Advanced Microsoft Excel Training

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Working with Data - Advanced

Applying Conditions to Cells

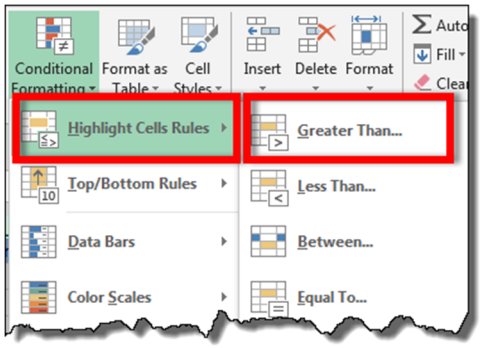
The Conditional Formatting feature in Excel 2013 allows you to apply a certain format to one or more cells based on the values contained in those cells.

For example, let's say you are tracking attorney's billable hours on an Excel spreadsheet, and you want to quickly see who has billed more than 175 hours in a month.

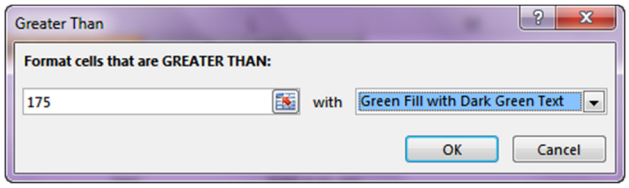
1. Select the range of cells to which you wish to apply the rule.

E	F	G	H	I	J
Jan-14	Feb-14	Mar-14	Apr-14	May-14	Jun-14
196	167	182	116	158	208
180	185	148	135	170	168
192	191	216	130	132	160
184	197	114	135	128	121
160	203	153	184	214	132
224	209	166	196	163	126
134	215	179	126	174	150
146	134	144	134	176	173

2. From the ***Home tab***, click the ***Conditional Formatting*** button. A drop-down menu will appear. Select the rule that you wish to apply. In our example, we want to highlight values higher than 175, so we select ***Highlight Cells Rules > Greater Than…***



3. A dialog box will appear. For our example, we entered ***'175.'***
4. Select a formatting style from the drop-down menu. We've chosen ***Green Fill*** with ***Dark Green*** text.
5. Once you've selected your options, click ***OK.***



The conditional formatting will be applied to the selected cells. In our example, it's easy to see which attorneys billed more than 175 hours in which months.

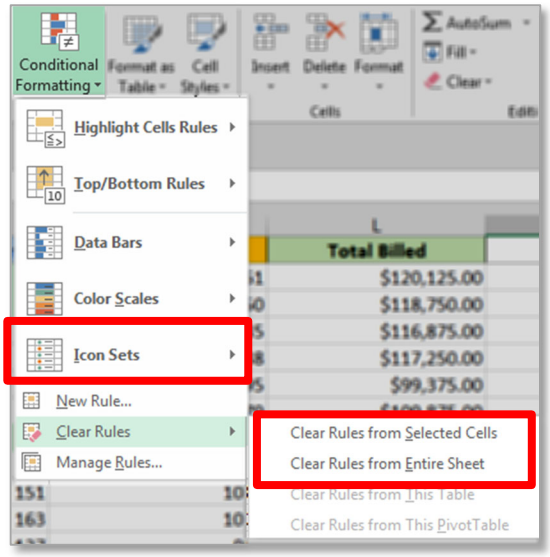
E	F	G	H	I	J
Jan-14	Feb-14	Mar-14	Apr-14	May-14	Jun-14
118	199	127	168	154	195
158	146	147	162	148	189
174	122	196	144	154	145
189	128	128	138	197	158
130	138	126	126	141	134
149	158	143	130	162	137
162	135	134	132	156	207
175	151	198	138	138	135
186	163	214	193	179	151
197	127	191	170	177	163
126	146	130	192	146	127
167	155	201	161	143	147
171	200	163	130	165	173

You're not limited to one condition. You can apply multiple formatting rules to a cell range or worksheet.

To Remove Conditional Formatting

1. Go to ***Home Tab > Styles Group > Conditional Formatting.***
2. Select ***Clear Rules*** and then choose which rules you wish to clear. Your options are to clear rules from ***Selected Cells*** or from ***Entire Sheet.***

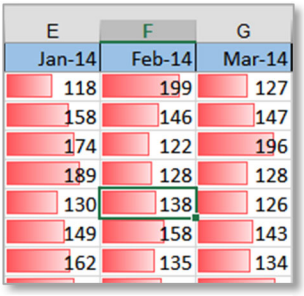
The ***Manage Rules*** option allows you to edit or delete individual rules. This is especially useful if you have applied multiple rules to a worksheet.



Conditional Formatting Presets

Excel has several predefined conditional styles, or presets, that you can use to quickly apply conditional formatting to your data. The available options are…

- ***Data Bars*** are similar to bar graphs. They present your data in horizontal bars and give you a quick reference to the information in your sheet.



Data Bars

- ***Color Scales*** use color gradients to reflect the value of a cell or cell range. In the example, to the right, the highest values are green, the middle or average values are yellow, and the lowest values are red.

	E	F	G
	Jan-14	Feb-14	Mar-14
	118	199	127
	158	146	147
	174	122	196
	189	128	128
	130	138	126
	149	158	143
	162	135	134

Color Scales

- ***Icon Sets*** add an icon to each cell based on its value.

	E	F	G
	Jan-14	Feb-14	Mar-14
✗	118	✓ 199	✗ 127
!	158	✗ 146	✗ 147
!	174	✗ 122	✓ 196
!	189	✗ 128	✗ 128
✗	130	✗ 138	✗ 126
✗	149	! 158	✗ 143
!	162	✗ 135	✗ 134

Icon Sets

You apply the preset formatting in the same manner that you apply specific rules.

Text to Columns

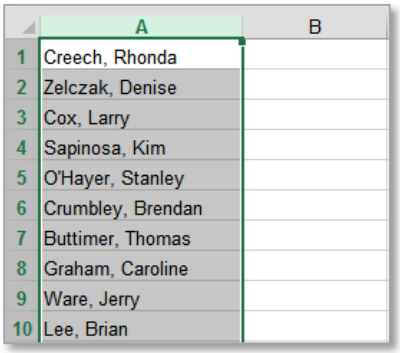
The ***Text to Columns*** feature allows you to separate data that appears in columns.

In this example, we have a list of last and first names in the same column. However, let's say we want to have the last names in one column and first names in another column. You could do this manually, by re-typing last names into column A and first names into column B. But what if you had hundreds of rows of data? The Text to Columns feature makes this easy.

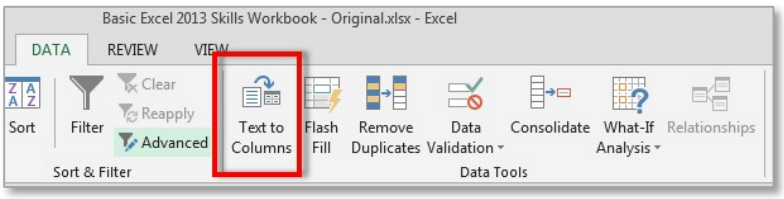
	A	B
1	Creech, Rhonda	
2	Zelczak, Denise	
3	Cox, Larry	
4	Sapinosa, Kim	
5	O'Hayer, Stanley	
6	Crumbley, Brendan	
7	Buttimer, Thomas	
8	Graham, Caroline	
9	Ware, Jerry	
10	Lee, Brian	

Here's how…

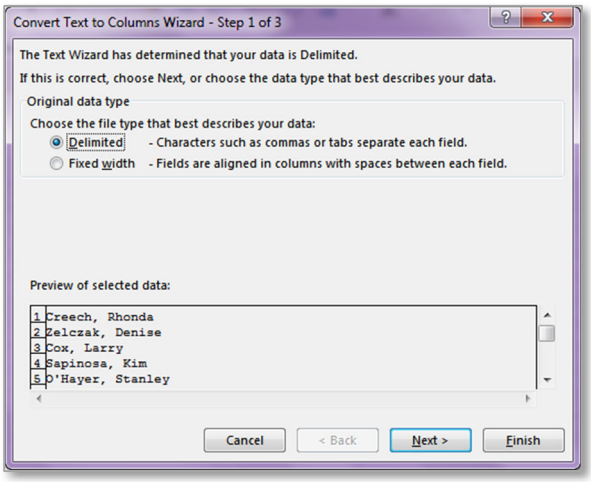
1. First of all, make sure you have an empty column to the right of the column that contains your data.
2. Highlight the column that contains the information that you wish to split. In our case, we're highlighting column A.



3. From the ***Data Tab > Data Tools Group*** select the ***Text to Columns*** button.

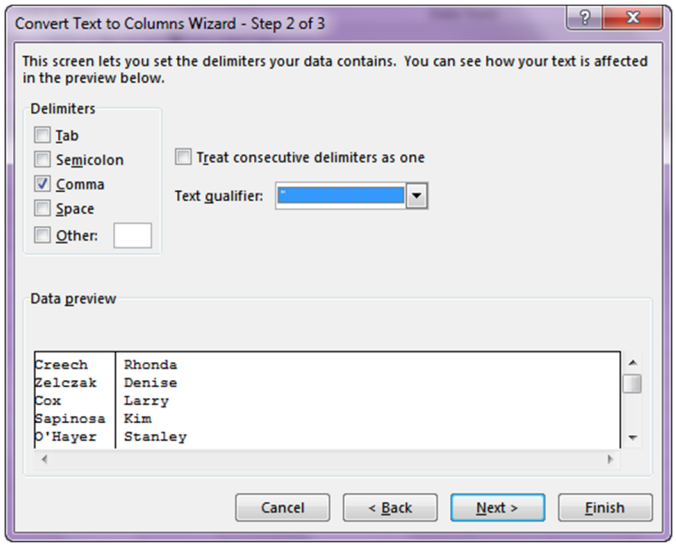


4. The ***Convert Text to Columns Wizard*** dialogue box appears.



5. You have a choice of two methods to change the text:
   - **Delimited** – This method uses characters such as commas or tabs to determine where to separate the data.
   - **Fixed width** – This method is a little more complicated. Using ***Fixed Width,*** you can manually select where the data breaks. You select at which points in the data the new columns are created. It's not as easy as it sounds because the data doesn't always line up.
6. For our purposes, we are going to use ***Delimited***. Select ***Delimited*** and then click ***Next.***

7. In **step 2** of the wizard, you're presented with the option to set the delimiters that your data contains, i.e. where the text will be separated into columns. Since our data has a comma, and since we want the data separated into last name and first name columns, select ***Comma***, click ***Next*** and then click ***Finish.***



8. Our data is now separated into 2 columns…

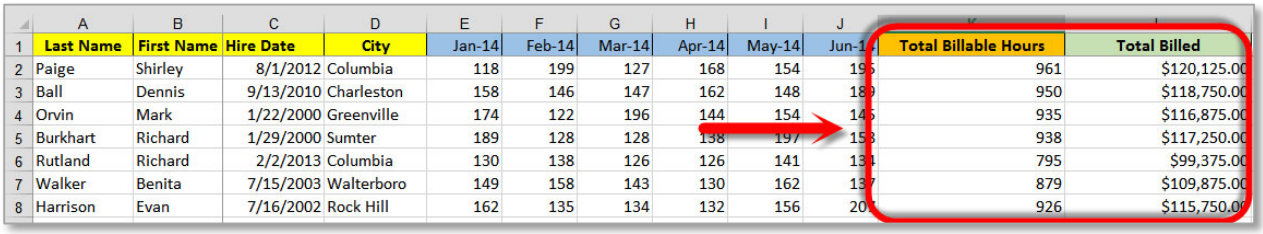
	A	B
1	Creech	Rhonda
2	Zelczak	Denise
3	Cox	Larry
4	Sapinosa	Kim
5	O'Hayer	Stanley
6	Crumbley	Brendan
7	Buttimer	Thomas
8	Graham	Caroline
9	Ware	Jerry
10	Lee	Brian

Linking Data in Different Worksheets

Linking data between worksheets eliminates the need to manually enter identical data in multiple sheets. This feature saves time and minimizes mistakes.

In the example we've been using, we're tracking attorneys' billable hours by month. But what if we simply wanted a sheet that identified each attorney's total hours billed and revenue generated year to date? We can create a sheet that links to that data, and which changes information as the data in the master sheet changes.

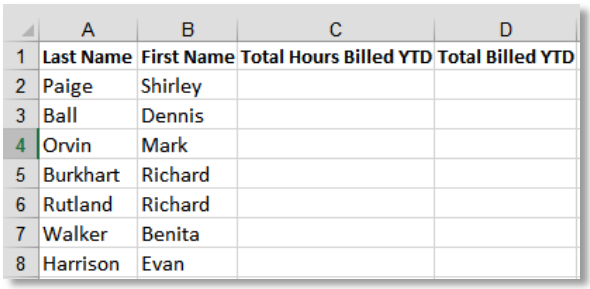
So, we want to take data from our original sheet, specifically, the total hours billed YTD and total billed YTD for each attorney...



	A	B	C	D	E	F	G	H	I	J	K	L
1	Last Name	First Name	Hire Date	City	Jan-14	Feb-14	Mar-14	Apr-14	May-14	Jun-14	Total Billable Hours	Total Billed
2	Paige	Shirley	8/1/2012	Columbia	118	199	127	168	154	195	961	$120,125.00
3	Ball	Dennis	9/13/2010	Charleston	158	146	147	162	148	189	950	$118,750.00
4	Orvin	Mark	1/22/2000	Greenville	174	122	196	144	154	145	935	$116,875.00
5	Burkhart	Richard	1/29/2000	Sumter	189	128	128	138	197	158	938	$117,250.00
6	Rutland	Richard	2/2/2013	Columbia	130	138	126	126	141	134	795	$99,375.00
7	Walker	Benita	7/15/2003	Walterboro	149	158	143	130	162	137	879	$109,875.00
8	Harrison	Evan	7/16/2002	Rock Hill	162	135	134	132	156	207	926	$115,750.00

…and create a spreadsheet that provides a summary of that data.

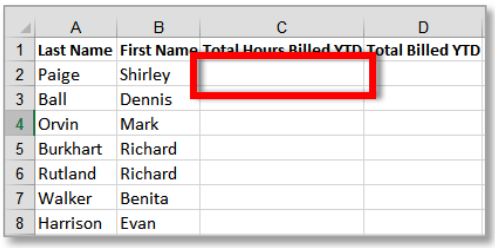
We've created a new sheet with the column headings ***Last Name, First Name, Total Hours Billed YTD*** and ***Total Billed YTD….***



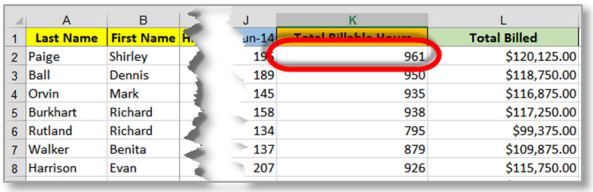
	A	B	C	D
1	Last Name	First Name	Total Hours Billed YTD	Total Billed YTD
2	Paige	Shirley		
3	Ball	Dennis		
4	Orvin	Mark		
5	Burkhart	Richard		
6	Rutland	Richard		
7	Walker	Benita		
8	Harrison	Evan		

Now to create the linked data…

1. Click within the cell on the new spreadsheet where you want the data to appear –in this case, total hours billed – and type ***=.***
2. Switch back to the sheet where the original data is and click on the box that contains the data that you wish to copy to the new summary spreadsheet. So, for our example, we've clicked in cell C2 of the new sheet, typed in **=**, and then switched back to the other sheet and clicked on cell K2…



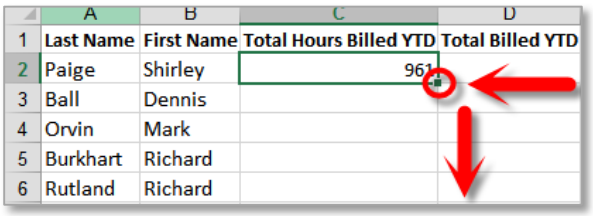
	A	B	C	D
1	Last Name	First Name	Total Hours Billed YTD	Total Billed YTD
2	Paige	Shirley		
3	Ball	Dennis		
4	Orvin	Mark		
5	Burkhart	Richard		
6	Rutland	Richard		
7	Walker	Benita		
8	Harrison	Evan		



	A	B	J	K	L
1	Last Name	First Name	Jun-14	Total Billable Hours	Total Billed
2	Paige	Shirley	195	961	$120,125.00
3	Ball	Dennis	189	950	$118,750.00
4	Orvin	Mark	145	935	$116,875.00
5	Burkhart	Richard	158	938	$117,250.00
6	Rutland	Richard	134	795	$99,375.00
7	Walker	Benita	137	879	$109,875.00
8	Harrison	Evan	207	926	$115,750.00

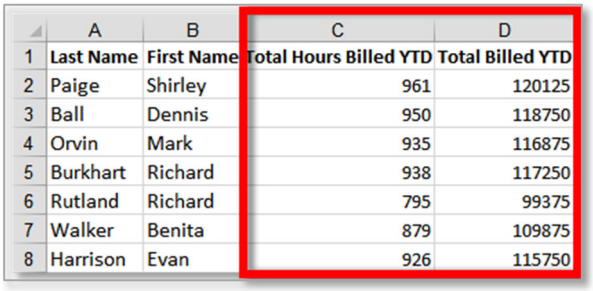
3. Hit ***Enter*** on your keyboard. Cell C2 in the new spreadsheet contains the number ***961***.
   Note that the formula bar reflects a *formula* in cell C2. The formula should include the name of the sheet to which the new cell is referring. In our example here, the formula is ***='Conditional Formatting'!K2.***

4. Now you can simply click, hold and drag the ***fill handle*** to copy that formula to the remaining cells on the new sheet.



	A	B	C	D
1	Last Name	First Name	Total Hours Billed YTD	Total Billed YTD
2	Paige	Shirley	961	
3	Ball	Dennis		
4	Orvin	Mark		
5	Burkhart	Richard		
6	Rutland	Richard		

Do this by ***left clicking*** on the tiny green square in the bottom right corner of the cell. While holding the left button down, drag and highlight the cells to which you want to copy the formula. Excel intuitively reads the data from the other sheet and recognizes what you're trying to do.



	A	B	C	D
1	Last Name	First Name	Total Hours Billed YTD	Total Billed YTD
2	Paige	Shirley	961	120125
3	Ball	Dennis	950	118750
4	Orvin	Mark	935	116875
5	Burkhart	Richard	938	117250
6	Rutland	Richard	795	99375
7	Walker	Benita	879	109875
8	Harrison	Evan	926	115750

Note that the data was copied into column D, but the text *format* was ***not***. We still may need to format data.

Now that this data is linked, if you change data on the master sheet, the data will change on the new sheet that you created.
You can apply this same process to the names in this spreadsheet.

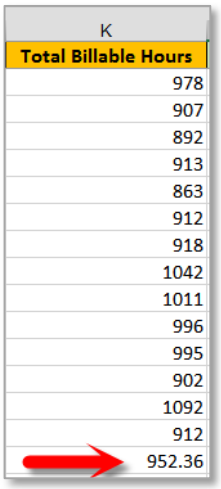
Advanced Formulas, Functions & Actions

In this section, we'll review a few advanced formulas and functions. Except where noted, these functions can be found at ***Home Tab > Editing Group > AutoSum Drop Down Menu.***

Average

Averages the data within a cell range. Go to the empty cell at the end of a column or a row, then ***Home Tab > Editing Group > AutoSum Drop Down > Average***.

In this example, we've averaged all 59 data entries in column K, total billable hours.



K
Total Billable Hours
978
907
892
913
863
912
918
1042
1011
996
995
902
1092
912
952.36

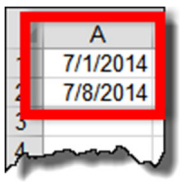
Minimum/Maximum

Using the same steps described in the entry for *Average*, ***Minimum*** will identify the lowest number within a cell range, and **Maximum** will identify the highest number.

Date and Time Functions

You can use the drag and copy function in Excel to enter time intervals.

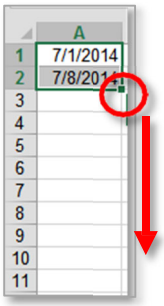
1. For example, if we wanted a series of dates spaced out every 7 days, simply type in the starting date in one cell.
2. In the next cell, add 7 days and enter that date.



A
7/1/2014
7/8/2014

Enter the 1st 2-3 dates of your interval.

3. Select both of those cells and drag the fill handle down to or across to where you want the dates to end.



	A
1	7/1/2014
2	7/8/2014
3	
4	
5	
6	
7	
8	
9	
10	
11	

4. Note that your dates will be exactly 7 days apart.

	A
1	7/1/2014
2	7/8/2014
3	7/15/2014
4	7/22/2014
5	7/29/2014
6	8/5/2014
7	8/12/2014
8	8/19/2014
9	8/26/2014
10	9/2/2014
11	9/9/2014
12	9/16/2014

This same process can be applied to ***time intervals***. For example, if you wanted a time sheet that started at 8:30 am at 15-minute intervals. Following the steps listed above, your first two cells would contain ***8:30*** and ***8:45*** respectively. Then simply drag and copy the formula from those 2 cells.

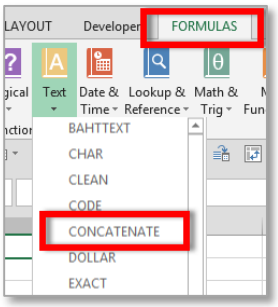
Concatenate

The ***Concatenate*** function allows you to combine data in cells into one cell.

For example, we have a list of first names and last names, but we want to combine them so that first names and last names are in one cell.

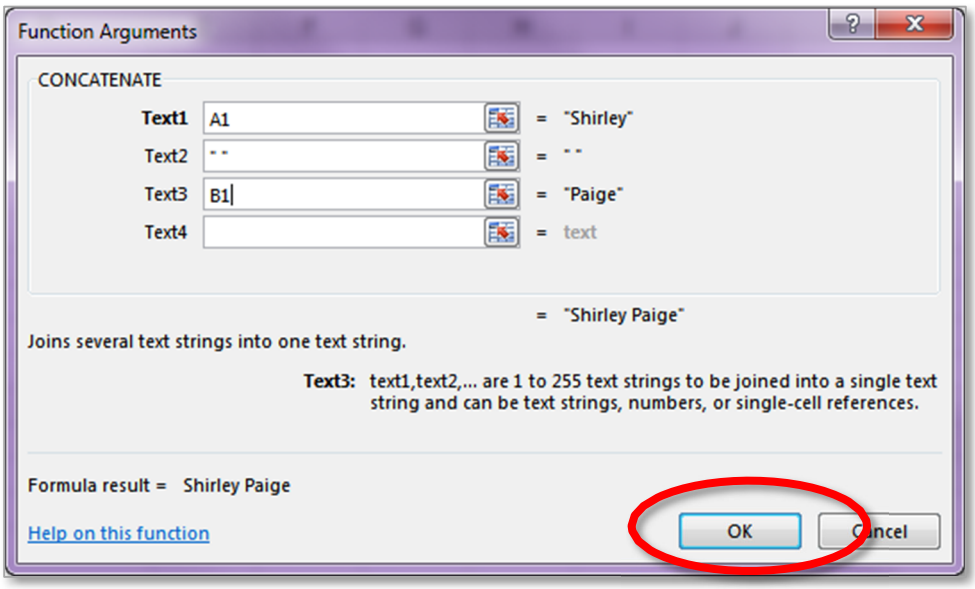
	A	B	C
1	Shirley	Paige	
2	Dennis	Ball	
3	Mark	Orvin	
4	Richard	Burkhart	
5	Richard	Rutland	
6	Benita	Walker	

1. Click in cell ***C1***.
2. From ***Formulas Tab > Text Button*** select ***Concatenate***.

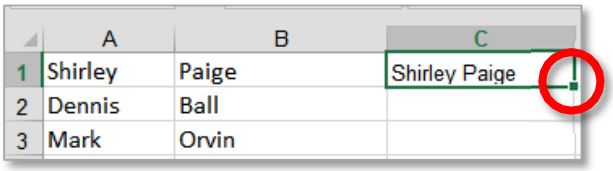


3. The ***Function Arguments*** window opens. In this window, click inside the ***Text 1*** box. Then click on cell ***A1***, the one that contains the name "Shirley."
4. Click inside the ***Text 2*** box. Type a space in this box by simply clicking spacebar on your keyboard. ***Note:*** This will put a space between the first and last names.

5. Click inside the ***Text 3*** box, and then click on cell ***B1***, the one that contains the name "Paige" and then click ***OK.***



"Shirley Paige" now appears in cell C1.

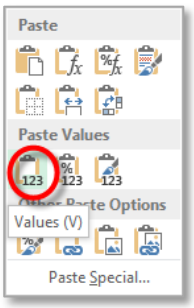


	A	B	C
1	Shirley	Paige	Shirley Paige
2	Dennis	Ball	
3	Mark	Orvin	

As is always the case, you can drag and copy the ***Concatenate*** formula to the other cells.

IMPORTANT NOTE ABOUT FUNCTIONS…

If you need to copy or cut and paste data resulting from functions such as linking data or the concatenate function, you will need to ***paste special > paste values***. This will retain the newly-created data.



Analyzing Data

One of Excel's biggest strengths is its ability to help you analyze and manage data. In this section, we'll discuss a number of ways to help you see your data in a different way.

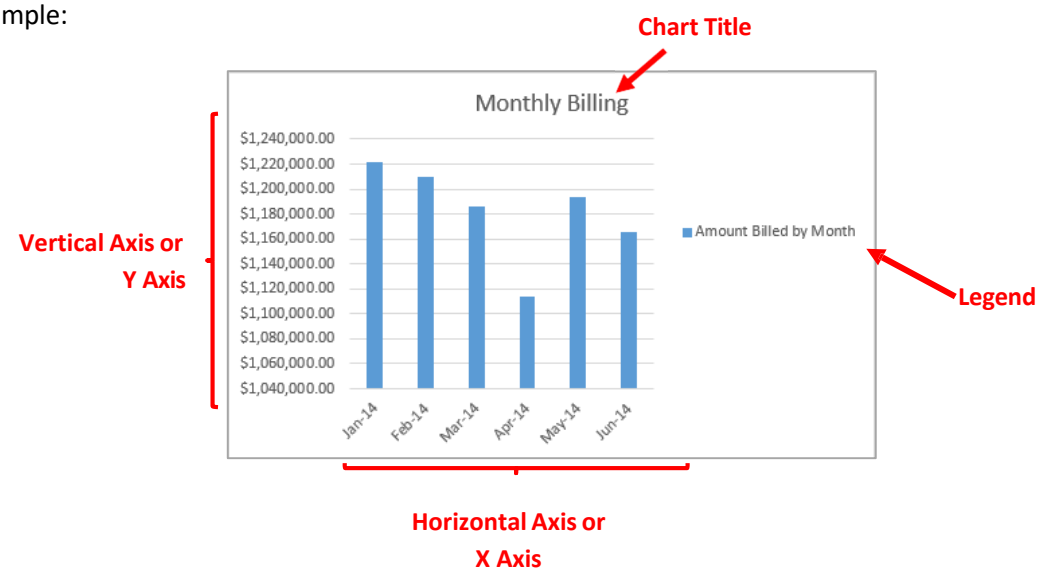
Chart Types

Excel has a variety of chart types, each with its own advantages.

- ***Column charts*** use vertical bars to reflect the data in a table. They're quite flexible and can work with a variety of data. However, most of the time they're used for comparing information.
- ***Bar charts*** are just like Column charts, except they use horizontal bars instead of vertical bars.
- ***Line charts*** are very helpful in reflecting trends. Data points are connected using lines, giving the reviewer a quick glimpse at the trends.
- ***Area charts*** are similar to line charts. The only difference is that the areas underneath the lines are filled in.
- ***Pie charts*** allow you to compare proportions by presenting each data point as a piece of a pie, making it easy to see which values make up the bulk of the results.
- ***Surface Charts*** display data in a 3D view. They are very useful when working with large data sets, presenting a variety of information at the same time.

Components of a Chart

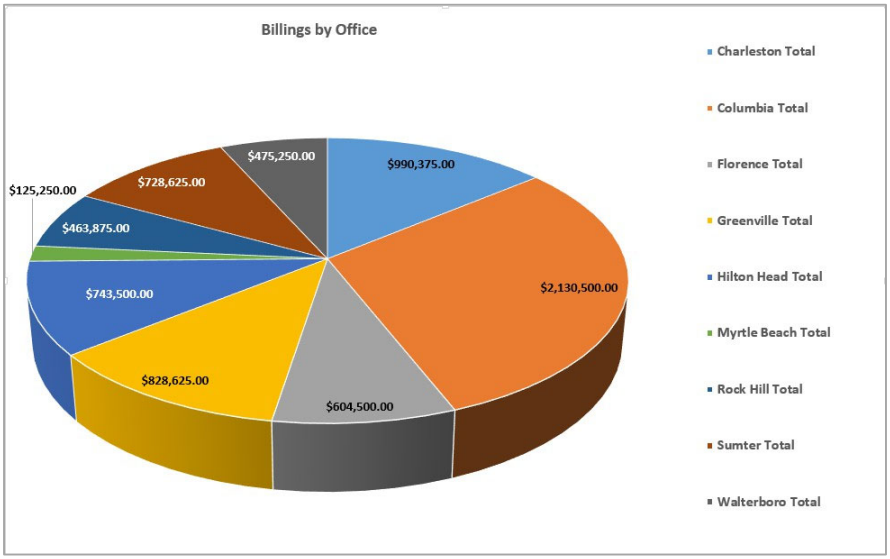
Charts comprise several elements that can help you interpret the data. This Column Chart provides a good example:



Creating and Modifying a Simple Graph or Chart

1. Select the cells that you want to chart, including the column titles and row labels. The titles and labels will serve as the source data for the chart.
2. Go to ***Insert Tab > Charts*** and choose the desired chart type from the drop-down menu. For our purpose, we're going to use a pie chart.

3. The chart will be inserted into the worksheet.
   HINT: The ***Recommended Charts*** button can help you determine which sort of chart you should consider.



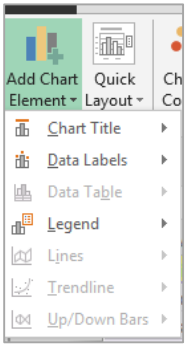
Modifying Chart Layout and Styles

Once you've inserted it you can modify the way it looks. There are a number of components in the chart that you can modify, including:

- Chart titles
- Legends
- Data Labels
- Axis Labels/Names

To add a chart element…

1. Click ***Add Chart Element*** command in the Design tab.
2. Choose the desired element from the drop-down menu.



Editing a Chart Element

To ***edit a chart element***, like a chart title, simply ***double-click*** the placeholder and begin typing.

Quick Layout Command

As the name implies, this button allows you to quickly add a pre-set format to your chart. The presets change depending upon the type of chart you're working on.

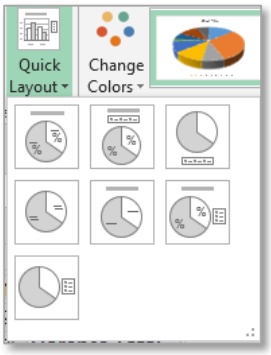
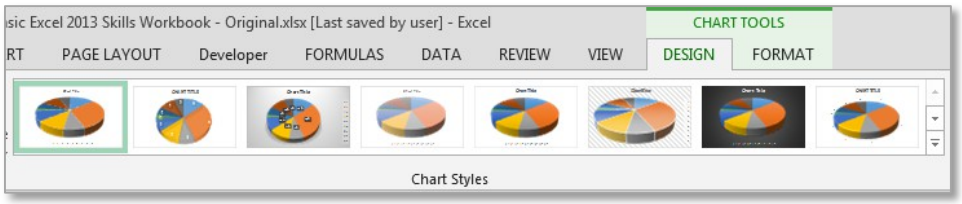


Chart Styles

Excel provides several ***chart styles*** that allow you to easily change the look of your chart. Simply select the chart style that you wish you to apply from the **Chart Styles group**.

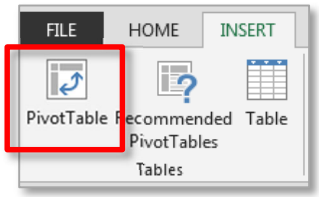


Pivot Tables

Pivot Tables allow you to summarize and manipulate data in a number of ways. It allows you to rearrange – or pivot – the information to give you a multitude of views. Most people don't use Pivot Tables, primarily because they seem a little intimidating. This should take care of that.

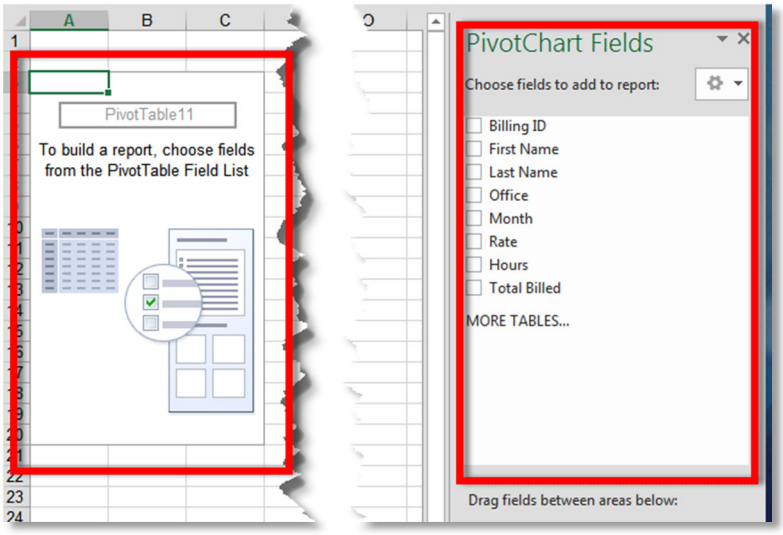
We want to know how much each attorney has billed so far this year. So let's get started.

1. Select the cells - including column headers – that contain the data you want to use.
2. Go to ***Insert tab***, select ***PivotTable***.

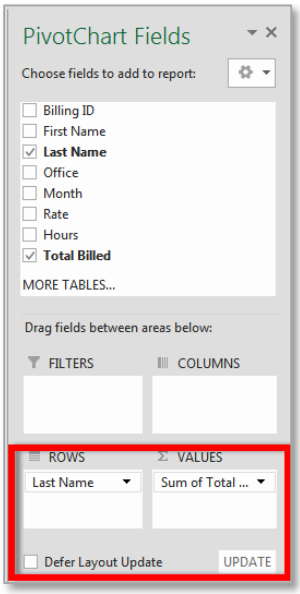


3. The ***Create PivotTable*** dialog box appears. You've already selected your data, so you don't need to change it. And it's always a good practice to create a new worksheet. That way you won't disrupt any of your data on the current sheet.

4. Your new blank PivotTable and Field List will appear on a new worksheet.



5. The column headers from your source data appear as fields in the ***PivotTable Field List***. From here it's a matter of determining which data you want to pivot – or switch - in and out check the box for each field you wish to add. In our example, we want to know the total amount billed by each attorney. So, we'll check ***Last Name*** and ***Total Billed***.
6. Note how each has been added to a field in the lower half of the Pivot Chart Field box…



7. The PivotTable summarizes the selected fields. In our example, the PivotTable shows us the amount each attorney billed.

Row Labels	Sum of Total Billed
Andrews	94950
Becky	174750
Hubbard	60125
Jeffrey	167400
Lee	148500
Lowe	115020
Moore	149770
O'Leary	261750
Paige	346500
Smoak	305375
Turner	67125
Walker	211000
Grand Total	**2102265**

Just like with any other spreadsheet data, you can sort the data in a Pivot Table by using the ***Sort & Filter*** command in the ***Home tab***. You can also apply any type of formatting.

But the true strength of the Pivot Table is its ability to pivot information and provide you with a multitude of views of your data.

By simply adding ***Month*** to the ***Columns*** window in our Pivot Chart Fields window, not only do we see the total each attorney has billed, but we can also see how much each attorney billed monthly.

Sum of Total Billed	Column Labels									
Row Labels	January	February	March	April	May	June	July	August	September	Grand Total
Andrews	9000	13500	10800	11250	12600	12240	13680	11880		94950
Becky	25125	20375	17750	20875	16875	23500	17375	15625	17250	174750
Hubbard	5625	6250	6250	11250	12000	9000	9750			60125
Jeffrey	18750	15000	19950	21300	17550	20550	16800	17850	19650	167400
Lee	15000	12500	13000	16500	20000	22500	18000	16500	14500	148500
Lowe	7500	9000	18000	16500	15675	14025	10560	13035	10725	115020
Moore	35000	10500	21000	19250	15675	14025	10560	13035	10725	149770
O'Leary	30000	33750	34800	31800	34500	35250	31650	30000		261750
Paige	33750	28125	29250	37125	45000	50625	40500	37125	45000	346500
Smoak	35000	39375	40600	37100	40250	41125	36925	35000		305375
Turner	5625	6250	6250	13125	14000	10500	11375			67125
Walker	20000	30000	24000	25000	28000	27200	30400	26400		211000
Grand Total	**240375**	**224625**	**241650**	**261075**	**272125**	**280540**	**247575**	**216450**	**117850**	**2102265**

Sparklines

Sparklines allow you to analyze and view trends in your data without creating an entire chart. They're sort of like mini charts that fit inside a single cell.

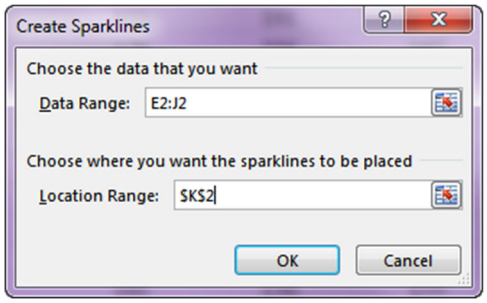
So why not just use a chart? Well, if you have 700 rows of data, your typical chart would have 700 series of data. The data that matters to you might get lost in all of that. However, a sparkline on each row it's easier to see relationships and trends for many series at once.

Before you start, make sure you have an empty cell or cells to the right of your data.

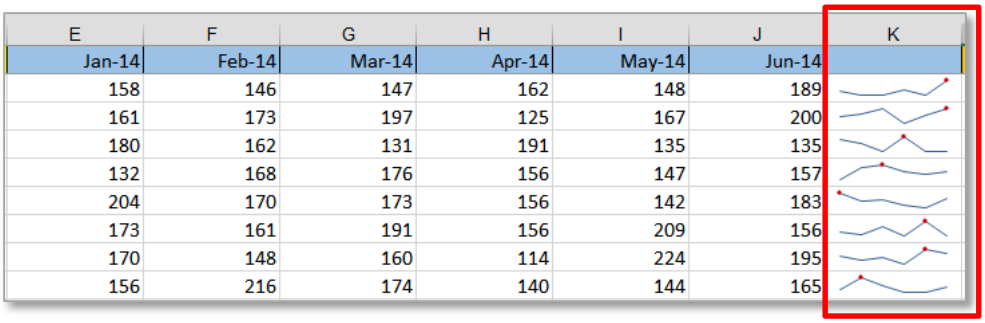
1. Select the cells where your source data for your sparklines is. In our example, we'll select the cell range ***E2:J2.***

Last Name	First Name	Hire Date	City	Jan-14	Feb-14	Mar-14	Apr-14	May-14	Jun-14	otal Billable Hours
Ball	Dennis	9/13/2010	Charleston	158	146	147	162	148	189	950
Moore	Paula	3/23/2004	Charleston	161	173	197	125	167	200	1023

2. Go to the ***Insert Tab > Sparklines*** group and select the style you wish to use. We're going to use the line style.
3. The Create Sparklines dialog box appears. Using your mouse, select the cell where the sparkline will appear, then click ***OK***.



4. The sparkline will appear in the specified cell.
5. Click, hold, and drag the ***fill handle*** to add sparklines to the remaining cells.



E	F	G	H	I	J	K
Jan-14	Feb-14	Mar-14	Apr-14	May-14	Jun-14	
158	146	147	162	148	189	
161	173	197	125	167	200	
180	162	131	191	135	135	
132	168	176	156	147	157	
204	170	173	156	142	183	
173	161	191	156	209	156	
170	148	160	114	224	195	
156	216	174	140	144	165	

The sparklines now show a clear trend for each attorney over time.

Customizing Sparklines

Use the ***Sparkline Tools Design > Contextual Tab*** to add additional emphasis to your sparklines. In the case above, we've added red dots to the high points, but you can also change the color, add data markers as well as a number of other things to customize your sparklines.