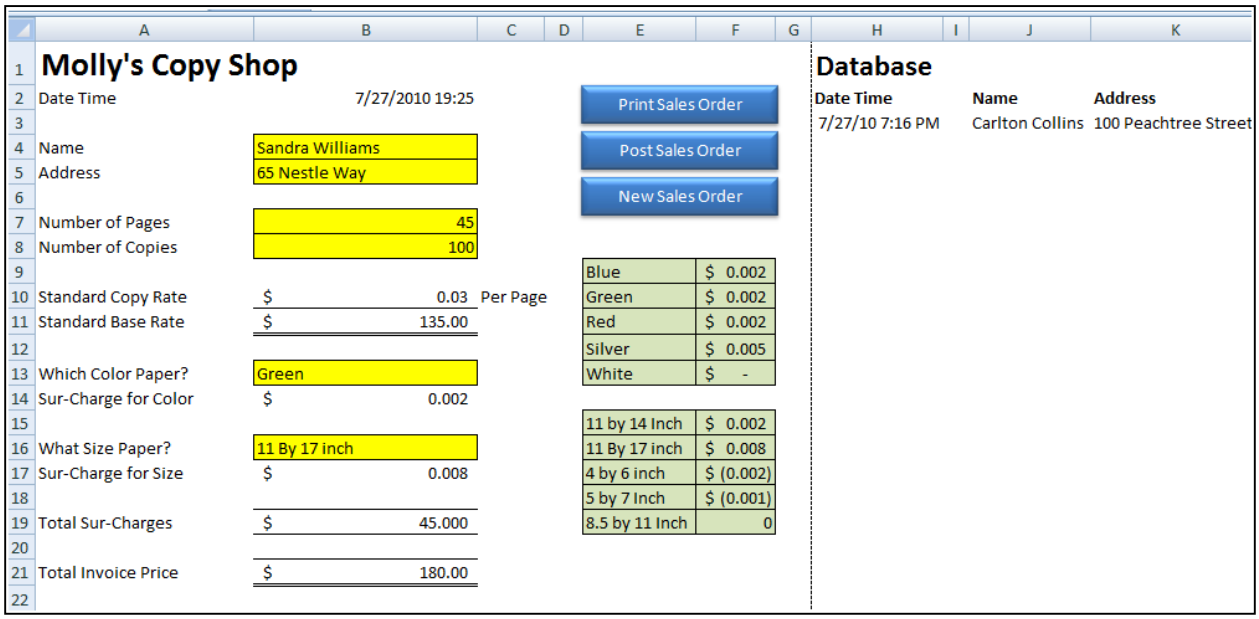
Press escape to deselect the "Object Pointer" tool, and return your cursor to normal.

12. **Post Sales Order Macro Button** – Next I created a macro to post the sales order information to a database. This is complicated and I will demonstrate several teaching points in class to help you fully understand the process of writing a combination relative and absolute Here are the steps:

    a. Relabel the second Macro Button to Read "Post Sales Order". This will require you to first right mouse click on the button and select the text, or if you prefer, remove the macro before continuing.
    b. Highlight cells B2 thru B21 and label that range "salesorderdata" using the Name Box.
    c. Go to Cell H1 and enter the phrase "Database" in cell H1.
    d. Label cell H1 "database" using the Name Box.
    e. Copy the labels in cells A2 thru A21 and Paste Transpose them to cell H2.
    f. Start recording a macro named "postsalesorder".
    g. Click the "Use Relative References" option from the Macros Group on the View Ribbon.
    h. Press the F5 key to launch the GoTo Dialog Box.
    i. Select the range "salesorderdata" by double clicking on the word "salesorderdata".
    j. With your cursor hovering above the selected range, right mouse click and choose "Copy".
    k. Press the F5 key to launch the GoTo Dialog Box.
    l. Select the range "database" by double clicking on the word "database".
    m. Press the End key, followed by the Down Arrow. (You will now be on the last row.)
    n. Press the Down Arrow. (You will now be on a blank row underneath the last row.)

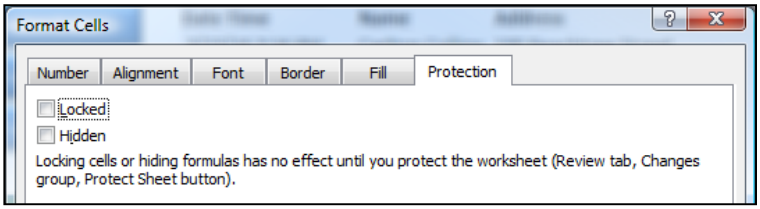
o. With your cursor hovering above the selected range, right mouse click and choose "Paste Special".
p. In the paste Special Dialog Box, check Values and Check Transpose, and click OK.
q. Place your cursor on cell A1.
r. Stop recording the macro by selecting "Macro, Stop Recording" from the "View Ribbon.
s. Assign the newly recorded macro to the Post Sales order macro Button.
t. Select Column H and format it to display Time and Date.
u. Adjust the width of your database columns to your preference.

13. **New Sales Order Macro Button** – Finally, edit the Third macro Button to Read "New sales Order" and create a macro that selects the yellow background data cells and deletes the contents. (Make sure to toggle the "Use Relative References" option off because this macro needs to be an absolute macro.) (Also make sure to select Cell B4, then hold the CTRL key down while you also select the other yellow back ground cells). Before you Stop Recording this macro, click on cell B4 so your cursor will be in the correct place to start recording a new sales order.



14. **Testing** – Test your three macros by filling in new sales order information, then click the three macro buttons in sequence to print, post and delete your data.

15. **Unlock Data Input Cells** – Next, select the cells containing the yellow background and also select the database columns (Hold the CTRL key down to make multiple selections. Then format the those cells to unlock them by right mouse clicking atop your selection and selecting "Format Cells, and unchecking the Locked Box on the protection tab – as shown below:



16. **Protect Your Worksheet** - Finally turn on worksheet protection by selecting "Protect Sheet" from the Review ribbon. Enter a password and repeat the password. This will prevent you or others from making accidental changes to the formulas and data contained in your template.

17. **Keep in Mind –** This case study covered the basics, but you could enhance this template a number of ways. Here are a few example hints:

    a. Combine the three macro buttons into one button that performs all tasks – printing, posting, and deleting.
    b. You might add an invoice number to the top of the page. Each time you post, your macro might also create a temporary formula in an empty cell that refers to the invoice number and adds one, then copies pastes that result atop the invoice number cell using the paste value command. Make sure the macro then deletes the formula in the temporary cell.
    c. You could easily add more options to your order form.
    d. Notice that we also included an option to decrease our price if a smaller paper size is selected.
    e. The sales order form could be dressed up to look far more professional. Colors, grids, logos, etc. could all be added to make the sales order form match the accounting system, for example.
    f. You could copy the worksheet and edit a second order for to be used in different situations. For example, Worksheet A might contain an order form that charges regular rates when a regular customer enters the store, and Worksheet B could charge higher rates when a lawyer enters the store – and so on.
    g. The resulting database will continue to compile each sales order as posted, adding new orders to the bottom of the database area each time you post.
    h. The bookkeeper need only record the date, customer name, address, and total amount due in QuickBooks. The printed Sales Order copies on file will serve as supporting documentation.
    i. You can download a copy of this example template from www.CarltonCollins.com – click the Excel Link.

Plan and book your vacations well in advanced, that we you will get to look forward to them longer, and you may benefit from research and feedback you get from your friends for making the trip more enjoyable.

Chapter 7

What's New in Excel 2013?

What's New in Microsoft Office 2013?

This course covers 8 hours of the very best and most essential Excel 2013 functionality that CPAs should be using in the performance of their jobs. This course is best suited for moderate level Excel users who know how to use the basic functionality of Excel, but have seldom explored the more powerful features and capabilities that Excel has to offer, including the following new features found in Excel 2013.

New in Excel 2013

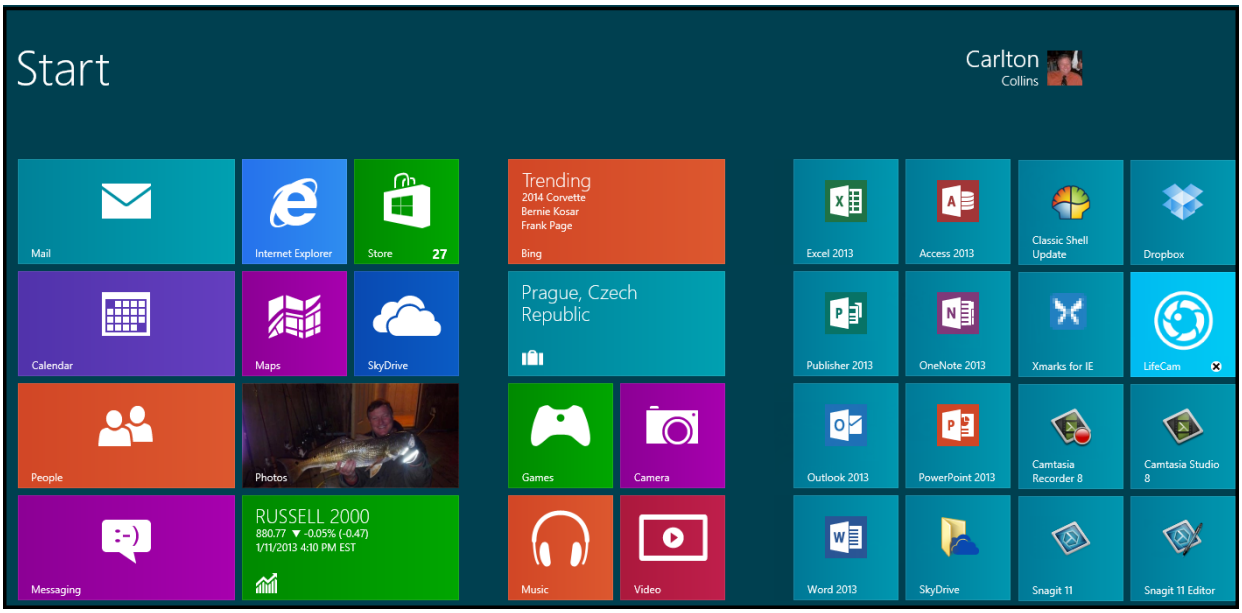
1. **Quick Tour of Menus –** Almost identical to Excel 2010
2. **Touch-Screen Enabled** – Makes Excel accessible on touch-screen mobile devices.
3. **Windows 8 Style Tiles** – Match Windows 8 tiles, easier to touch on a smaller mobile device.
4. **Cloud-Enabled** – Save Excel workbooks directly to your free cloud data storage SkyDrive.
    a. **SkyDrive (20 to 25 GBs)**
    b. **Get A Link** – Send Excel workbooks links instead of workbooks via email.
    c. **Publish Excel Data to Social Media** – Embed Workbooks directly in Facebook.
5. **Office 2013 Web Apps** – a free version of Excel 2013 is available via the cloud.
6. **Subscription Pricing** – Enables you to install Excel on five devices, and run Excel from the cloud.
    a) **Installs on more PCs**
    b) **Never upgrade again**
    c) **Superior iMap email**
    d) **Better security**
    e) **File Sharing**
    f) **Eliminate upfront capital costs**
    g) **Eliminate balance sheet liabilities**
7. **Excel Instances** - Excel now opens each workbook in a separate instance.
8. **Flash Fill** - Watches you work and applies logic to help you complete your tasks.
9. **Timeline Slicer** - Helps you slice and dice Pivot data containing dates.
10. **Recommended Pivot Tables & Charts –** To help you work quicker and easier.
11. **Quick Analysis** - Helps you analyze data more quickly by offering data layouts.
12. **PowerView** - Enables you to create new report types, such as the interactive map charts.
13. **Create Relationships Tool –** Enables you to build PivotTables from multiple data sources.
14. **More Tables –** Add multiple tables to a PivotTable
15. **Drill Up and Cross Drill** - Drill upward and cross drill to related tables.
16. **New PivotTable Tools** - Decouple PivotCharts so they stand alone.
17. **New Chart Controls** - Excel pops up new chart controls.
18. **Review Tools** - New inquire Add-in reviews design, function and data dependencies.
19. **Excel Compare Tool** - Similar to Word's Compare tool.
20. **Fifty New Functions** – Bring the total number of functions to 455.
21. **Office on Demand** - https://office.microsoft.com/en-us/myoffice.aspx?CTT=97
22. **Managing Updates –** From the File, Account menu, you can set how updates install.

These concepts are described in greater depth below.

1. **No Changes to the 2013 Ribbons -** Many CPAs worry that Office's new touch-screen functionality means the product's new ribbons that will be time-consuming to learn, but this is not the case. Office 2013's ribbons work and look almost exactly like Office 2010's ribbons, and transitioning to the new product involves only a minor learning curve. While the new touch-screen controls provide new ways to launch and use the applications on touch-screen devices, the 2010-style ribbon along with a standard keyboard and mouse remains to be the primary means for operating the product.

2. **Touch-Enabled -** On mobile devices, the ribbons offer the same menu options, but they are redesigned to better fit smaller hand-held devices. Most of Office's new touch controls work similar to mouse-clicks, but new gestures have been added. For example, you can navigate Excel workbooks or multiple pages in Word by swiping your finger across the screen. You can also pinch and spread to shrink or enlarge your spreadsheets, documents or presentations. A new **Touch Mode** button inserts more space around the Ribbon's icons so operating the touch controls on smaller devices is a little easier.

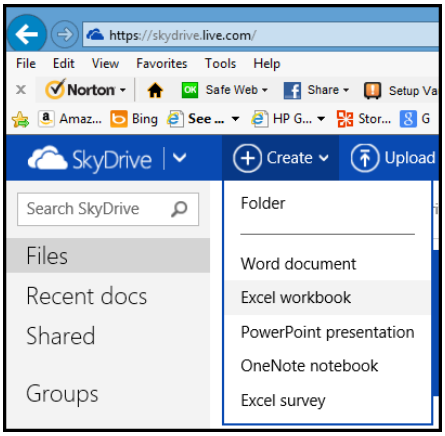
3. **Windows 8 Style Tiles** - Office's new square, color-coded tiles *(see figure)* are used to launch applications on your tablet, smartphone, or computers equipped with touch-screen monitors. The tiles can be resized and rearranged to your preference, and the color-coded schemes make it easier to identify and select the correct application. Office's tiles match the Windows 8 tiles which have been praised by some for their simplicity and utility.



Examples of Office 2013 Quick Launch Tiles in Windows 8

4. **Quick Demonstration of Excel 2013 on a Touchscreen Mobile Device-**

5. **Cloud Enabled -** Office binds you to the cloud in many ways. For example, Office automatically connects to your free cloud-based SkyDrive which includes 20 GBs of data storage space, email account, contact management, calendar management, and the following free web apps: 2013 editions of Word, Excel, PowerPoint, and OneNote. These web apps are cloud-based versions of the popular applications (with limited commands and features), accessible from any web browser on a desktop, laptop, tablet or smartphone device.



Office 2013's Free Web Apps

a) See SkyDrive on the smartphone.
b) See example of opening the same Excel file from SkyDrive on Desktop computer.

c) **File, Info** – Pick the sheets that browsers can see when opening that file.
d) Save a file to SkyDrive, show options to invite people, get a link, Post to Facebook or email.

6. **Web Apps -** Since everyone has access to the free web apps, troublesome file-sharing barriers and file compatibility issues are removed; therefore, CPAs can use Office 2013 with the confidence of knowing that documents and workbooks they produce can be easily viewed and edited by others.

7. **Subscription Rental Plan -** Microsoft offers Office via a subscription plan and many CPAs are finding the rental plan to be a better option than purchasing the product. Pricing options and functionality for selected Office 2013 editions are summarized in the *table* below.

Office Edition	Users/PCs	Price	Included
Purchase Options:			
Office Home & Business	1 user/3 PCs	$279.99	Word, Excel, PowerPoint, OneNote, Outlook
Office Professional	1 user/2 PCs	$499.99	Word, Excel, PowerPoint, OneNote, Outlook, Access, Publisher
Subscription Options:			
Office 365 Professional Plus	1 user/5 PCs	$15/Month	Word, Excel, PowerPoint, OneNote, Outlook, Access, Publisher
Office 365 E3 Plan	1 user/5 PCs	$20/Month	Word, Excel, PowerPoint, OneNote, Outlook, Access, Publisher, Cloud-based email, Web conferencing, Shared calendars, Cloud-based team sites, Office Web Apps

Pricing Options for Selected Editions of Office 2013

Seven advantages for renting rather than purchasing are as follows:

1. **Installs on more PCs** - The subscription plan allows you to install Office professional on five computers or devices, compared to just two or three installations with the purchased product.

2. **Never upgrade again** – Renters will never face an upgrade decision again as future product enhancements are included automatically.

3. **Superior iMap email** - The subscription plan includes a cloud-based email solution using iMap (Internet Message Access Protocol), which is stronger than the traditional Pop3 (Post Office Protocol) email solution. This is because iMap maintains email messages, replies, contacts, tasks and calendars in a central location so you can access them from any of your computers, the web, or mobile devices. In contrast, Pop3 maintains this information on the individual computers, thus accessing this information from multiple computers or devices is more problematic.

4. **Better security** - In the cloud, data is securely encrypted from your computer to the cloud, and your data remains encrypted in the cloud. Your data is also backed up automatically on a continuous basis and is protected by world-class firewalls, anti-virus software, and intrusion monitoring solutions. A significant amount of technology, cost and effort is needed to duplicate this level of security on a local computer or file server.

   Exception – Warning!!!

   Microsoft's agreement allows them to read your files!!!

   Here's the code of conduct agreement:
   http://windows.microsoft.com/en-us/windows-live/code-of-conduct

   Here's an example article in Forbes:
   http://www.forbes.com/sites/kellyclay/2012/07/19/is-microsoft-spying-on-skydrive-users/

5. **File Sharing** – The subscription plan includes a cloud-based SkyDrive (starting at 20 GBs), team management tools, and file syncing options to help groups work in collaboration. You can grant permission to others to access your SkyDrive files or folders, even if they don't use Office. In the cloud environment, email attachments are unnecessary because you can send recipients a link instead of attachments; as a result, emails travel faster, deliveries are no longer hung up due to attached file size restrictions, and attachments no longer contribute to oversized inbox data files.

6. **Eliminate upfront capital costs** – For larger companies, the subscription plan eliminates their need to borrow money to purchase product. By opting for the "pay as go" subscription plan, companies can expense the costs as a monthly operating expense;

7. **Eliminate balance sheet liabilities –** For larger companies, FASB 47 requires disclosure of long term obligations, but because Office's subscription plan requires no long-term commitment, these rental obligations need not be included on the balance sheet.

New Features in Excel 2013

8. **Excel Now Opens Each Workbook in a Separate Instance** - Prior to Excel 2013, Excel opened multiple workbooks in the same instance of Excel by default. However, it was possible to launch Excel twice, and open workbooks in separate instances – but this approach had a problem in that Excel's **Paste** function behaves differently when pasting between two instances of Excel compared to pasting between two workbooks opened in the same instance of Excel. Specifically, Excel 2010 and prior editions did not allow you to copy formulas back and forth between Excel files opened in separate instances – only the formula's calculated value was pasted to the other instance of Excel.

   Excel 2013 now solves this problem allowing you to copy and paste formulas between separate instances of Excel. (FYI - Word has always opened Doc files in separate instances).

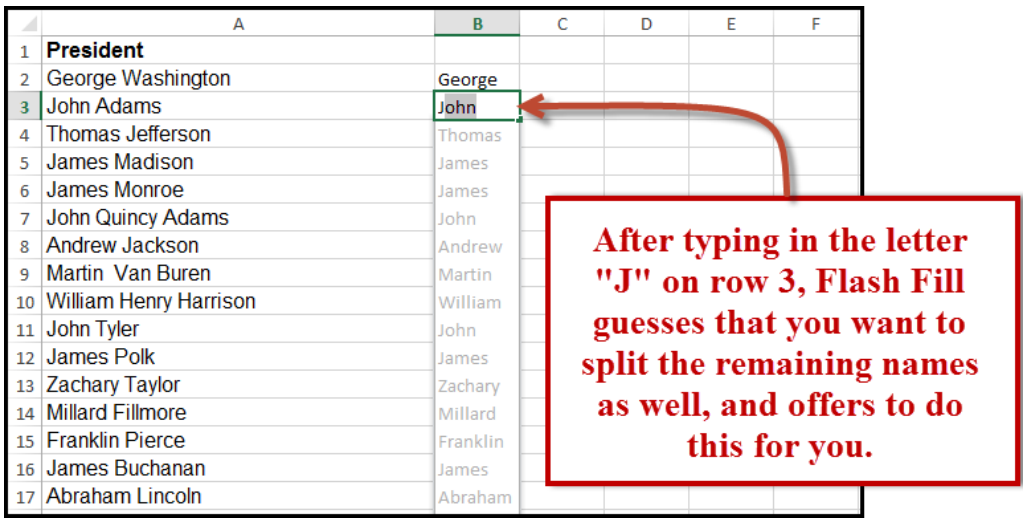
   This issue came to light once CPAs started using dual monitors, and they launched excel on each monitor only to find they could not copy and paste formulas back and forth. In case you have clients or colleagues that still use an older edition of Excel, here are the procedures that you had to follow to display two workbooks simultaneously on dual monitors, and preserve the ability to copy and paste formulas:

   1. *Open only one instance of Excel.*
   2. *Restore down the Excel window by double-clicking the Title Bar located at the top of the window.*
   3. *Stretch the window across both monitors by hovering your mouse pointer over either the left or right edge of the window until your pointer becomes a double arrow, then click and drag the window across both monitors.*
   4. *Open two Excel workbooks.*

5. *In Excel 2007 and 2010, select Arrange All from the View tab to display the two workbooks side-by-side, each appearing in a separate monitor. In Excel 2003, select Arrange from the Window menu, select Tiled, and click OK.*
6. *You can now use Paste Special, Value, Add between the two Excel workbooks displayed on separate monitors.*

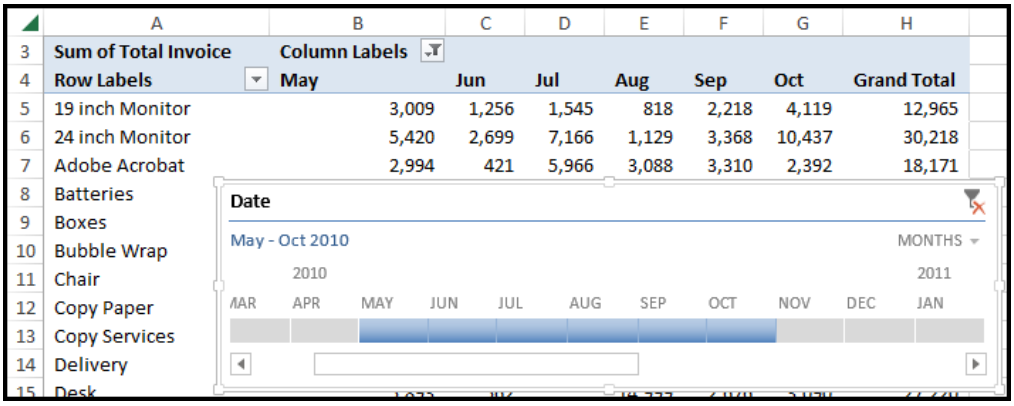
   Note: To avoid undesirable results when stretching a window across two monitors, make sure both monitors are set to the same display resolution.

9. **Flash Fill** - Of all the Office 2013 applications, Excel is the beneficiary of the most impressive enhancements. Excel's new **Flash Fill** watches you work and applies logic to help you complete your tasks. The example pictured below *(see figure below)* contains a list of 44 first and last names in Column A, which I want to separate into Columns B and C. As I start typing the first name of the second record in Column B; Excel's **Flash Fill** guesses what I'm trying to do and offers to fill in the remaining 42 first names *(as shown in grey text)*.



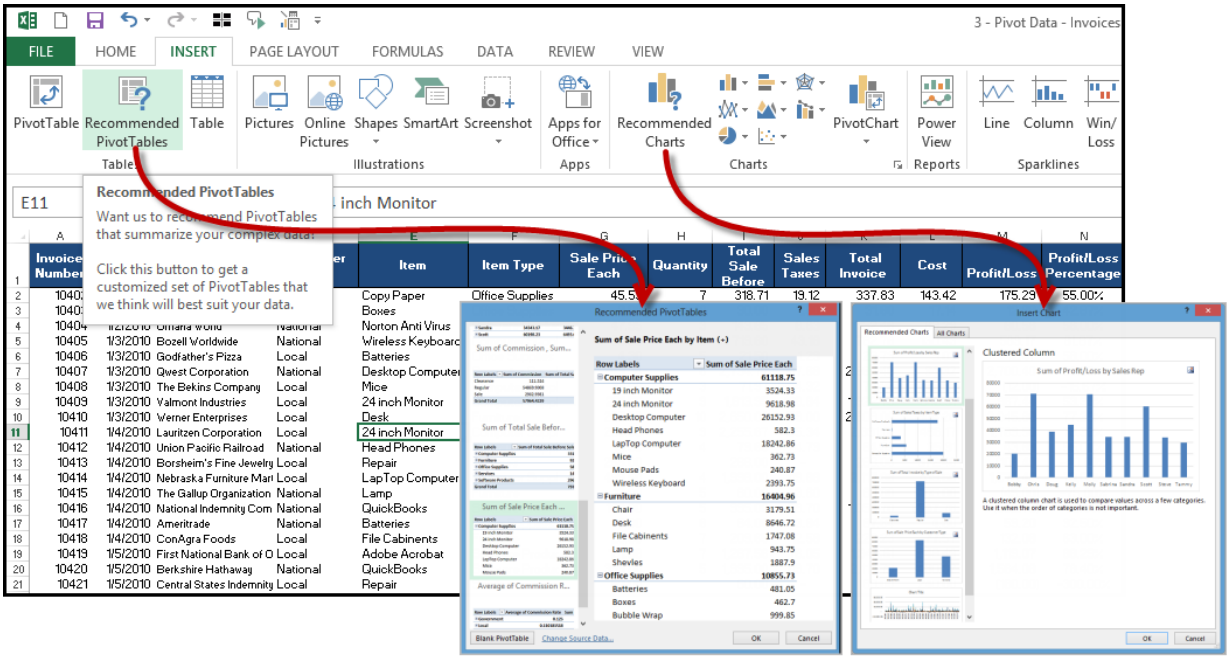
Excel's New Flash Fill Tool

10. **Timeline Slicer** - Excel's new **Timeline Slicer** which helps users *slice and dice* Pivot data that contain dates. As an example, selecting the dates May through October on the Timeline slicer (pictured) adjusts the PivotTable to display May thru October data.



Excel's New Timeline Slicer provides a
Visual Method of Filtering a PivotTable by Date

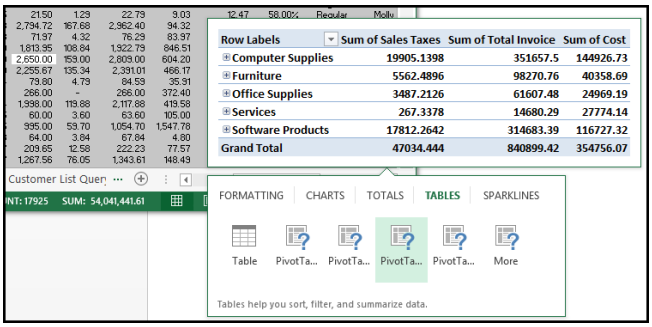
Recommended PivotTables and PivotCharts - Excel offers new tools which can analyze your data and recommend a variety of PivotTable and Chart layouts to best illustrate the data. This new functionality is especially useful to novice users who are less familiar with Excel's functionality, but can also help avid Excel users save time too. Simply place the cursor anywhere in your data area and select **Recommended PivotTables** (or **Recommended Charts**) and in return, Excel offers various PivotTable and Chart options and as pictured in the *figure*.



Excel's New Recommend PivotTables and Recommend Charts Tools

Excel's **Quick Analysis** tool also helps you analyze data by offering a variety of formatting, charts, totals, tables and sparkline layouts to instantly summarize large volumes of data *(see*

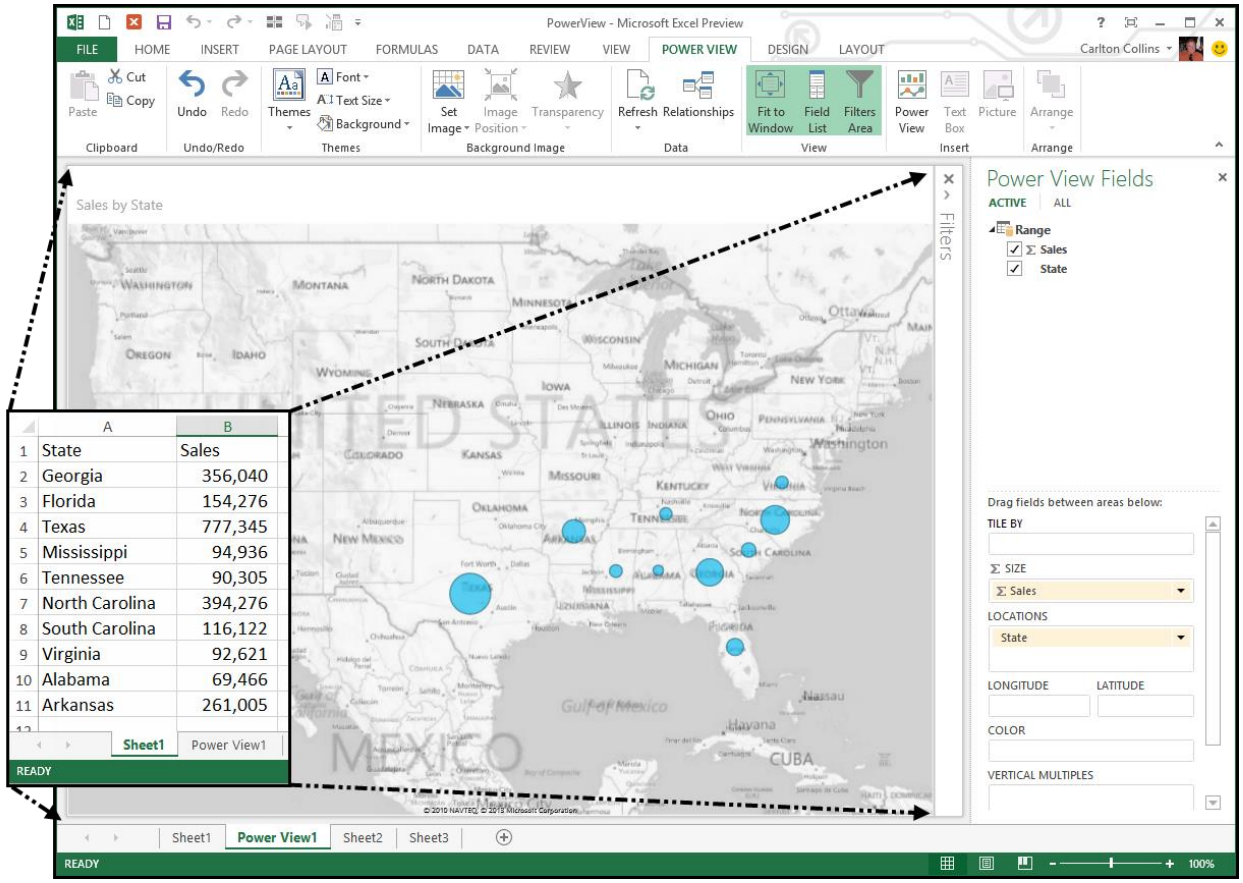
figure below). When using Quick Analysis to scrutinize text-only data, text specific options for highlighting duplicate or unique text items appear.



Example of Excel's New Quick Analysis Tool

Simply place your cursor in your data area and then press **Ctrl + A** to highlight your data. Then in the bottom right corner make your selections.

PowerView - Excel's new **PowerView** inserts new worksheets connected to your data, and then enables you to create new report types, such as the interactive map chart presented in the *figure below*. The resulting PowerView Map report is zoomable, and filters can be applied to display partial data.



PowerView Tool Depicting a New Zoomable Map View

A few points about PowerView:

1. PowerView is not included in Office 2013 Professional subscription, it is available in the Office 2013 Professional purchased product and the Office 2013 Professional ***Plus*** Subscription.

2. You can try PowerView for free here, as prepared in Excel 2013 and published to SharePoint: http://www.microsoft.com/en-us/bi/GetMicrosoftBI/TryIt.aspx

3. For demonstration purposes, I will select the ***Contoso Tab, Contoso Sample Data***

4. PowerView produces a dashboard containing multiple PowerViews, each with it's own unique view and capabilities.

5. For example, the ***Scatter Chart*** includes a ***Play button***, so you can view data over time.

6. By default, all PowerView reports are linked so one filter applies to all reports. Or if you prefer, click the Filter button in the upper right corner (as you hover a chart) to gain more control over filtering using the ***View tab*** versus ***Chart tab***.

7. An ***Advanced Filter Button***, enables you to apply more advanced filters, such as *"only those transactions greater than $1,000"*.

8. PowerView worksheets can be published as standalone, interactive reports to Microsoft SharePoint's PowerPivot Gallery or other reporting service destinations.

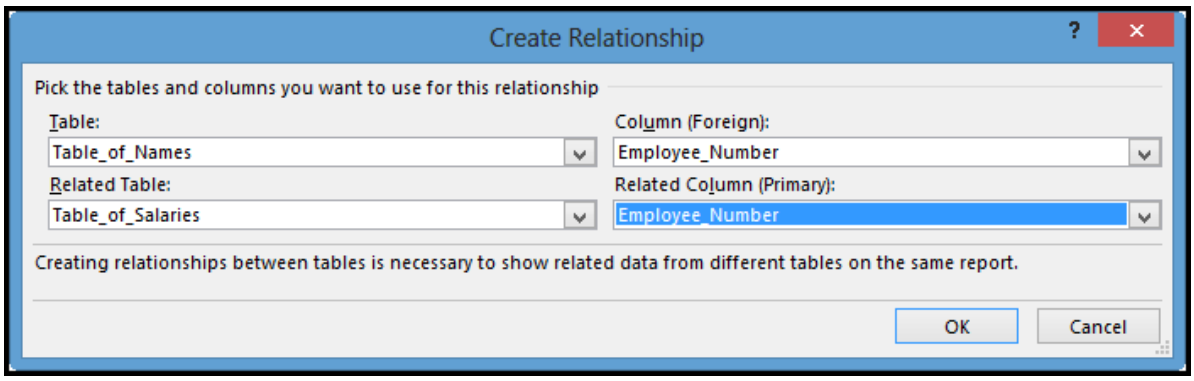
9. You can apply themes and backgrounds, insert pictures and text boxes, insert collapsible and expandable tiles, and add data slicers.

10. I'll give you a quick demonstration using Excel 2013.

    a. Invoices
    b. Quick PowerView Map
    c. Quick PowerView Scatter Chart
    d. Play the PowerView Scatter Chart

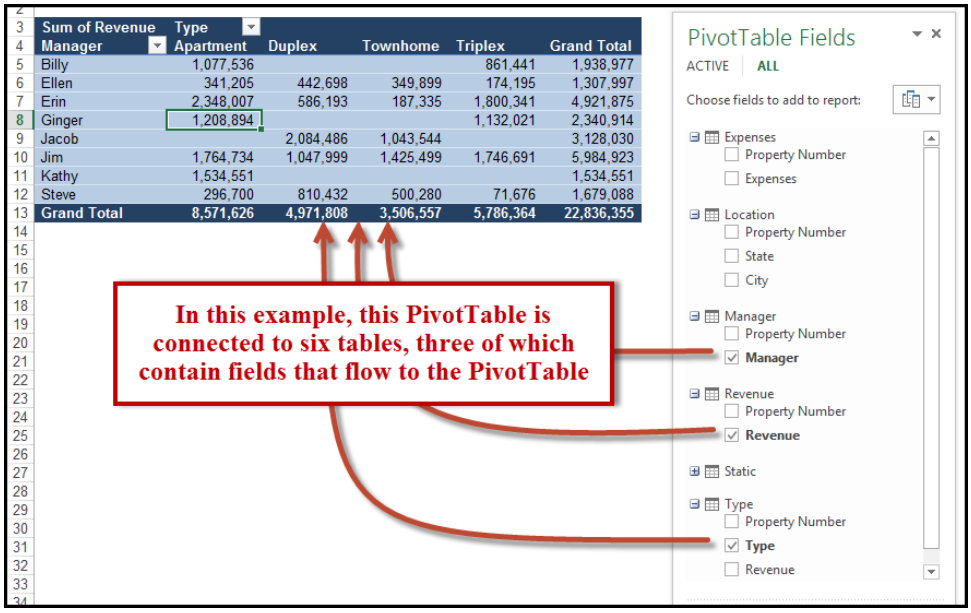
Create Relationships - As an advanced enhancement, Excel provides the new **Create Relationships** tool for building table relationships in workbooks that contain at least two tables sharing at least one common field name.

Before you start, you first need to convert your data to **Tables**, using the **Insert Tables** tool. Then, with a PowerView selected, click the **Create Relationships** tool and fill out the resulting dialog box pictured below.



Excel's New Relationship Tool for Pivoting Multiple Sources of Data

Once relationships are established, the **More Tables** option can be used to display additional tables allowing you to add data fields from mutiple tables to PivotTables, as pictured.



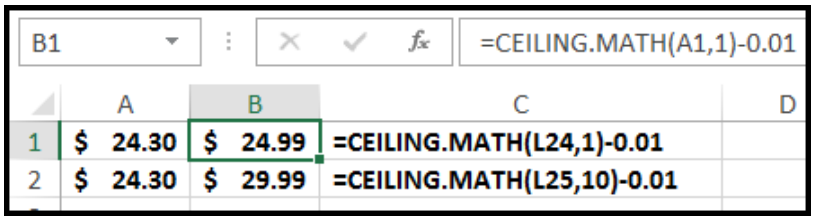
Connecting Multiple Sources of Data to a PivotTable

Drill Up and **Cross Drill** - Another PivotTable enhancement involves drillability. Previously, users could only drill down on PivotTable data, but now you can also **Drill Up** and **Cross Drill** to related tables.

50 New Functions - Microsoft has added 50 new functions to Excel (increasing the total number of functions to 450), and the following 12 new functions in particular will appeal to many CPAs.

1. **ARABIC** – Converts roman numerals to regular numbers, for example V, IX, and XX are converted to 5, 9, and 20.

2. **CEILING.MATH** – This function can be used to round a number up to a specific interval, such as the nearest 99 cents, as demonstrated in *figure 10*.



Example Use of Excel's New Ceiling.Math Function

3. **DAYS** – Calculates the number of days between two dates.

4. **FLOOR.MATH** - Rounds numbers down to a specific interval, and also can be used to round negative numbers towards zero, instead of towards a smaller number. For example, -8.5 can be rounded to -8.0 (instead of the -9.0 results delivered by the older **Round** function).

5. **FORMULATEXT** – Displays referenced formulas as text, and can be used to improve formula reading, reviewing and printing.

6. **ISFORMULA** – Returns the value TRUE if the referenced cell contains a formula.

7. **ISOWEEKNUM** – Calculates the week during the year in which a given date falls. As an example, I used this formula to determine that I was born in the 53rd week of 1959.

8. **PDURATION** - Returns the number of periods required by an investment to reach a specified value. For example, you could calculate that $1,000 invested at 6% APR would take 26.89 years to reach a value of $5,000. (This function approach is faster than constructing a 322 row table to figure this out.)

9. **RRI** – This function returns an equivalent interest rate for the growth of an investment. For example, you could calculate that a $1,200 mutual investment that grew to $5,600 in 18 years earned an average return of 8.93%.

10. **SHEET** – Calculates the sheet number of the referenced sheet. For example, you might use this function to determine that your interest rate assumptions are entered on the 46th sheet in your workbook.

11. **SHEETS** – Calculates the total number of sheets in a referenced range.

12. **SKEW.P** – Like the Skew function, SKEW.P calculates the standard deviation of a string of data, but bases its calculation on the entire population instead of a sample of the population. This function could be used to determine whether each line item of a company's historical financial statement data is consistent enough to use as a basis for projecting the following year's budget.

Fifty New Functions in Excel 2013

FUNCTION NAME	TYPE AND DESCRIPTION
1. ACOT function	**Math and trigonometry:** Returns the arccotangent of a number
2. ACOTH function	**Math and trigonometry:** Returns the hyperbolic arccotangent of a number
3. ARABIC function	**Math and trigonometry:** Converts a Roman number to Arabic, as a number
4. BASE function	**Math and trigonometry:** Converts a number into a text representation with the given radix (base)
5. BINOM.DIST.RANGE function	**Statistical:** Returns the probability of a trial result using a binomial distribution
6. BITAND function	**Engineering:** Returns a 'Bitwise And' of two numbers
7. BITLSHIFT function	**Engineering:** Returns a value number shifted left by shift_amount bits
8. BITOR function	**Engineering:** Returns a bitwise OR of 2 numbers
9. BITRSHIFT function	**Engineering:** Returns a value number shifted right by shift_amount bits
10. BITXOR function	**Engineering:** Returns a bitwise 'Exclusive Or' of two numbers
11. CEILING.MATH function	**Math and trigonometry:** Rounds a number up, to the nearest integer or to the nearest multiple of significance
12. COMBINA function	**Math and trigonometry:** Returns the number of combinations with repetitions for a given number of items
13. COT function	**Math and trigonometry:** Returns the hyperbolic cosine of a number
14. COTH function	**Math and trigonometry:** Returns the cotangent of an angle
15. CSC function	**Math and trigonometry:** Returns the cosecant of an angle
16. CSCH function	**Math and trigonometry:** Returns the hyperbolic cosecant of an angle

17.	DAYS function	**Date and time:** Returns the number of days between two dates
18.	DECIMAL function	**Math and trigonometry:** Converts a text representation of a number in a given base into a decimal number
19.	ENCODEURL function	**Web:** Returns a URL-encoded string
20.	FILTERXML function	**Web:** Returns specific data from the XML content by using the specified XPath
21.	FLOOR.MATH function	**Math and trigonometry:** Rounds a number down, to the nearest integer or to the nearest multiple of significance
22.	FORMULATEXT function	**Lookup and reference:** Returns the formula at the given reference as text
23.	GAMMA function	**Statistical:** Returns the Gamma function value
24.	GAUSS function	**Statistical:** Returns 0.5 less than the standard normal cumulative distribution
25.	IFNA function	**Logical:** Returns the value you specify if the expression resolves to #N/A, otherwise returns the result of the expression
26.	IMCOSH function	**Engineering:** Returns the hyperbolic cosine of a complex number
27.	IMCOT function	**Engineering:** Returns the cotangent of a complex number
28.	IMCSC function	**Engineering:** Returns the cosecant of a complex number
29.	IMCSCH function	**Engineering:** Returns the hyperbolic cosecant of a complex number
30.	IMSEC function	**Engineering:** Returns the secant of a complex number
31.	IMSECH function	**Engineering:** Returns the hyperbolic secant of a complex number
32.	IMSINH function	**Engineering:** Returns the hyperbolic sine of a complex number
33.	IMTAN function	**Engineering:** Returns the tangent of a complex number

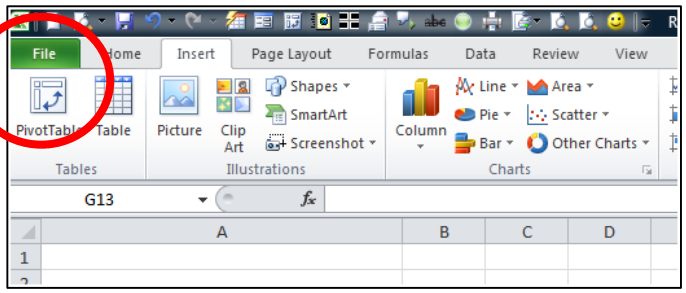
34.	ISFORMULA function	**Information:** Returns TRUE if there is a reference to a cell that contains a formula
35.	ISOWEEKNUM function	**Date and time:** Returns the number of the ISO week number of the year for a given date
36.	MUNIT function	**Math and trigonometry:** Returns the unit matrix or the specified dimension
37.	NUMBERVALUE function	**Text:** Converts text to number in a locale-independent manner
38.	PDURATION function	**Financial:** Returns the number of periods required by an investment to reach a specified value
39.	PERMUTATIONA function	**Statistical:** Returns the number of permutations for a given number of objects (with repetitions) that can be selected from the total objects
40.	PHI function	**Statistical:** Returns the value of the density function for a standard normal distribution
41.	RRI function	**Financial:** Returns an equivalent interest rate for the growth of an investment
42.	SEC function	**Math and trigonometry:** Returns the secant of an angle
43.	SECH function	**Math and trigonometry:** Returns the hyperbolic secant of an angle
44.	SHEET function	**Information:** Returns the sheet number of the referenced sheet
45.	SHEETS function	**Information:** Returns the number of sheets in a reference
46.	SKEW.P function	**Statistical:** Returns the skewness of a distribution based on a population: a characterization of the degree of asymmetry of a distribution around its mean
47.	UNICHAR function	**Text:** Returns the Unicode character that is references by the given numeric value
48.	UNICODE function	**Text:** Returns the number (code point) that corresponds to the first character of the text
49.	WEBSERVICE function	**Web:** Returns data from a web service.
50.	XOR function	**Logical:** Returns a logical exclusive OR of all arguments

What's New in Microsoft Excel 2010

Chapter 8

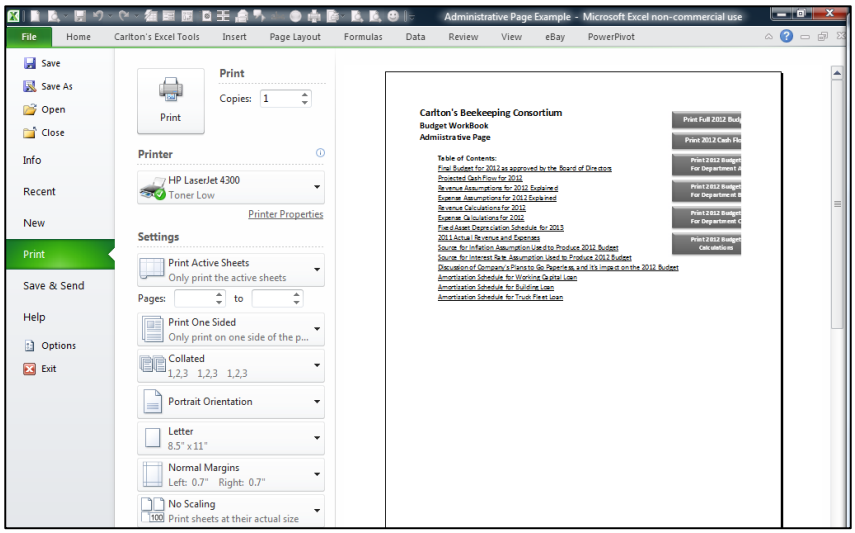
What's New in Microsoft Office 2010?

1. **Office Button Is Replaced With File Tab** – Excel 2007 included the Office Start button, which was not intuitive to anybody, despite what Microsoft said. In Excel 2010, Microsoft Office axed the office Start button in favor of the File tab. **YIPPY!**

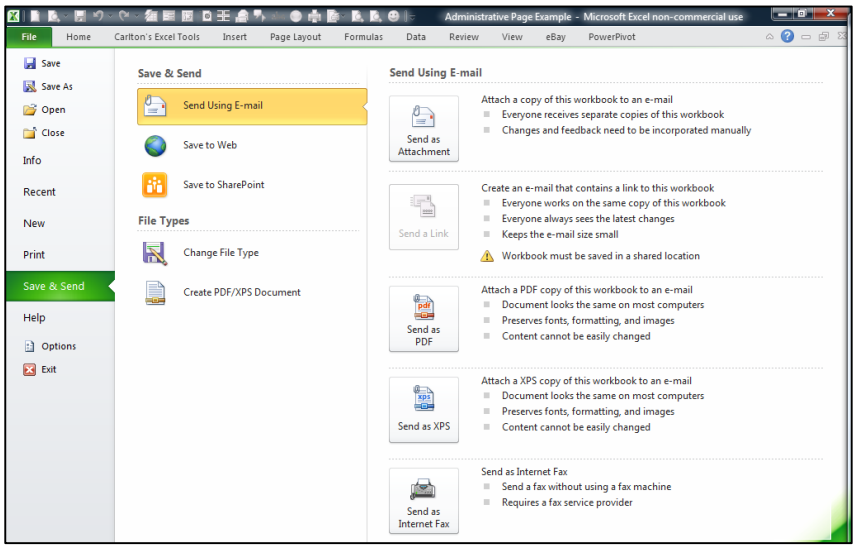


2. **Backstage View –** The file tab provides new look and feel called "Backstage View". This new view represents one of the biggest differences you'll notice in Microsoft Excel 2010. Backstage View is displayed by clicking on Excel's File tab, as in all the other applications that comprise Office 2010. The backstage view in is available in the other Office 2010 applications, and each application uses a different color scheme to differentiate it from the others. In Excel 2010, the color scheme is green.

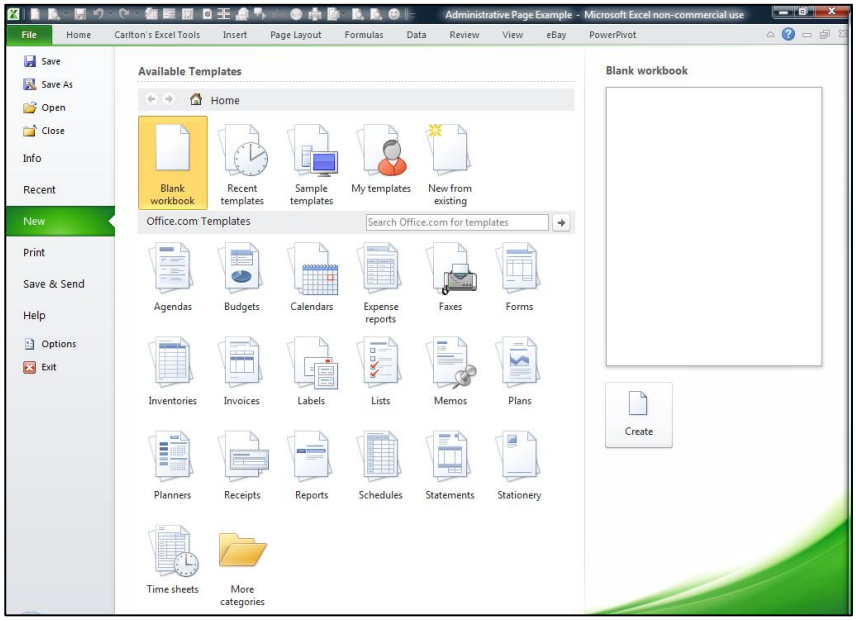
   In general, Backstage View provides basically the same commands found under the File menu in previous version of Excel such as Save, Save As, Open, Close, Print, etc. What's new is the preview screen and info tabs that accompanying some of these selections. For example, when you select the print option, a preview of the print job is automatically displayed, as shown below.



The Print option Backstage View also provides access to various Page and Print settings, such as Duplexing, Orientation, Margins, and Scaling. The save and Send option also has a new look and feel, providing buttons for emailing, publishing, and saving files, as well as options to create PDF or XPS documents.



The New option also incorporates a new look and feel with thumbnail previews of templates, and links to downloading more templates from the Web.



If you want to return to the old Excel 2007 look and feel when you click the File tab (not that you would want to), you can change registry settings, as detailed in this article on Turning Off The Microsoft Office 2010 OutSpace located here:

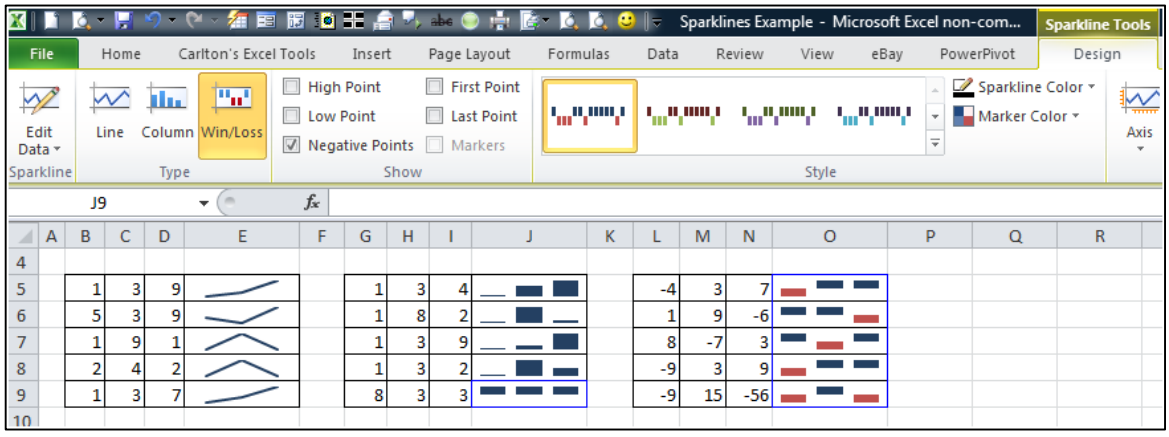
http://www.off14.com/microsoft-office-2010-outspace/

(They've actually got the name wrong in this article; although the registry key is named "outspace", the display is called Backstage View.)

3. **Double Clicking Fill Handle Uses Connected Columns For Fill Down** – In previous versions of Excel, the double click only worked if data were located in the column immediately to the left or right of the range to be copied, but Excel 2010 will use more distant columns provided they are connected with a common set of column labels.

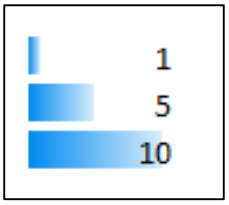
4. **Custom Lists Obey Character Case Example** – When using the Smart List feature, Excel 2010 obeys the case (proper, lower, and upper) that is used in your starting phrase.

5. **Remove Hyperlinks (Instead Of One Hyperlink at A Time In 2007 And 2003)** – In earlier versions of Excel, you could only remove one hyperlink at a time (the work around is to copy and paste a range containing hyperlinks and paste them as text elsewhere, then copy and paste that result back to your original location. Excel 2010 can remove all hyperlinks from a range in just one step.
6. **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 are examples:

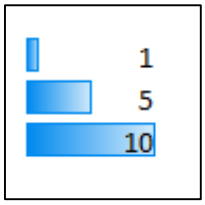


7. **Conditional Formatting Improvements** – Microsoft has improved and added more styles and icons regarding the ability to apply a format to a range of cells, and then have the formatting change according to the value of the cell or formula.

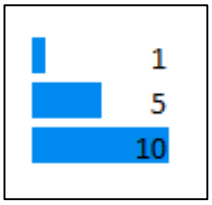
   a. **Solid Bars** - Data Bars can be solid now in Excel 2010. Excel 2007 bars offered only a gradient effect, which was visually was confusing to read. Below is a comparison on the Excel 2007 and Excel 2010 Data Bar options.



2007 Gradient

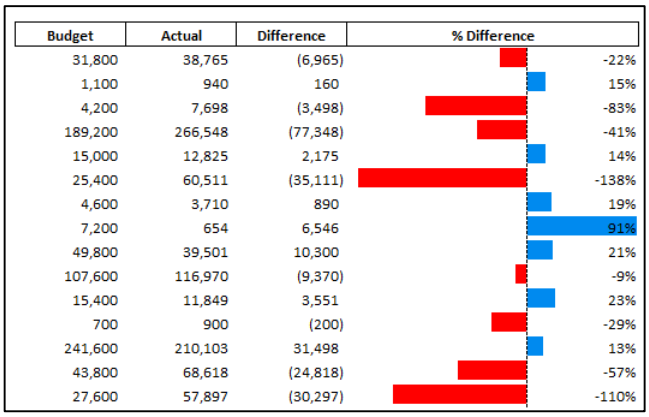


2010 Gradient



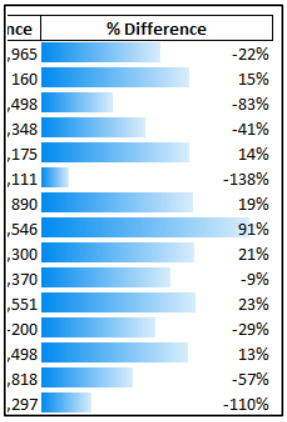
2010 Solid

   b. **Negative Numbers** - Microsoft also corrected a problem which Excel 2007 had creating when Data Bars based on negative numbers by adding axis support for both positive and negative values. The screens shots below show Excel 2010's new solution, and how Excel 2007 got confused when applying Data Bars to the exact same data.



Budget	Actual	Difference	% Difference
31,800	38,765	(6,965)	-22%
1,100	940	160	15%
4,200	7,698	(3,498)	-83%
189,200	266,548	(77,348)	-41%
15,000	12,825	2,175	14%
25,400	60,511	(35,111)	-138%
4,600	3,710	890	19%
7,200	654	6,546	91%
49,800	39,501	10,300	21%
107,600	116,970	(9,370)	-9%
15,400	11,849	3,551	23%
700	900	(200)	-29%
241,600	210,103	31,498	13%
43,800	68,618	(24,818)	-57%
27,600	57,897	(30,297)	-110%

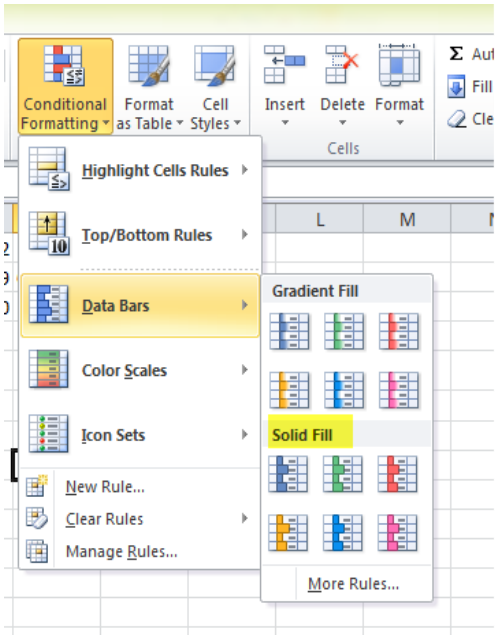
Excel 2010's Data Bars



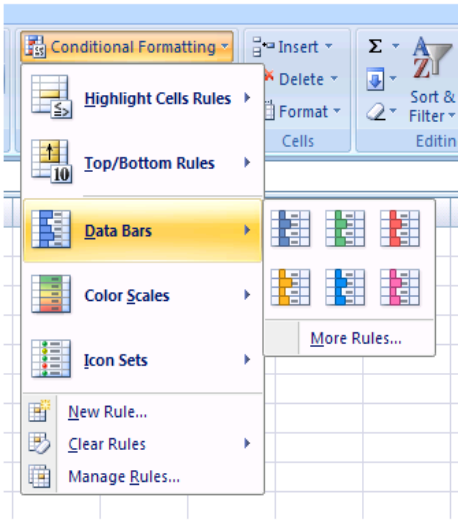
nce	% Difference
,965	-22%
160	15%
,498	-83%
,348	-41%
,175	14%
,111	-138%
890	19%
,546	91%
,300	21%
,370	-9%
,551	23%
-200	-29%
,498	13%
,818	-57%
,297	-110%

Excel 2007's Data Bars

   c. **More Data Bar Options** - Notice that Microsoft added more Data Bar options as shown in the comparison below.

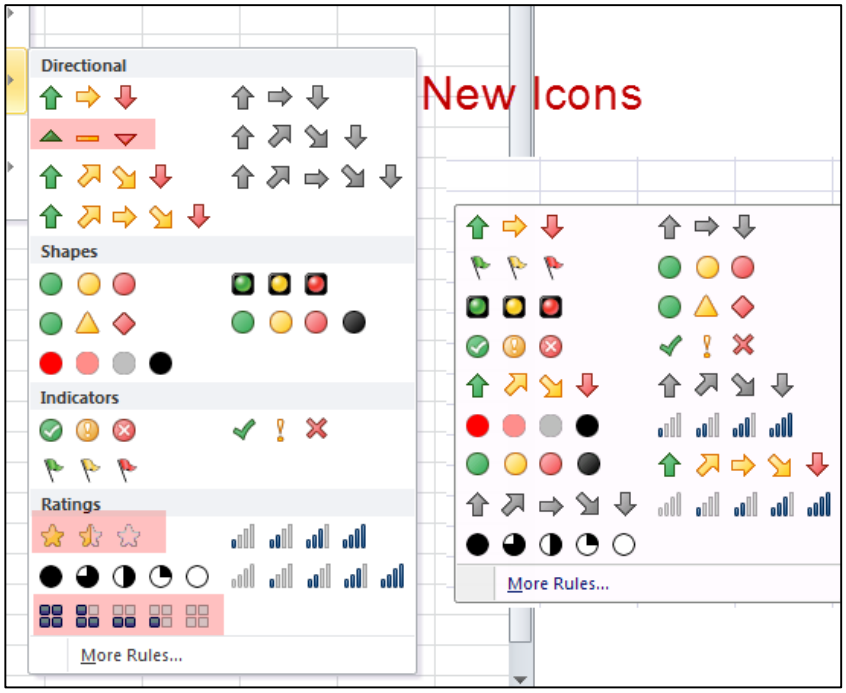


Excel 2010's Data Bar Menu



Excel 2007's Data Bar Menu

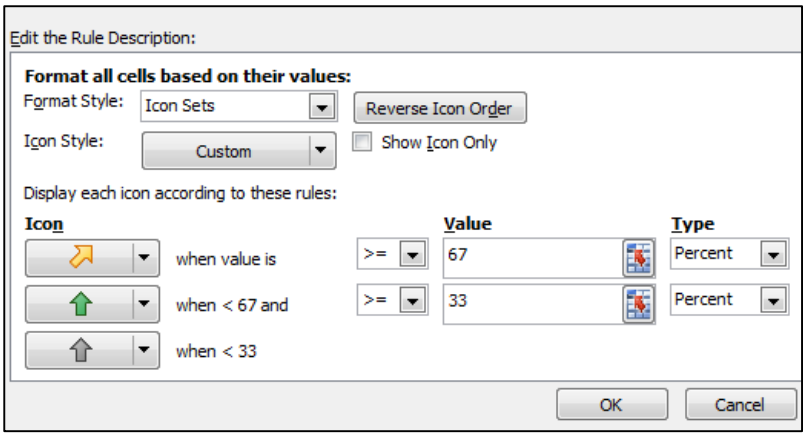
d. More Icon Options - Notice that Microsoft added more Data Bar options as shown in the comparison below.



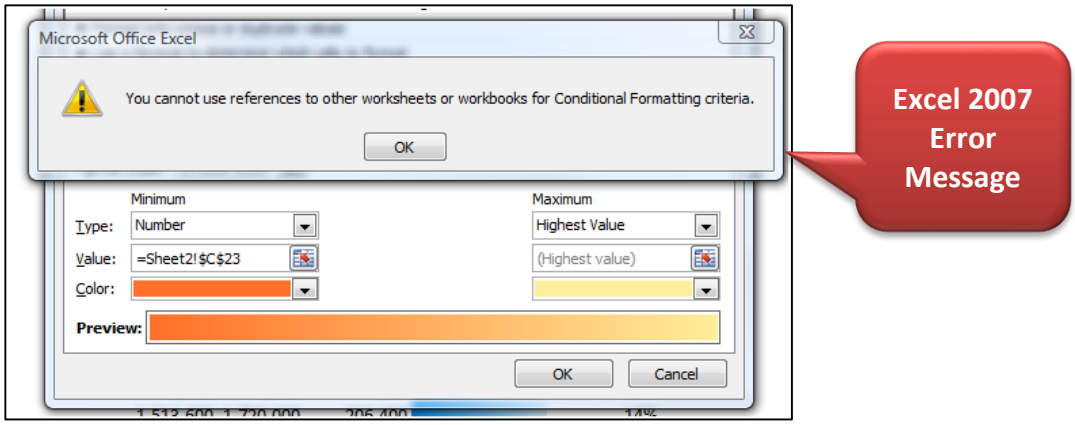
Excel 2010's Icon Menu

Excel 2007's Icon Menu

e. **Arrow Colors** - It is possible to change icons used for KIP i.e. You can have two arrows with different colors of if negative impact and positive growth are good for you.



f. **Referring to Data** - You can now refer to data on different worksheets, and even refer to a range outside the Conditional Formatting area. The screen below shows the error message produced by Excel 2007 when you attempted to reference cells outside the Conditional Formatting area; Excel 2010 now accommodates this situation.



8. **Microsoft Excel Web App's Improved Sharing** – Excel 2010 has new and improved tools for sharing data with other people, including multiple people working on the same document at the same time. Excel Web App extends your Excel experience to the web browser, where you can work with workbooks directly on the site where the workbook is stored. Excel Web App is part of Microsoft Office Web Apps, and is available in Windows Live SkyDrive and in organizations that have configured Office Web Apps on SharePoint 2010. With Excel Web App, you can:

    a. **View** - View a workbook in the browser - When you click on a workbook to open it in Excel Web App, the workbook is displayed in view mode.
    b. **Sort and Filter** - You can sort and filter data in the workbook, expand PivotTables to see relationships and trends in the data, recalculate values, and view different worksheets.
    c. **Browser-Based Editing** - Edit a workbook in the browser - With Excel Web App, all you need to access your workbooks is a browser.
    d. **Share** - Your teammates can work with you, regardless of which version of Excel they have.
    e. **Looks the Same** - Your workbooks look the same in the browser as they do in Excel.
    f. **Excel Tools** - You can edit your worksheets in the browser, using the familiar look and feel of Excel. When you edit in the browser, you can change data, enter or edit formulas, and apply basic formatting within the spreadsheet.
    g. **Simultaneous Access** - You can also work with others on the same workbook at the same time.

    Microsoft offers a free solution called Windows Live SkyDrive, which enables everyone in your group to share Word and Excel (and other) documents. This solution also provides users with Word, Excel and PowerPoint applications (with limited functionality) so your group members can work in the same applications.

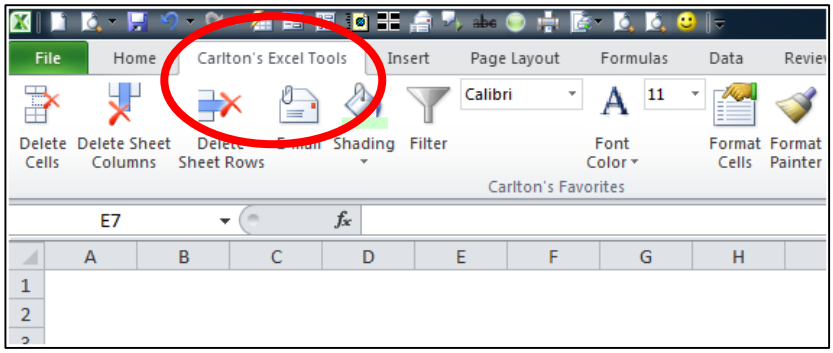
    To use SkyDrive, sign up for a free Windows Live account at http://explore.live.com/. Under the **SkyDrive** menu, select **Get started** and follow the instructions for setting up a Windows Live account. Once you have completed the registration process, sign into your Windows Live Sky Drive account and click the **Office** menu option at the top of the screen to view your **SkyDrive** as follows:

Next create a folder and upload (or create) the group's Word and Excel files. Select the folder and click the **Share** menu option as shown to edit permissions and to send links to your group members, which will enable them to access the data files.

When sharing files in this manner, to better protect your data, check the checkbox labeled **Require recipients to sign in with Windows Live ID**. This action will require your group members to obtain their own Windows Live accounts and use their passwords in order to access the data files. Otherwise, anyone who receives the link will be able to access the data files.

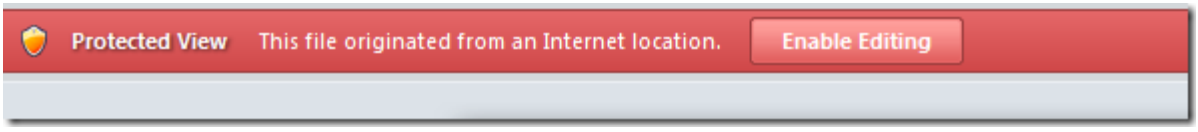
Notes: The free version of Windows Live Sky Drive is limited to 25 GBs of storage, and individual files are limited to 50 MBs. For a fee, you can increase these capacities. Installing Microsoft's free Silverlight browser add-in will enable drag and drop functionality to and from your SkyDrive. The Windows Live SkyDrive solution was first introduced in August 2007, and is widely used.

9. **Customize the Ribbon Toolbar -** The Ribbon tool bar has been enhanced, and is now highly customizable. For example, you can add your own tabs to the Ribbon (as shown below), you can add your own groups to each tab (also shown below), and you can add any commands or macros to your customized tabs and groups.



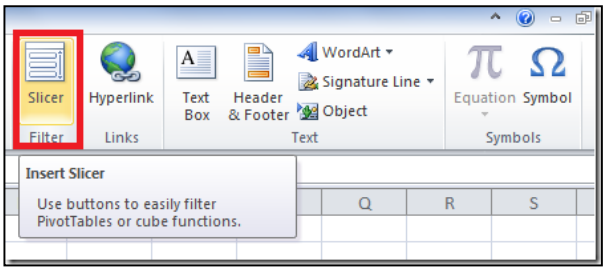
10. **Compatibility of .xlsx -** In Excel 2007, Microsoft introduced a new XML format (.xlsx) which was not compatible with former .xls spreadsheet formats. This problem has been resolved - Excel files created in Excel 2010 may easily be opened in versions of Excel prior to Excel 2007. Now Excel 2010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

11. **Protected Mode -** Excel 2010 includes a Protected View, so you can see the document and make a more informed decision before exposing your computer to possible vulnerabilities. By default, documents that originate from an Internet source are opened in Protected View. When this happens, you see a warning on the Message bar, along with the option to enable editing. You can control which originating sources trigger Protected View. You can also set specific file types to open in Protected View regardless of where they originate. 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.



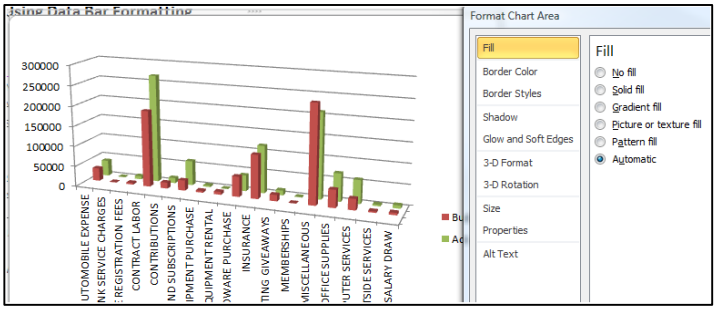
12. **Trusted Documents** - The trusted documents feature is designed to make it easier to open workbooks and other documents that contain active content, such as data connections or macros. Now, after you confirm that active content in a workbook is safe to enable, you don't have to repeat yourself. Excel 2010 remembers the workbooks you trust so that you can avoid being prompted each time you open the workbook.

13. **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.



14. **Macro -** Macros in Excel 2010 now support working with shapes, including creating, moving or editing shapes. For example, you could now record a macro that automatically insert s the following SmartArt object.

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



16. **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.

17. **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:

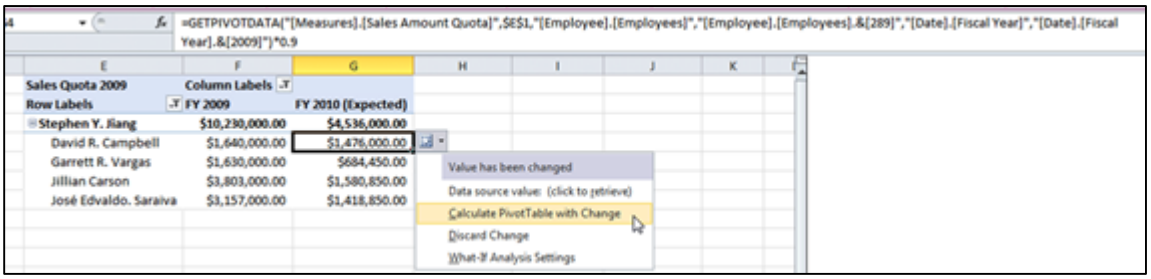
https://cmg.vlabcenter.com/prepare.aspx?moduleid=ad3bd3e9-8d2b-498d-94fa-e41e1b09730d&ticks=633992819904236083.

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.

18. **What-If with Write-Back** - PivotTable What-If Analysis is the ability to modify values in PivotTable cells, recalculate the PivotTable with those values and, if the results are satisfactory, publish the changes so that they are reflected in the OLAP data source for other people to see. This feature is also called write back, though it really goes beyond just the ability to write values back to the cube. "What if our sales for New York increased by 10%?" "What if the total number of product orders fell by 25%?" These are examples of questions that PivotTable What-If Analysis is aimed at helping the user answer. Let's take a look at the following scenario:

Sales Quota 2009	Column Labels	
Row Labels	FY 2009	FY 2010 (Expected)
Stephen Y. Jiang	**$10,230,000.00**	**$4,536,000.00**
David R. Campbell	$1,640,000.00	$851,850.00
Garrett R. Vargas	$1,630,000.00	$684,450.00
Jillian Carson	$3,803,000.00	$1,580,850.00
José Edvaldo. Saraiva	$3,157,000.00	$1,418,850.00

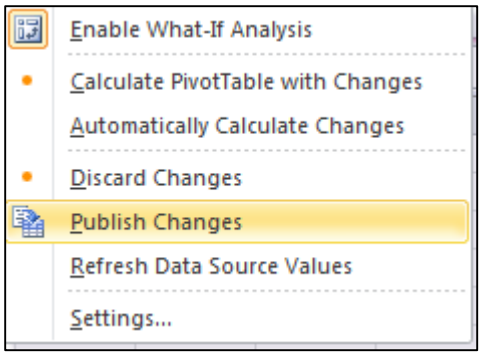
Stephen, the sales manager at a small IT company, is trying to figure out what his optimal sales quotas should look like for 2010. Based on a previous analysis and forecasts for next year it seems like 2010 will have a large decrease in sales which would mean his quotas would be reduced by 10% from the 2009 quotas. With the new PivotTable What-If Analysis feature he can now modify the relevant values in his PivotTable report and calculate the PivotTable with the changes to see what the totals would look like without actually modifying the data source. (click to see larger image)



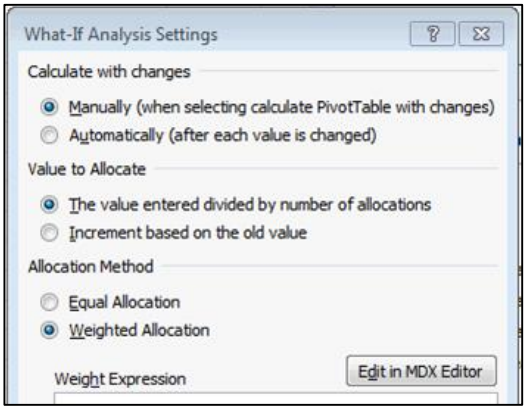
So here is what his PivotTable looks like after calculating with the changes:

Sales Quota 2009	Column Labels	
Row Labels	FY 2009	FY 2010 (Expected)
Stephen Y. Jiang	**$10,230,000.00**	**$9,207,000.00**
David R. Campbell	$1,640,000.00	$1,476,000.00
Garrett R. Vargas	$1,630,000.00	$1,467,000.00
Jillian Carson	$3,803,000.00	$3,422,700.00
José Edvaldo. Saraiva	$3,157,000.00	$2,841,300.00

If he wants to keep these numbers and share them with other people he can go ahead and publish the changes to the OLAP data source.



He can also just keep the changes locally without publishing back to the OLAP data source by simply saving the file. When the workbook is loaded again in Excel 2010 all the changes will be reapplied and the PivotTable recalculated. With little knowledge of OLAP data sources the manager was able to change values and recalculate his PivotTables. The changes can be shared across the organization by simply sharing the workbook or publishing the changes back to the OLAP data source.



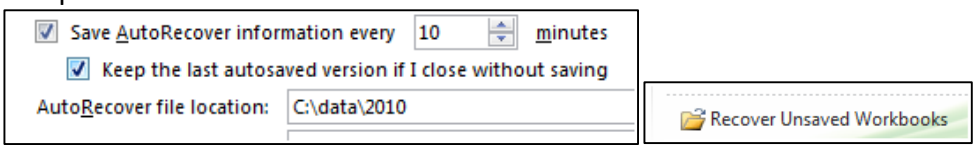
Advanced Options - Advanced options for PivotTable What-If Analysis include being able to change the allocation method, which is the methodology in which the OLAP data source will allocate the newly entered values in the cube. Excel 2010 also gives

you the ability to define your own weight allocation definitions from within an MDX editor.

19. **Recover Earlier Versions Of A File In Office 2010** - It is now easier to recover a Microsoft Word 2010, Microsoft Excel 2010, or Microsoft PowerPoint 2010 file if you close your file without saving, or you want to review or return to an earlier version of the file you're already working in.

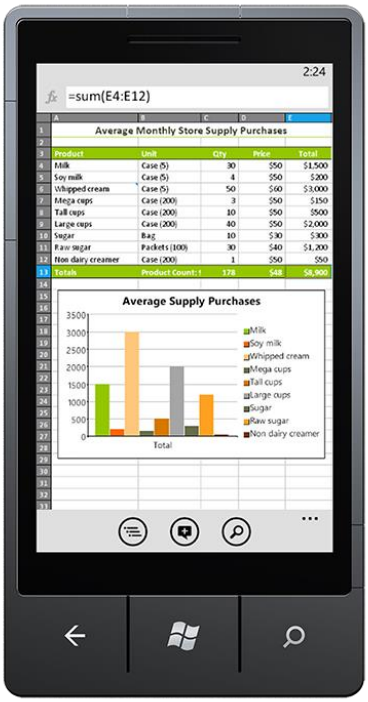
    As with earlier versions of Office, enabling AutoRecover in Word 2010, Excel 2010 or PowerPoint 2010 will save versions while you are working in your file at the interval you select. Now, you can choose to keep the last autosaved version of a file in case you accidentally close that file without saving, so that you can restore it the next time that you open the file. Also, while you are working in your file, you can access a listing of the autosaved files from the Microsoft Office Backstage view.

    Note: You must have the "Save AutoRecover information" and "Keep the last autosaved version if I close without saving" enabled for these features to work. (The Recover Unsaved Workbooks option is available from the File tab, under the Recent menu option.



20. **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.

21. **Excel Mobile 2010 for Windows Phone 7 -** If you have Windows Phone 7, you can use Microsoft Office Mobile 2010 to work with your files from anywhere—whether you're at work, at home, or on the go. Excel Mobile 2010 is part of Office Mobile and already on your phone in the Office Hub, so you don't need to download or install anything else to get started.



You can use Excel Mobile to view and edit workbooks stored on your phone, sent to you as email attachments, or hosted on a SharePoint 2010 site through SharePoint Workspace Mobile 2010. When you edit a workbook via SharePoint Workspace Mobile, you can save your changes back to the SharePoint site when you're online. You can create, update, and instantly recalculate your spreadsheets using many of the same tools you already know and use in the desktop version of Excel:

a) Use the outline view to switch between worksheets or charts in a workbook.
b) Sort, filter, and manage your spreadsheets.
c) Add or edit text and numbers.
d) Add comments.
e)

22. Improved PivotTables

PivotTables are now easier to use and more responsive. Key improvements include:

a) **Performance** - In Excel 2010, multi-threading helps speed up data retrieval, sorting, and filtering in PivotTables.
b) **PivotTable Labels** - It's now possible to fill down labels in a PivotTable. You can also repeat labels in PivotTables to display item captions of nested fields in all rows and columns. **Watch a video about repeating item labels.**

c) **Enhanced Filtering** - You can use slicers to quickly filter data in a PivotTable with the click of a button and see which filters are applied without having to open additional menus. In addition, the filter interface includes a handy search box that can help you to find what you need among potentially thousands (or even millions) of items in your PivotTables.

d) **Write-back Support -** In Excel 2010, you can change values in the OLAP PivotTable Values area and have them written back to the Analysis Services cube on the OLAP server. You can use the write-back feature in what-if mode and then roll back the changes when you no longer need them, or you can save the changes. You can use the write-back feature with any OLAP provider that supports the UPDATE CUBE statement.

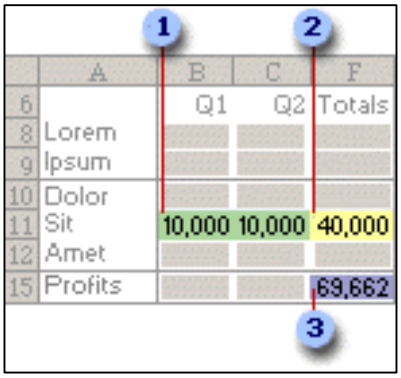
e) **Show Values As feature** - The **Show Values As** feature includes a number of new, automatic calculations, such as **% of Parent Row Total**, **% of Parent Column Total**, **% of Parent Total**, **% Running Total**, **Rank Smallest to Largest**, and **Rank Largest to Smallest**. Watch a video about changes to the Show Values As feature. **Watch a video about changes to the Show Values As feature.**

f) **PivotChart Improvements** - It is now easier to interact with PivotChart reports. Specifically, it's easier to filter data directly in a PivotChart and to reorganize the layout of a PivotChart by adding and removing fields. Similarly, with a single click, you can hide all field buttons on the PivotChart report.

23. **Improved Solver Add-In -** Excel 2010 includes a new version of the Solver add-in, which you can use to find optimal solutions in what-if analysis. Solver has an improved user interface, a new Evolutionary Solver, based on genetic algorithms, that handles models with any Excel functions, new global optimization options, better linear programming and nonlinear optimization methods, and new Linearity and Feasibility reports. In addition, the Solver add-in is now available in a 64-bit version.

    Use Solver to determine the maximum or minimum value of one cell by changing other cells. For example, you can change the amount of your projected advertising budget and see the effect on your projected profit amount.

    Example of a Solver problem - In the following example, the level of advertising in each quarter affects the number of units sold, indirectly determining the amount of sales revenue, the associated expenses, and the profit. Solver can change the quarterly budgets for advertising (cells B11:E11), up to a total budget constraint of $40,000 (cell F11), until the value for the total profit reaches the maximum possible amount. The values in the decision variable cells are used to calculate the profit for each quarter, so the values are related to the formula in the target cell F15, =SUM(B15:E15).



1 Decision variable cells

2 Constraint cell

3 Objective cell

After Solver runs, the new values are as follows.

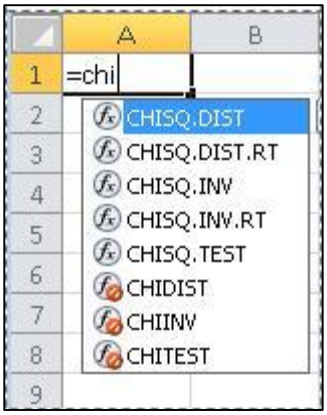
11	Sit	7,273	12,246	40,000
12	Amet			
15	Profits			71,447

For more solver examples, check out:
http://www.solver.com/excel2010/solverhelp.htm

24. **Improved Function Accuracy -** Excel 2010 includes more accurate statistical and other functions. Certain existing functions have also been renamed to better describe what they do, as follows:

a) **Accuracy Improvements** - A number of functions have been optimized to improve accuracy. For example, Excel 2010 returns more accurate results for the beta and chi-squared distributions.

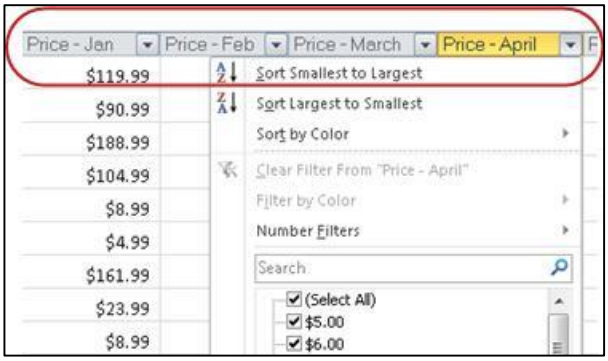
b) **More Consistent Functions** - Certain statistical functions have been renamed so that they are more consistent with the function definitions of the scientific community and with other function names in Excel. The new function names also more accurately describe their functionality. Workbooks created in earlier versions of Excel will continue to work despite these name changes, because the original functions still exist in a **Compatibility** category.



25. **Improved Filter Capabilities -** In addition to slicers, which are described earlier in this article, Excel 2010 comes with new features that make it easier to sort and filter data, as follows.

    a. **New search filter** - When you filter data in Excel tables, PivotTables, and PivotCharts, you can use a new search box, which helps you to find what you need in long lists. For example, to find a specific product in a catalog that stocks over 100,000 items, start by typing your search term, and relevant items instantly appear in the list. You can narrow the results further by deselecting the items you don't want to see.

    b. **Filter And Sort Regardless Of Location** - In an Excel table, table headers replace regular worksheet headers at the top of columns when you scroll down in a long table. AutoFilter buttons now remain visible along with table headers in your table columns, so you can sort and filter data quickly without having to scroll all the way back up to the top of the table.



26. **Performance Enhancements -** Performance improvements in Excel 2010 can help you to interact with your data more efficiently. Specific investments include:

    a) **General improvements** - Excel 2010 is more responsive when you move and resize charts, work in Page Layout view, and interact with shapes on the worksheet.

    b) **Support For Large Data Sets** - Excel 2010 handles workbooks that contain massive amounts of data more efficiently. Specifically, it takes less time to perform activities commonly performed on large data sets, such as filtering and sorting the data, copy and pasting it from one worksheet to another, and using the Fill feature to copy formulas.

    c) **Multicore Improvements** - Multithreading improvements in Excel 2010 help to speed up the process of retrieving, sorting, and filtering data in PivotTables and Excel tables. In addition, opening and saving large files is generally faster than before.

    d) **Faster Calculation** - To achieve faster calculation performance, Excel 2010 includes support for asynchronous user-defined functions, which can run simultaneously without using multiple Excel calculation threads.

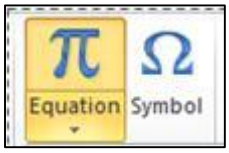
27. **Improved Charting -** It's now easier to work with charts in Excel 2010. Specific improvements include:

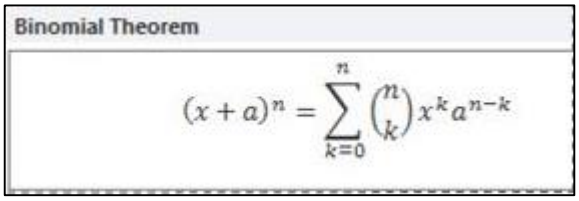
    a) **New Charting Limits** - In Excel 2010, the limitation on the number of data points that can be created on a chart has been removed. The number of data points is now limited only by available memory.

    b) **Quick Access To Formatting Options** - In Excel 2010, you can instantly access formatting options by double-clicking a chart element.

    c) **Macro Recording For Chart Elements** - In Office Excel 2007, recording a macro while formatting a chart or other object did not produce any macro code. In Excel 2010, however, you can use the macro recorder to record formatting changes to charts and other objects.

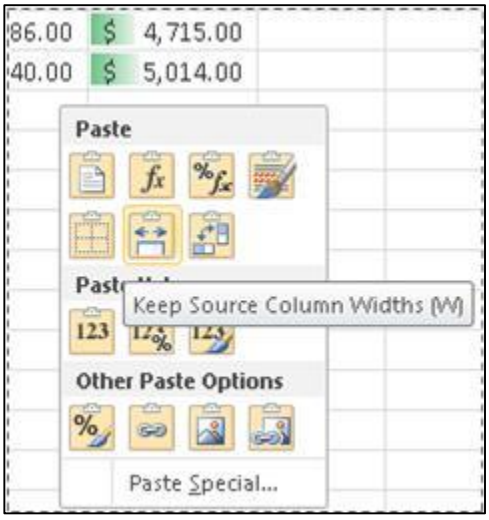
28. **Support for Equations -** You can use the new equation editing tools in Excel 2010 to insert common mathematical equations into your worksheets or to build up your own equations by using a library of math symbols. You can also insert new equations inside of text boxes and other shapes. To get started, on the Insert tab, in the Symbols group, click the arrow next to Equation.





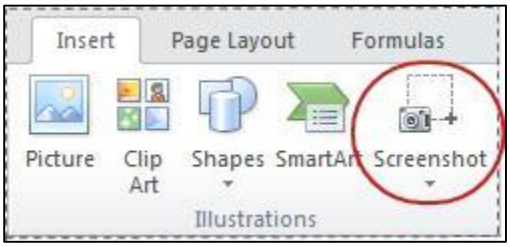
29. **More Themes -** In Excel 2010, there are more themes and styles than ever before. These elements can help you apply professional designs consistently across your workbooks and other Microsoft Office documents. Once you select a theme, Excel 2010 does the design work. Text, charts, graphics, tables, and drawing objects all change to reflect the theme you have selected, so that all elements in your workbook visually complement one another.

30. **Paste With Live Preview -** The paste with live preview feature enables you to save time when reusing content within Excel 2010 or across other programs. You can use it to preview various paste options, such as Keep Source Column Widths, No Borders, or Keep Source Formatting. The live preview enables you to visually determine how your pasted content will look before you actually paste it in the worksheet. When you move your pointer over Paste Options to preview results, you'll see a menu containing items that change contextually to best fit the content you are reusing. ScreenTips provide additional information to help you make the right decision.



31. **Improved Picture-Editing Tools -** If you use photos, drawings, or SmartArt to communicate visually, you can take advantage of the following features:

    a) **Screenshots** - Quickly take a screenshot and add it to your workbook, and then use the tools on the **Picture Tools** tab to edit and improve the screenshot.



    b) **New SmartArt Graphic Layouts** - With new picture layouts, you can tell your story with photographs. For example, use the Captioned Picture layout to show pictures with nice-looking captions underneath.

    c) **Picture Corrections** - Fine tune the color of a picture, or adjust its brightness, contrast, or sharpness—all without having to use additional photo-editing software.

    d) **New and Improved Artistic Effects** - Apply different artistic effects to your picture to make it look more like a sketch, drawing, or painting. New artistic effects include Pencil Sketch, Line Drawing, Watercolor Sponge, Mosaic Bubbles, Glass, Pastels Smooth, Plastic Wrap, Photocopy, Paint Strokes, and many more.

    e) **Better Compression And Cropping** - You now have better control of the image quality and compression tradeoffs, so that you can make the right choice for the medium (print, screen, e-mail) that your workbook will be used for. Read more about cropping and picture compression.

32. **Accessibility Checker -** The new Accessibility Checker tool in Excel 2010 enables you to find and fix issues that can make it difficult for people with disabilities to read or interact with your workbook. You can open the Accessibility Checker by clicking the File tab, clicking Check for Issues, and then clicking Check Accessibility. Errors and warnings will appear in a task pane. You can then review the issues and see which ones you need to fix. In addition to the Accessibility Checker, you can add alternative text to more objects in your worksheet, including Excel tables and PivotTables. This information is useful to people with visual impairments who may be unable to easily or fully see the object.

33. **Improved Language Tools -** In the Excel Options dialog box, multilingual users can quickly set preferences for editing, display, ScreenTip, and Help languages. And, changing your language settings in Excel automatically changes them across all applicable Microsoft Office 2010 applications. If you don't have the software or keyboard layout installed that you need, you are notified, and links are provided to make it easier to quickly resolve such issues.

34. **Improved Programmability Features -** Improvements for developers include:

    a) **Changes to the XLL SDK -** The XLL Software Development Kit (SDK) now supports calling new worksheet functions, developing asynchronous user-defined functions, developing cluster-safe user-defined functions that can be offloaded to a compute cluster, and building 64-bit XLL add-ins.

    b) **VBA Improvements** - Excel 2010 has a number of features that will enable you to migrate any remaining Excel 4.0 macros you may have to VBA. Improvements include better performance for print-related methods and chart properties not previously accessible with VBA.

    c) **Better User-Interface Extensibility** - If you develop custom workbook solutions, you have more options for programmatically customizing both the ribbon and the new Backstage view. For example, you can programmatically activate tabs on the ribbon, and make custom tabs behave similarly to built-in contextual tabs, where tabs only appear when specific events occur. In addition, you can make custom ribbon groups grow and shrink as the ribbon is resized and customize context menus with rich controls. You can also add custom UI and other elements to the Backstage view.

    d) **Changes to the Open XML SDK** - The Open XML SDK 2.0 now supports schema-level objects, in addition to the part-level support introduced in the Open XML SDK 1.0. This makes it easier to programmatically manipulate workbooks and other documents outside the Office 2010 desktop applications—for example, as part of a server-based solution.

35. **Sixty One New Functions in Excel 2010**

In Excel 2010, Microsoft added 61 new functions and improved 19 others. This page contains a summary of those new functions and improvements. CPAs will notice that many of these functions are more scientific in nature, or are geared more towards engineers and statisticians. However, there are a handful of new functions that apply to the CPA function - particularly when it comes to data analysis. I've place a next to those new functions which I consider more useful in standard CPA applications.

1. **AGGREGATE** - allows you to handle errors and other issues in ranges referenced by aggregate function such as MAX, SMALL, SUM, AVERAGE,…

Bio for J. Carlton Collins, CPA

ASA Research Carlton@ASAResearch.com **770.842.5902**

Summary of Selected Positions, Awards & Accomplishments:

1. Member of the 2013 GSCPA Leadership Council.
2. Recipient of the John L. Lawler Literary award for 2012 best article to appear in the Journal of Accountancy.
3. 2013 - 2014 Chair of the GSCPA IT Section.
4. Author of the monthly technology Q&A column for the Journal of Accountancy.
5. Recipient of the AICPA's *Lifetime Technical Contribution to the CPA Profession Award*.
6. Honored in 2011 as one of the CPA Industries Top 25 Thought Leaders by CPA Technology Advisor Magazine4.
7. Chairman of the Southeast Accounting Show - the South's largest CPA event (*multiple years*).
8. Recipient of the ASCPA's *Tom Radcliff Outstanding Discussion Leader Award*.
9. Named "Top Ten CPA Technologists" by Accounting Technologies Magazine (multiple years).
10. Named "Top 100 Most Influential CPAs " by Accounting Technologies Magazine (multiple years).
11. Has personally delivered over 2,000 technology lectures in multiple countries throughout the world.
12. Recipient of the Outstanding Discussion Leader Award from the Georgia Society of CPAs.
13. Lead author for PPC's Guide to Installing Microcomputer Accounting Systems.
14. Has installed accounting systems for more than 200 companies.
15. Chairperson of the AICPA Technology Conference.
16. Recipient of the ACCPAC Partner of the Year Award.
17. Determined by SAP to be one of the country's "Top Ten Most Influential ERP Systems Consultants".
18. 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 .
19. 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).
20. Sworn in as a Certified Public Accountant on September 18, 1985.
21. Member of the American Institute of CPAs since 1985.
22. Member of the Georgia Society of CPAs since 1982.
23. Founder of the Atlanta based PC Advisory Group in 1987.
24. Editor of Accounting Software News since 1998.

J. Carlton Collins, CPA is an award winning author/editor for the Journal of Accountancy who publishes a monthly technology column in the Journal. In 2013 Collins won the prestigious Lawler Award for excellence in national journalism. J. Carlton Collins, CPA is also an award winning and top rated public speaker, delivering more than 2,000 lectures in 44 states and 5 countries at international, national, and regional conferences and full day CPE presentations. His 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". J. Carlton Collins, CPA is also a consultant who has assisted 275+ large and small companies with the selection and implementation of accounting systems. Mr. Collins has a Bachelor's degree in Accounting from the University of Georgia, and is a 25+ year member of the American Institute of CPAs and the Georgia Society of CPAs.

At the University of Georgia, Mr. Collins was elected President of the Phi Eta Sigma Honor Society, was initiated into the BIFTAD Honor Society, served three years in the Judicial Defender/Advocate program, and was a member of Alpha Tau Omega fraternity. At Glynn Academy High School, Mr. Collins was Senior Class President, Class Valedictorian (1 of 6), and received a principle nomination to Annapolis Naval Academy. Mr. Collins has been married for 29 years and has two children. He devotes his leisure time to family, travel, tennis, fishing, snow skiing, and riding motorcycles (both dirt and street). Mr. Collins is past president of his home owners association, participates in the Gwinnett Clean and Beautiful program, and volunteers for Norcross Cooperative Ministries food drive.

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 (or assisted in preparing) 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. In 1992, Mr. Collins contributed and demonstrated more than 500 pages of suggested design improvements to the Microsoft Excel development team - and many of those improvements are found in Excel today.

