



2ND EDITION

MICROSOFT EXCEL COURSE

ADVANCED
MODULE

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A Message From the Author

Congratulations on taking ownership of your professional development. My name is Allen Aguilar and I am the author of this booklet. My intention with this message is to provide you with additional context about this booklet and details on how to use it.

I began to use Excel since I was about 11 years old. However, I never received formal training in Excel until college but forgot most of it because I stopped using it. It wasn't until I worked for a start-up company that Excel became the every-day software to use. This booklet is intended for the Excel user who is looking to build up their Excel skills and thinking. Although I do cover some of the Excel terminology in this booklet, I shy away from being too technical, and instead, provide a very practical approach to learning.

About This Booklet

This booklet can be used as a reference guide for any Advanced Excel user. This booklet most likely accompanies one of my in-person trainings or online trainings on the same topic. My Excel trainings are typically delivered in-person or online and includes a booklet (such as the one you're reading) with Excel files where the participants get to practice what they learned. To learn more about my trainings, please visit www.leadershipbuild.com.

How to Use This Booklet

This booklet will take you step-by-step through the journey of an Excel user moving from an Advanced level to an advanced level. There are various screenshots that will help you visualize my explanations in this booklet. Additionally, there are practice exercises along with this booklet that will help you apply what you are learning. If you purchased one of my online courses, or are attending an in-person training, the practice exercises will be provided for you by your instructor.

If you have any questions or would like to get in contact with me, please feel free to send me an email at allenaguilar@leadershipbuild.com. Enjoy!



Allen Aguilar

Founder of Leadership Build

Introduction

Excel continues to be a very popular software used across different companies. Most people don't know this, but MS Excel existed since 1985, making its way to the offices of different companies throughout the world.

Why Excel?

Excel is typically used to capture information in a centralized location. However, the true power of Excel lies in its ability to make calculations by using different formulas and functions. MS Excel is one of the most powerful software that can make computations, forecasts, charts, graphs and organize data in a way that can be understood.

How can this booklet help me professionally?

Depending on the type of work that you do, a good understanding of Excel can help you become faster at your job. Excel experts are extremely efficient when it comes to projects, reports and sharing information. Those that use Excel with proficiency will save time because Excel will do the work for them. This booklet will not only help you learn more Excel features, but will also help you get better at problem solving by deciding which Excel function is the most efficient to use.

What will I learn in the Excel Advanced Course?

In the Excel Advanced Course, you will learn:

1. How to become more efficient in Excel with hyperlinks
2. How to better work with Tables, records and fields
3. How to effectively work with dates on spreadsheets
4. Formulas to help you make calculations with dates
5. How to become more efficient with Names and Ranges
6. An introduction to basic Logical Formulas such as the SUMIFS formula and others
7. How to use different types of Logical Formulas such as the OR formula, AND formula and the IF formula
8. The difference between the different types of *lookup* formulas
9. How to use the VLOOKUP, HLOOKUP and the LOOKUP formulas
10. How to work with Pivot Tables, perform Pivot tasks and more
11. How to set up pages and update settings in your sheets to print according to needs

Basic Terminology

Before you dig deep into this booklet, it is important that you know some of the terminology that we will use throughout the book. As you read through this booklet you will encounter different words that are used in Excel and you will get a chance to learn the definition of those words. Just like anything new that is worth learning, it takes some time to get used to the terminology used in Excel. This booklet can't confirm your previous Excel training so it will make the assumption that you know some terms and not others. However, we want to make sure that we speak the same language which is why we want to include four terms and its definition in this section.

A Workbook

A Workbook consists of one or many spreadsheets. You can think of a Workbook as a book with different pages (or sheets) that you are working on. Typically, when you save your work in Excel, you save it as a Workbook file.

A File

A file is the name of your workbook. Think of it as a book that you are 'filing' away. You need to give it a name so that you can easily find it later. The older versions of Excel save workbooks as .xls. Newer version of Excel saves files as .xlsx.

A Spreadsheet

The spreadsheet is the platform that allows you to do your work with cells, make calculations, enter data, store data, create graphs and display any type of information you would like to present. Spreadsheets are sometimes called 'sheets' or 'Excel sheets' as well.

Gridlines

Gridlines are the 'rectangles' that you see on a spreadsheet. They help users gauge the space between each entry while neatly organizing data. The gridlines do not print unless you modify a setting in Excel.

Become More Efficient in Excel

The Excel features you'll learn in this section are functions that will help you access data, tables and sheets quicker. The techniques are more of a warm-up for those seeking a smoother transition from Intermediate-level skills to more Advanced skills.

Creating and Working with Hyperlinks

Using hyperlinks in your Excel spreadsheets help users quickly get from one place to another with just one click. In this section, you'll learn how we define hyperlinks, the different types of hyperlinks that we typically use in Excel and how to create them and insert them into a spreadsheet. Additionally, you'll learn how to edit and customize your hyperlinks.

I	J	K	L	M
Zip	Purchase Date			
42988	05/11/1995			
41496	09/23/1993		Lesson 2	
74800	03/01/2000			
61950	08/25/1993			

What is a Hyperlink?

Microsoft defines a hyperlink as an object that links to another location in the same file, or to another file altogether. Hyperlinks are common in other areas such as websites and digital books. Think of it as something that you can click on that will direct you to another location or file. Hyperlinks can be used to direct someone from your spreadsheet to a file, a website, an email and even someone else's file. You probably have already used hyperlinks in your lifetime in one way or another, especially if you have visited any websites recently. Hyperlinks are typically displayed as words that are blue and underlined. This is typically how people know that a word can be clicked on and be directed to another location.

How to Insert a Hyperlink to an Existing File

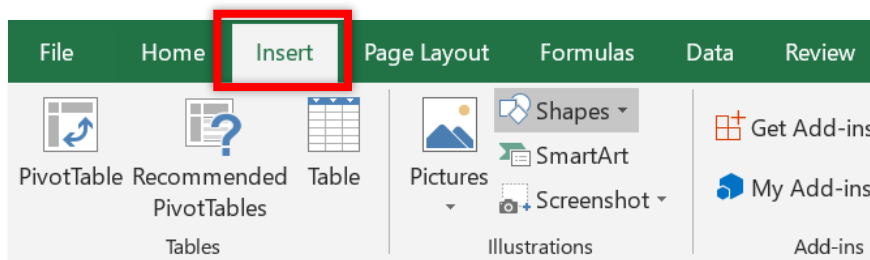
The process to create a hyperlink is relatively easy. One way to use hyperlinks is by linking them to a file on your computer. This way, if someone (such as yourself) needs to access a certain file quickly, you can easily click on the hyperlink and be directed to the file that you choose.

To insert a **Hyperlink** to an existing file:

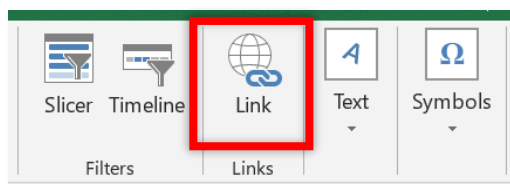
1. Click on the cell where you will insert the hyperlink

	G	H	I	J	K	L	M
	City	State	Zip	Purchase Date			
	Kearney	NE	42988	05/11/1995			
	Las Vegas	NV	41496	09/23/1993			
	Cincinnati	OH	74800	03/01/2000			

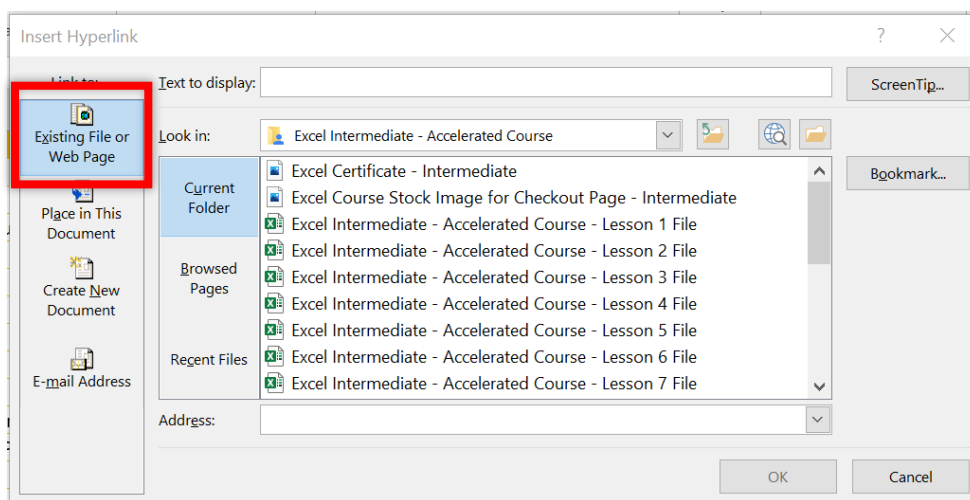
2. After selecting the cell, navigate to the **Insert** tab



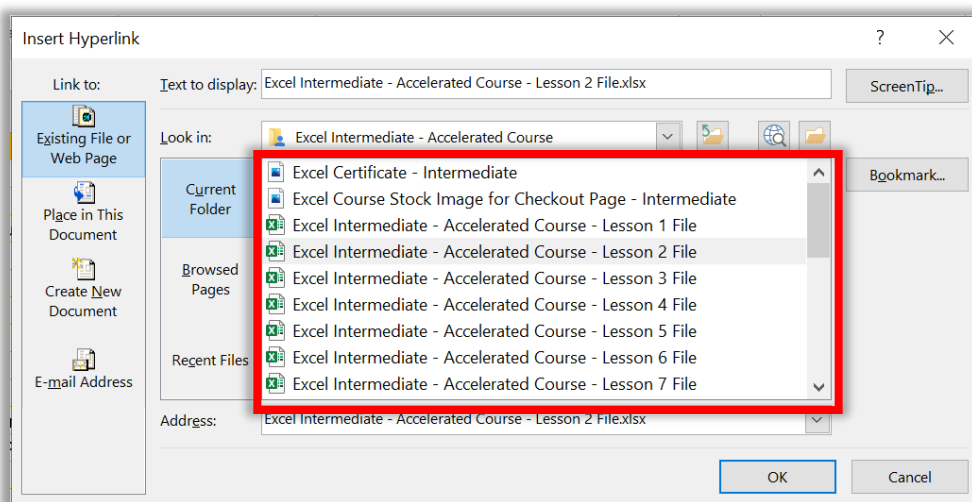
3. From the **Links** group, select the command that says **Link**. (If you're using an earlier version of Excel, then you would find a command called **Hyperlink**).



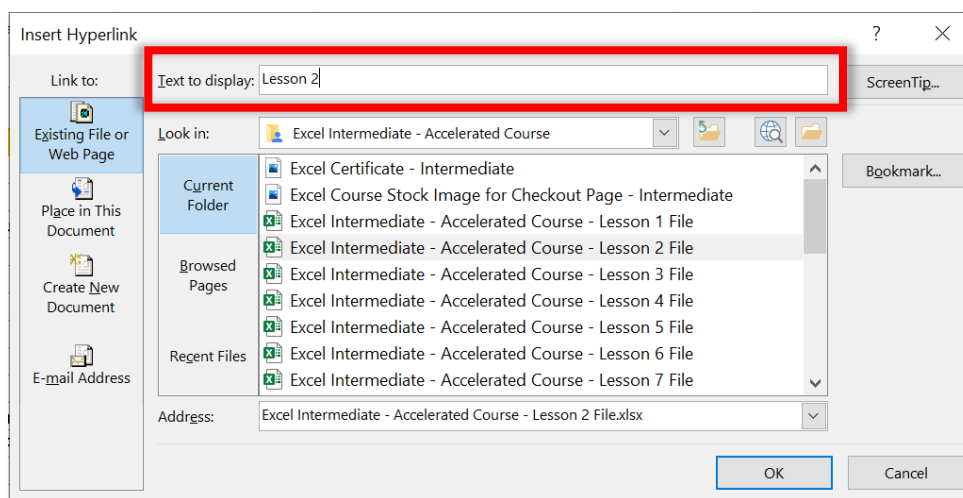
4. After selecting the command, you will see a dialog box displayed. Make sure that you select the appropriate settings by selecting the **Existing File or Web Page** option from the left side.



5. Select the appropriate file to open when the hyperlink is clicked. You can view your **Current Folder**, view **Recent Files** or browse through your computer for the appropriate file.



6. If applicable, change the **Text to Display** at the top to a word or phrase of your choice.



7. Click the **OK** button to see the hyperlink displayed.

I	J	K	L	M
Zip	Purchase Date			
42988	05/11/1995			
41496	09/23/1993		Lesson 2	
74800	03/01/2000			
61950	08/25/1993			

Moving forward, you (or anyone else) will be able to click on the hyperlink and will automatically be directed to the file you selected. The hyperlink helps you access the file quickly, without the need of opening your File Explorer and looking for the file manually.

How to Insert a Hyperlink directed to a Web Page

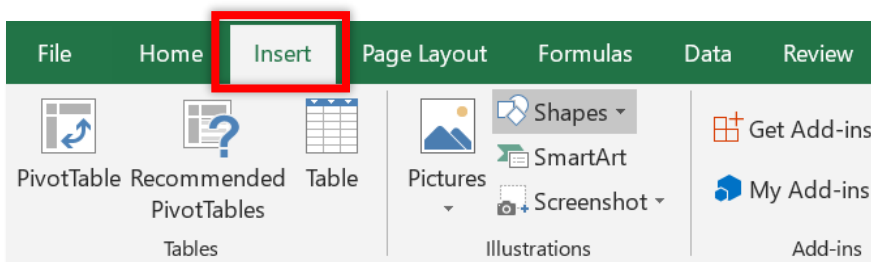
One other way to use hyperlinks is by linking them to a website. This is perhaps one of the most common ways to use hyperlinks. When done correctly, anyone who clicks on the hyperlink will be directed to the website you selected.

To insert a **Hyperlink** directed to a website:

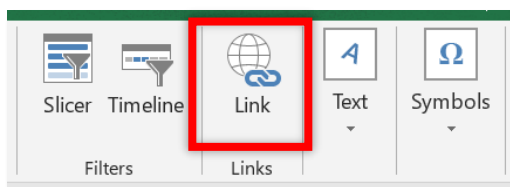
1. Click on the cell where you will insert the hyperlink.

City	State	Zip	Purchase Date			
Kearney	NE	42988	05/11/1995			
Las Vegas	NV	41496	09/23/1993			
Cincinnati	OH	74800	03/01/2000			

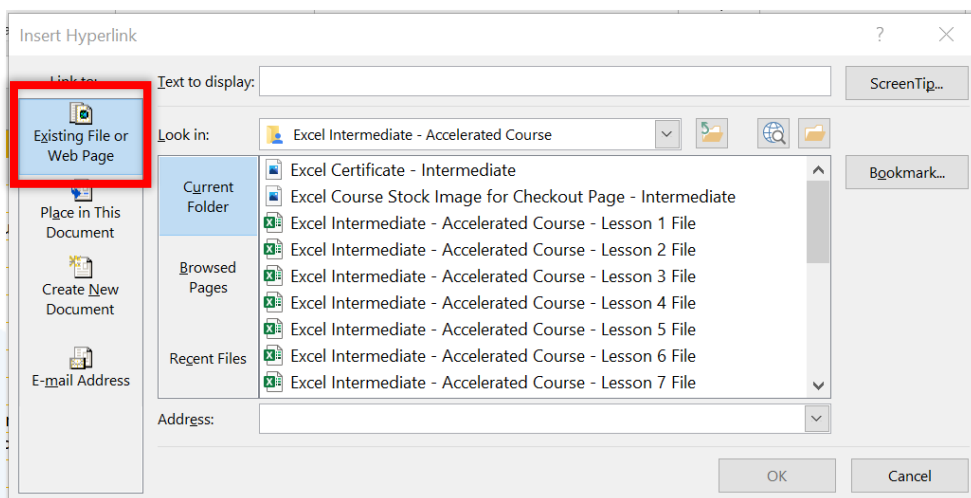
2. After selecting the cell, navigate to the **Insert** tab.



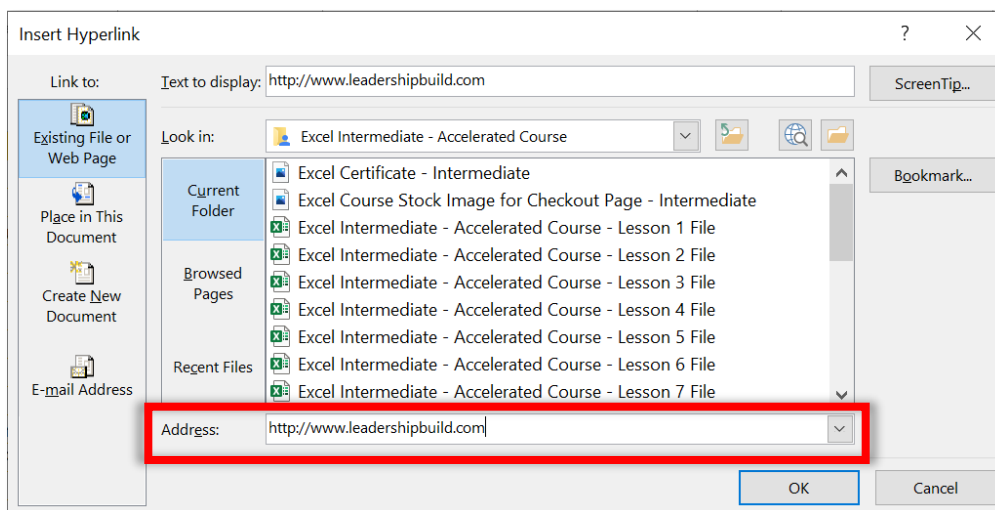
3. From the **Links** group, select the command that says **Link**. (If you're using an earlier version of Excel, then you would find a command called **Hyperlink**).



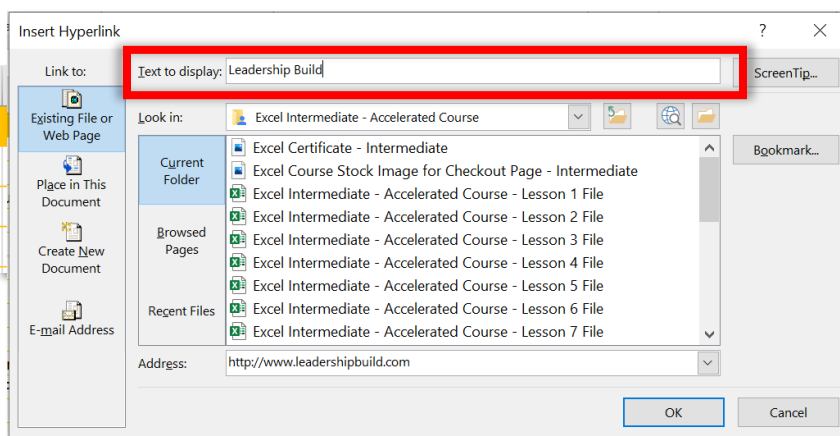
4. After selecting the command, you will see a dialog box displayed. Make sure that you select the appropriate settings by selecting the **Existing File or Web Page** option from the left side.



5. In the bottom sections titled **Address**, type the name of the website (or paste the URL from an existing website).



6. If applicable, change the **Text to Display** at the top to a word or phrase of your choice.



7. Click the **OK** button to see the hyperlink displayed.

Now, when you (or anyone else) clicks on this hyperlink you will be directed to the website you included in the hyperlink.

How to Insert a Hyperlink to a Location In Your Workbook

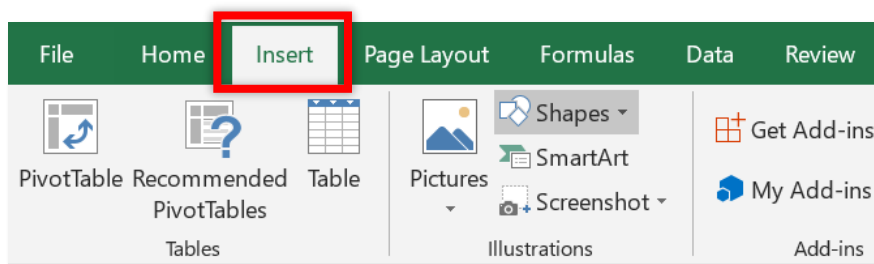
You may have an instance in which you want to create a shortcut from the current spreadsheet you're working on to a different location in your workbook. Again, the point of the hyperlink is to create shortcuts and produce efficiency.

To insert a **Hyperlink** to a location in your workbook:

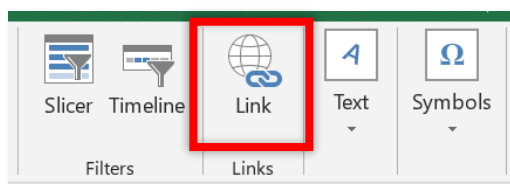
1. Click on the cell where you will insert the hyperlink

City	State	Zip	Purchase Date			
Kearney	NE	42988	05/11/1995			
Las Vegas	NV	41496	09/23/1993			
Cincinnati	OH	74800	03/01/2000			

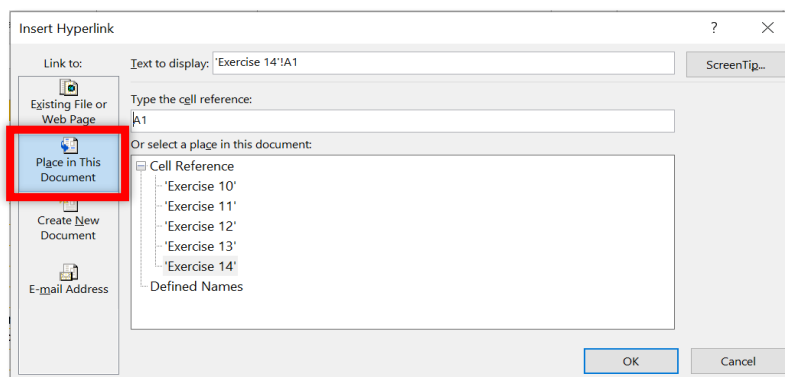
2. After selecting the cell, navigate to the **Insert** tab



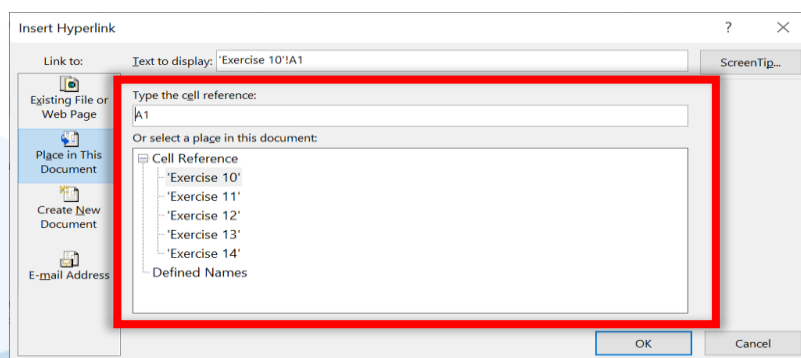
3. From the **Links** group, select the command that says **Link**. (If you're using an earlier version of Excel, then you would find a command called **Hyperlink**).



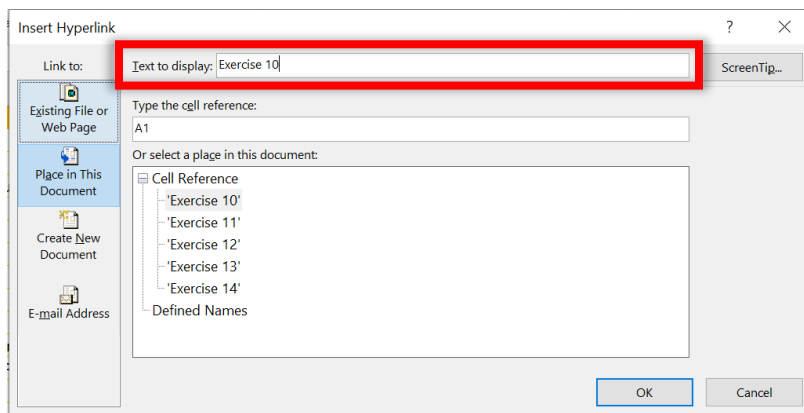
4. After selecting the command, you will see a dialog box displayed. Make sure that you select the appropriate settings by selecting the **Place in This Document** option from the left side.



5. Select a specific sheet, cell reference or defined name in your workbook.



- If applicable, change the **Text to Display** at the top to a word or phrase of your choice.



- Click the **OK** button to see the hyperlink displayed.

H	I	J	K	L	M
State	Zip	Purchase Date			
NE	42988	05/11/1995			
NV	41496	09/23/1993		Exercise 10	
OH	74800	03/01/2000			
WA	61050	08/25/1993			

From now on, when this hyperlink is clicked, it will direct the user to the appropriate location in your worksheet.

How to Insert a Hyperlink to An Email Address

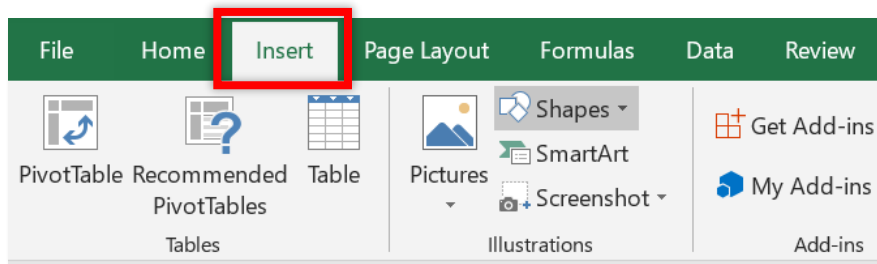
Another common use of the hyperlink is using it to direct to an email address. In other words, whoever clicks on the hyperlink will be able to automatically email the person you included when the hyperlink was created.

To insert a **Hyperlink** to an email address:

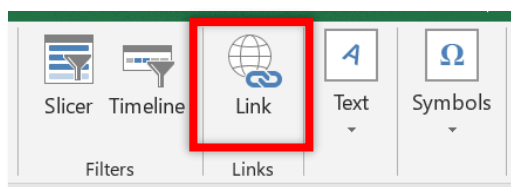
- Click on the cell where you will insert the hyperlink

G	H	I	J	K	L	M
City	State	Zip	Purchase Date			
Kearney	NE	42988	05/11/1995			
Las Vegas	NV	41496	09/23/1993			
Cincinnati	OH	74800	03/01/2000			

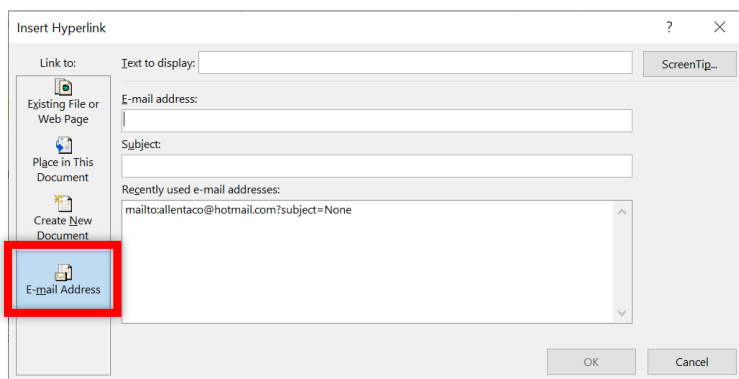
- After selecting the cell, navigate to the **Insert** tab



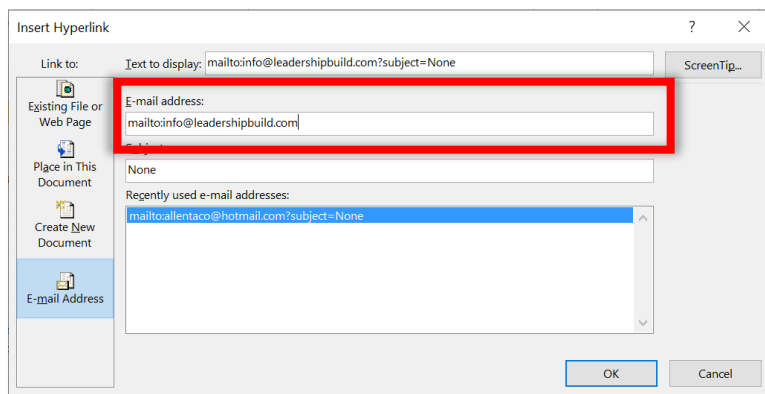
- From the **Links** group, select the command that says **Link**. (If you're using an earlier version of Excel, then you would find a command called **Hyperlink**).



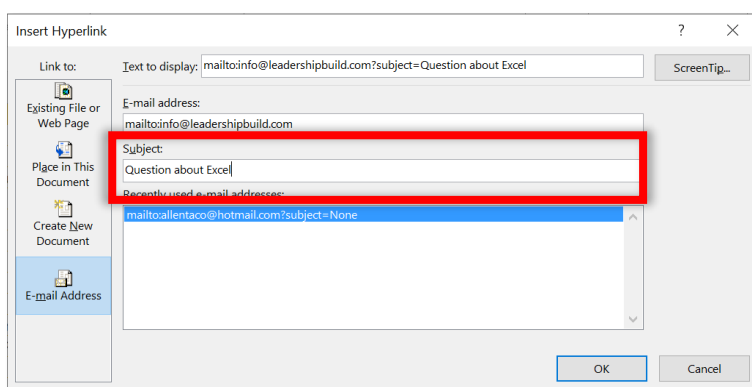
- You will see a dialog box displayed. Make sure that you select the appropriate settings by selecting the **Email Address** option from the left side.



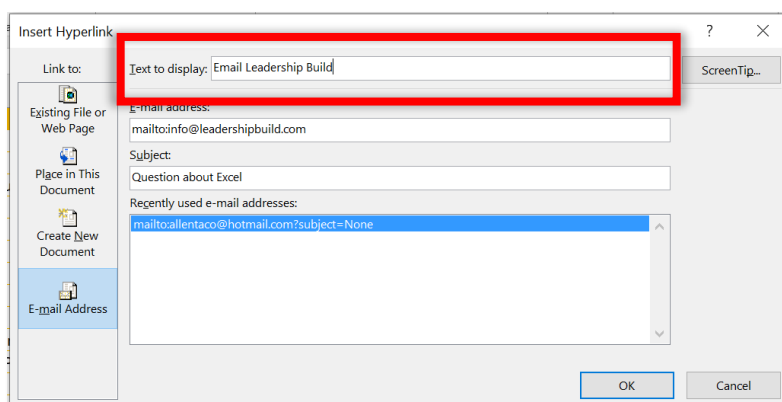
- Include the recipient's email address in the section titled **Email Address**.



- If you want to include a default subject, type something in the field titled **Subject**.



7. If applicable, change the **Text to Display** at the top to a word or phrase of your choice.



8. Click the **OK** button to see the hyperlink displayed.

H	I	J	K	L	M	N
State	Zip	Purchase Date				
NE	42988	05/11/1995				
NV	41496	09/23/1993		Email Leadership Build		
OH	74800	03/01/2000				

Moving on, when this hyperlink is clicked, it will open a window to access the person's email provider and will include the email address you included and the default subject (if one was included).

How to Quickly Modify Hyperlinks

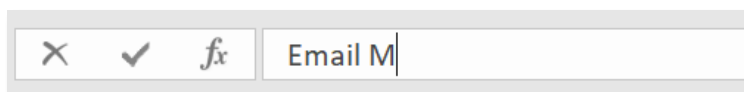
If you need to quickly change the displayed text of a hyperlink you created, you can easily do so by using the **Formula Bar**.

To quickly modify your **Hyperlinks**:

1. Select the cell that contains the hyperlink. Be careful because the hyperlink is clickable. Therefore, if you click on the cell that contains the hyperlink, you will most likely trigger the hyperlink. You can select the cell by using the arrow keys on your keyboard.

H	I	J	K	L	M	N
State	Zip	Purchase Date				
NE	42988	05/11/1995				
NV	41496	09/23/1993		Email Leadership Build		
OH	74800	03/01/2000				

2. Click on the **Formula Bar** and make the necessary edits to the text.

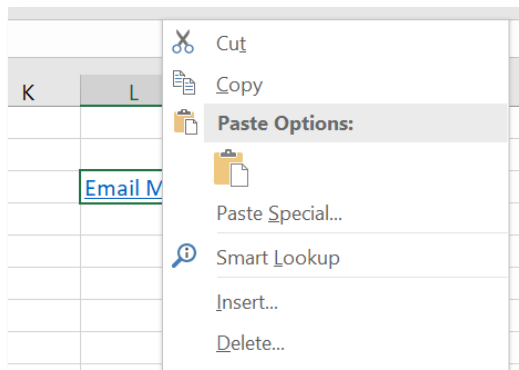


How to Make Changes to Your Hyperlinks

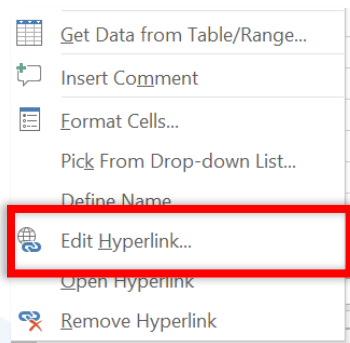
If you're planning on making major modifications to your hyperlinks, then the best thing to do is to modify the work you created when you first set up the hyperlinks.

To insert a **Hyperlink** to an email address:

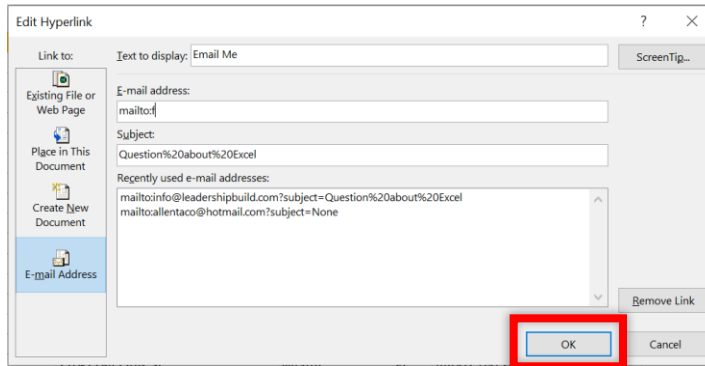
1. Right-click on the hyperlink.



2. Select the **Edit Hyperlink** option.



3. Make any necessary changes to your hyperlink and click the **OK** button.

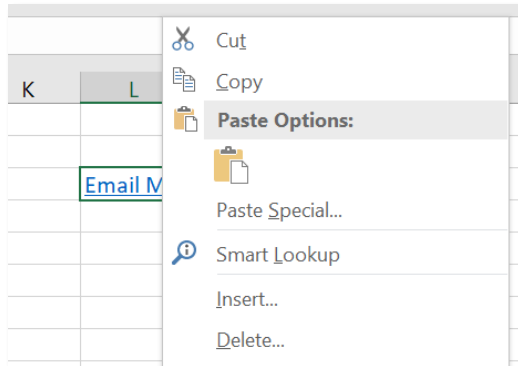


How to Format A Hyperlink

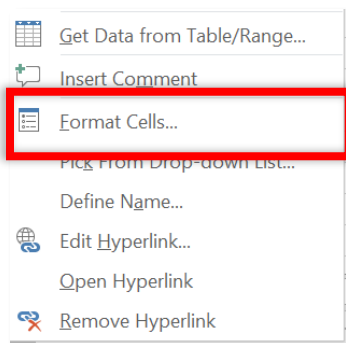
As mentioned previously, by default hyperlinks will be displayed in blue with an underline. However, how the hyperlink is displayed can be customized.

To change the format of a **Hyperlink**:

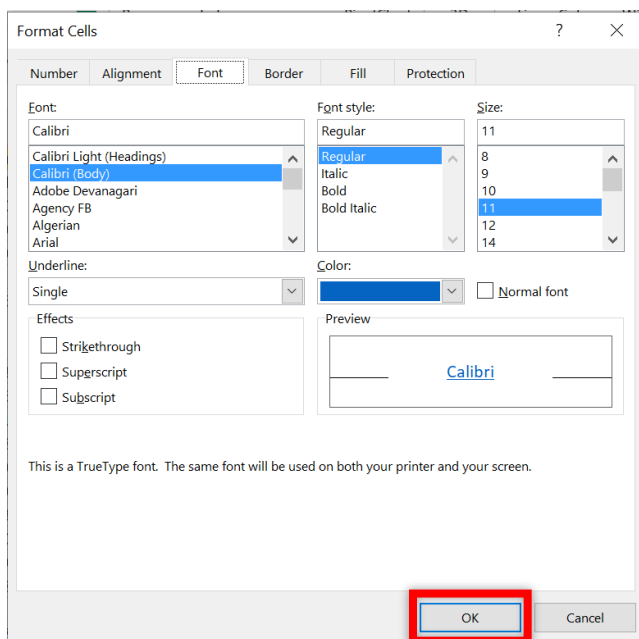
1. Right-click on the hyperlink.



2. Select the **Format Cells...** option.



3. The **Format Cells** dialog box will appear. Here, you can change the font size, font type, font color and other settings that you can typically make to the cell. Once you're done. Click on the **OK** button.

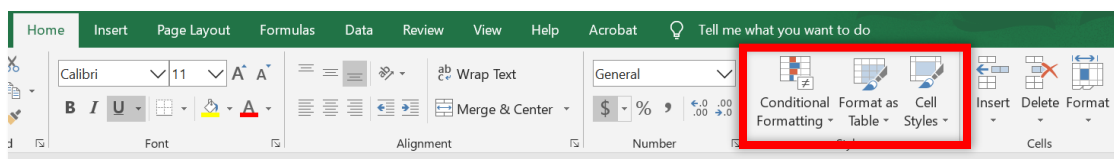


How to Change the Default Formatting For All Hyperlinks

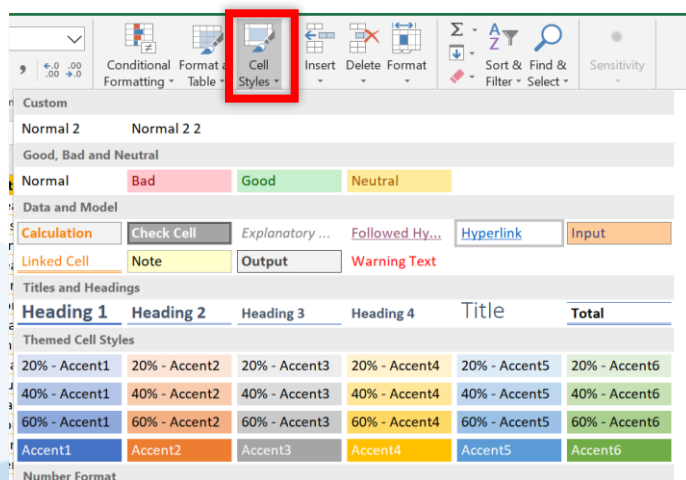
In the previous section, you learned how to modify the formatting for a hyperlink's cell. However, that method only allows you to make edits to one hyperlink. The following are the steps you would take to change the default formatting for all hyperlinks in your workbook.

To change the default formatting for all **Hyperlinks**:

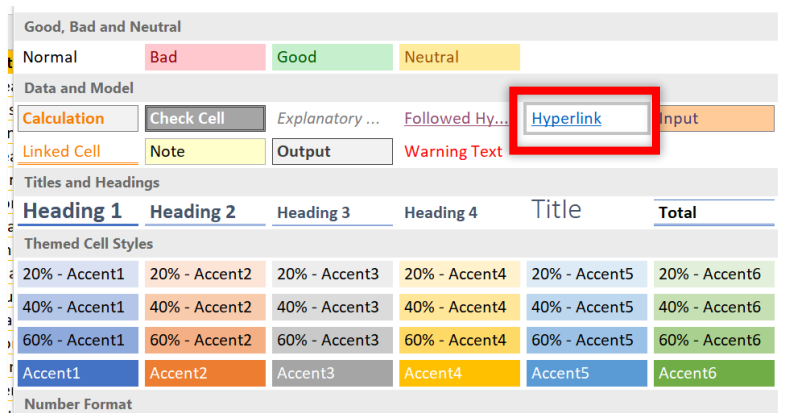
1. Navigate to the **Styles** group in the **Home Tab**.



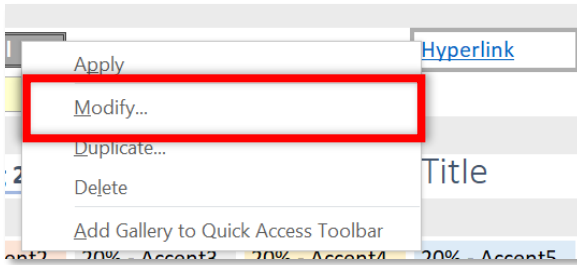
2. Select the **Cell Styles** command to display a gallery of options.



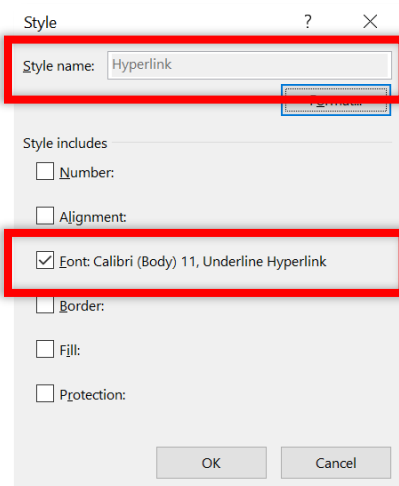
3. Locate the **Hyperlink** option.



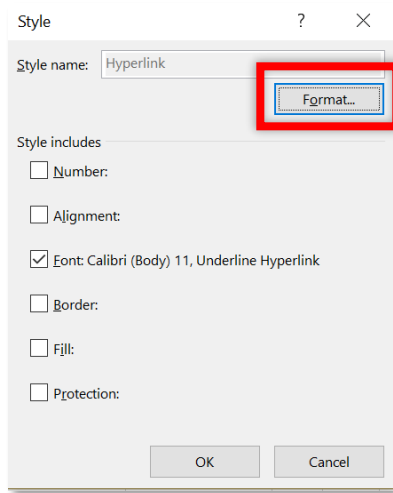
4. Right-click on the **Hyperlink** option and from the drop-down menu, select the **Modify** option.



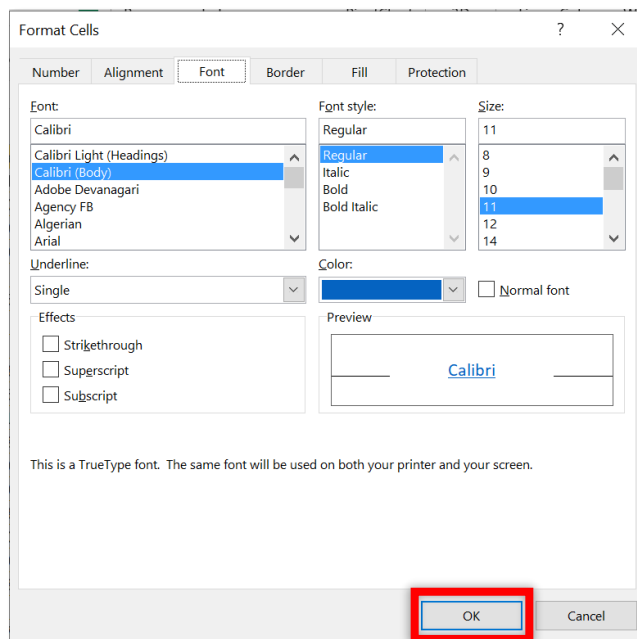
5. Afterwards, you will see the **Style** dialog box. Make sure that the *Hyperlink* word appears in the **Style Name** section. As you may notice, the only box that is checked is the *Font* checkbox. This is because your hyperlinks currently only include font styles.



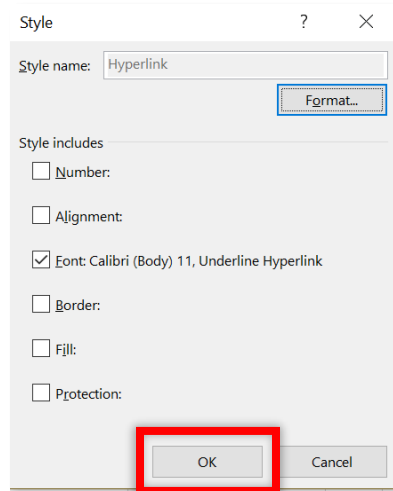
- Click on the **Format** button to display a dialog box that will help you modify the formatting of your cells that contain hyperlinks.



- The **Format Cells** dialog box will appear. Here, you can change the font size, font type, font color and other settings that you can typically make to the cell. Once you're done. Click on the **OK** button.



- When the **Style** window appears, click the **OK** button again to apply your changes to all hyperlinks.

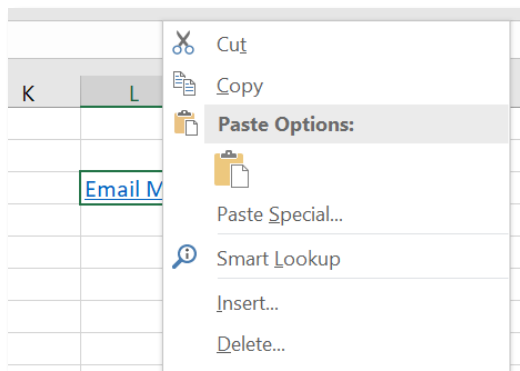


How to Remove the Hyperlink

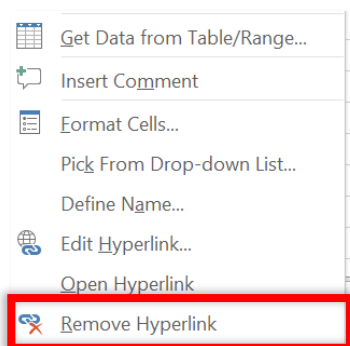
If you decide that you no longer want the hyperlink you can easily delete it by clicking on the cell and hitting the **Delete** button on your keyboard. However, if you want to keep the text but remove the hyperlink, you'll just need to follow a few steps.

To remove a **Hyperlink**:

1. Right-click on the **Hyperlink**.



2. Select the **Remove Hyperlink** option.



If done correctly, you will see that the hyperlink (and it's formatting) has been successfully removed, but your text will remain in the cell.

H	I	J	K	L	M
State	Zip	Purchase Date			
NE	42988	05/11/1995			
NV	41496	09/23/1993		Email Me	
OH	74800	03/01/2000			

Working with Dates

A critical component of using excel is working with dates. It seems as though every person that uses Excel, at one point has to figure out how many days are left, how many days have gone by or how many years are needed for something. In the following section we'll be working exclusively with dates and use formulas to make calculations while working with dates.

Formatting Dates

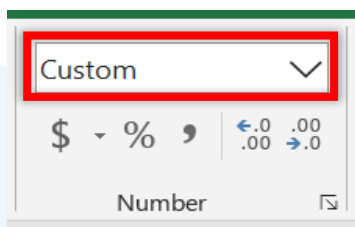
First, it's very important to know how to convert a cell or range from a generic text format to a date format. There are two common date formats that are used in Excel.

To format your cells or range into as a date:

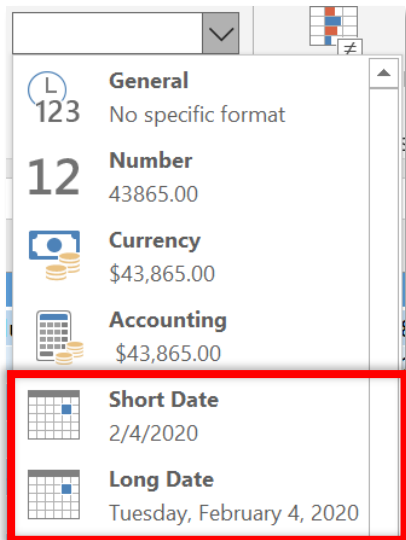
1. Select the area that you want to convert to a date format.

D	E	F
Phone	Last contact	Status Update
1-313-296-3978	4-Feb	Not Interested
1-393-405-3642	5-Feb	Not Interested
1-880-171-2435	6-Feb	Wants to purchase
1-225-234-6700	7-Feb	Wants to purchase
1-427-427-0392	8-Feb	Not Interested
1-508-189-9848	9-Feb	Not Interested
1-288-897-8181	10-Feb	Not Interested
1-528-455-8474	11-Feb	Not Interested

2. Navigate to the **Number** group (located in the **Home** tab) and select the drop-down menu.



3. Select one of the following two date formats: 1) **Short Date** and 2) **Long Date**



Customizing the Date Formats

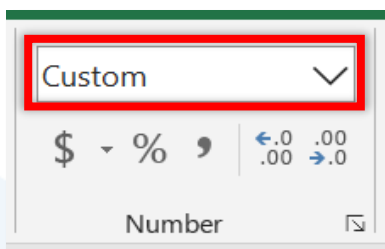
If you are not pleased with the two options Excel gives you for date formats, Excel has other options to choose from.

To customize the date format:

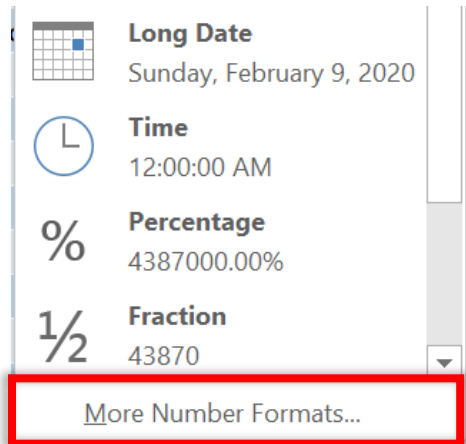
1. Select the area that you want to convert to a date format.

D	E	F
Phone	Last contact	Status Update
1-313-296-3978	4-Feb	Not Interested
1-393-405-3642	5-Feb	Not Interested
1-880-171-2435	6-Feb	Wants to purchase
1-225-234-6700	7-Feb	Wants to purchase
1-427-427-0392	8-Feb	Not Interested
1-508-189-9848	9-Feb	Not Interested
1-288-897-8181	10-Feb	Not Interested
1-528-455-8474	11-Feb	Not Interested

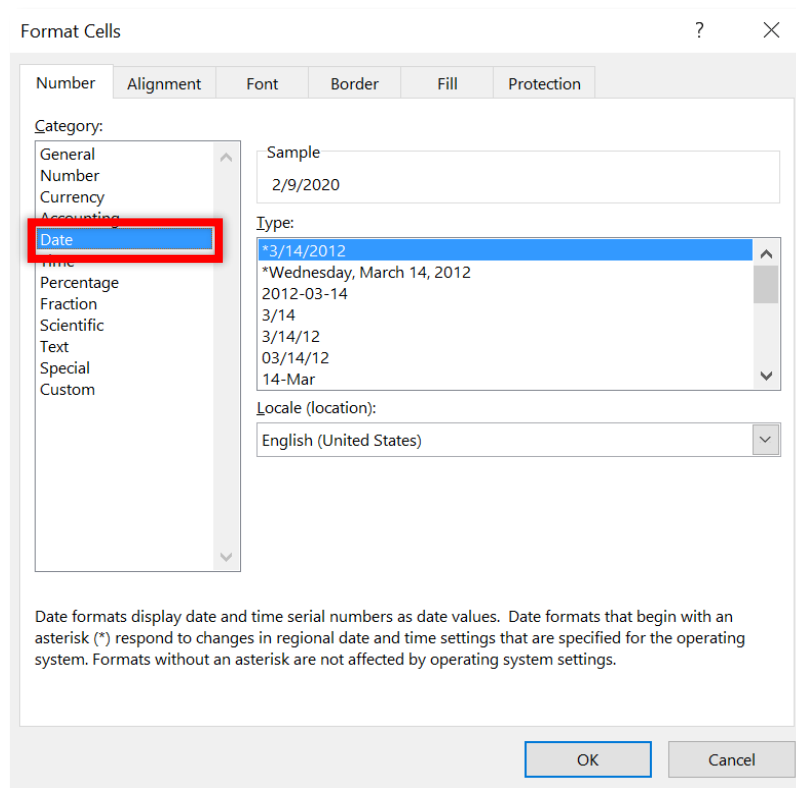
2. Navigate to the **Number** group (located in the **Home** tab) and select the drop-down menu.



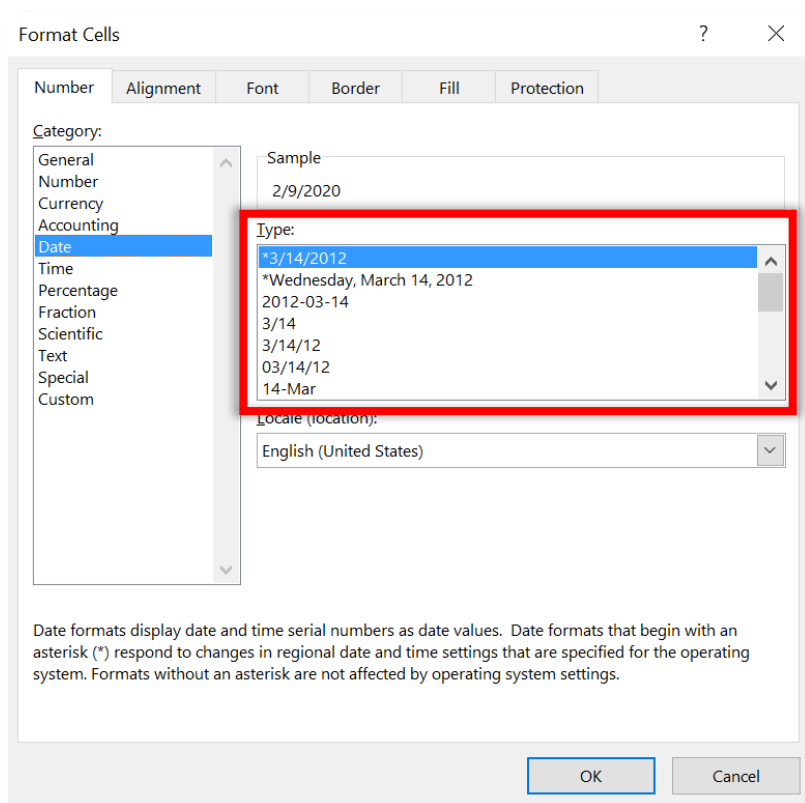
3. Select the **More Number Formats...** option from the drop-down menu.



4. The **Format Cells** window will appear next. In the **Number** tab, you'll have various format types to choose from. Select the **Date** category located on the left menu.



5. In the **Type** area, select an option from the various date formats. The *Sample* section displays a preview of the format you choose. Once you're done, select the **OK** button.



Working with Dates and Formulas

Excel not only allows you to do calculations for dollar amounts and basic numbers, but it can also do calculations on date formats. In this section you'll explore a few ways that you can use dates to make calculations.

TODAY Formula

The TODAY formula allows users to quickly display the current date in a cell. This is extremely helpful when you want to make up-to-date calculations. Therefore, if you use the TODAY formula today and log into Excel tomorrow, tomorrow's date will display in the cell where you used the TODAY formula. The TODAY formula doesn't require an argument.

Example of the TODAY formula

=TODAY()

To create a **TODAY** formula:

1. Select the cell in your spreadsheet where you want the current date displayed.

	A	B	C
1			
2			
3			
4			

2. In the cell you selected, type **=TODAY()**

	A	B	C
1	=TODAY()		
2			
3			
4			

3. Press the **ENTER** key on your keyboard to complete the formula and you will see the current date displayed in the cell you selected.

	A	B	C
1	10/23/2019		
2			
3			
4			

Adding a date and number of days to calculate a future date

Just like you can add digits in Excel, the same holds true for making calculations when you're using dates.

To use formulas to calculate days in the future:

1. Click on a cell to type a formula.

	A	B
1	Current Date	Date in 45 days
2	10/23/2019	

2. Type = and use the cell with the date you want to reference in your formula by clicking on that cell. This will be your *start date*.

	A	B
1	Current Date	Date in 45 days
2	10/23/2019	=A2

3. Add the number of days you want to include in your calculation by selecting another cell reference or using a constant.

	A	B
1	Current Date	Date in 45 days
2	10/23/2019	=A2+45

4. Press the **Enter** key on your keyboard to complete your computation.

	A	B
1	Current Date	Date in 45 days
2	10/23/2019	12/7/2019

Once you're done typing your formula, check the cell to ensure that your formula is calculating correctly. The *end date* will display in the cell with your formula.

Using formulas with cell references that have dates

In Excel, you can also make certain calculations by adding or subtracting two dates together. For example, perhaps you want to know the days in between two dates. In this case, you can use the subtraction operator to come up with that calculation, even if those two dates are cell references.

To calculate the number of days between two dates:

1. Click on the cell where you want to make your calculation.

	A	B	C
1	Invoice Date	Current Date	Days Past Due
2	8/1/2019	10/23/2019	

2. Type = and reference the first cell with the most recent date by clicking on that cell.

	A	B	C
1	Invoice Date	Current Date	Days Past Due
2	8/1/2019	10/23/2019	=B2

3. In your formula, subtract that cell with the older date located as a cell reference.

	A	B	C
1	Invoice Date	Current Date	Days Past Due
2	8/1/2019	10/23/2019	=B2-A2

4. Press the **Enter** key on your keyboard to complete your formula.

	A	B	C
1	Invoice Date	Current Date	Days Past Due
2	8/1/2019	10/23/2019	83

Once you're done with your formula, check the cell with your calculation to make sure that the formula is giving you the correct computation.

DAYS Formula

In the previous section, you learned how to manually subtract two dates to compute the number of days in between. Excel allows the simplicity of using a formula that will automatically do this calculation. The DAYS formula will calculate the number of days between two dates.

Example of the DAYS formula:

=DAYS(C2,D2)

The DAYS formula consists of two parts in the argument:

=DAYS(End Date,Start Date)

To create a **DAYS** formula:

1. Select the cell where you want to create your **DAYS** formula.

	A	B	C
1	Invoice Date	Current Date	Days Past Due
2	8/1/2019	10/23/2019	

2. In the cell, type **=DAYS(**

	A	B	C
1	Invoice Date	Current Date	Days Past Due
2	8/1/2019	10/23/2019	=DAYS(

3. Click on the cell that has the *end date* you want to reference and type a comma to complete the first part of the formula.

	A	B	C
1	Invoice Date	Current Date	Days Past Due
2	8/1/2019	10/23/2019	=DAYS(B2,

4. Click on the cell reference that contains the *start date*.

	A	B	C
1	Invoice Date	Current Date	Days Past Due
2	8/1/2019	10/23/2019	=DAYS(B2,A2

- Press the **Enter** key on your keyboard to complete the formula.

	A	B	C
1	Invoice Date	Current Date	Days Past Due
2	8/1/2019	10/23/2019	83

You'll know that you typed the formula correctly if you don't get an error message in the cell where you did the calculation and if the calculation is correct.

YEARFRAC Formula

The YEARFRAC formula helps calculate the number of years between two dates. To complete the YEARFRAC formula you'll need to cell references. Excel will display the computation, not as a whole number, but as a decimal, providing you with the exact time that has passed in years.

Example of the YEARFRAC formula:

=YEARFRAC(C2,D2)

The YEARFRAC formula consists of two parts in the argument:

=YEARFRAC(Start Date,End Date)

To create a **YEARFRAC** formula:

- Select the cell where you want to create your **YEARFRAC** formula.

G	H	I
DOB	TODAY'S DATE	YEARS
1/30/1990	7/15/2020	

- In the cell, type **=YEARFRAC(**

G	H	I
DOB	TODAY'S DATE	YEARS
1/30/1990	7/15/2020	=YEARFRAC(

- Click on the cell reference that contains the *start date* and type a comma to end the first part of the formula.

G	H	I	J
DOB	TODAY'S DATE	YEARS	
1/30/1990	7/15/2020	=YEARFRAC(G2	

- Click on the cell reference that contains the *end date*.

G	H	I	J
DOB	TODAY'S DATE	YEARS	
1/30/1990	7/15/2020	=YEARFRAC(G2,H2)	

- Press the **Enter** key on your keyboard to complete the formula.

G	H	I
DOB	TODAY'S DATE	YEARS
1/30/1990	7/15/2020	30.45833

You'll know that you typed the formula correctly if you don't get an error message in the cell where you did the calculation and if the calculation is correct.

DAY Formula

Another formula that may be useful is the **DAY** formula. The **DAY** formula helps users transfer or extract the day of the date. Therefore, if one needs the number 14th from February 14th, the **DAY** formula will help get that number. The **DAY** formula only contains one part in its argument.

Example of the DAY formula:

=DAY(C2)

To create a **DAY** formula:

- Click on a cell where you want to create your **DAY** formula.

A	B
Date	Day (Num)
4/7/1967	

- In the cell, begin typing the **DAY** formula as follow: =DAY(

A	B
Date	Day (Num)
4/7/1967	=DAY(

- In the argument, select a cell that contains a date.

A	B
Date	Day (Num)
4/7/1967	=DAY(A2)

- Hit the **Enter** key on your keyboard to complete your formula.

A	B
Date	Day (Num)
4/7/1967	7

If done correctly, the **DAY** formula will display the day of the date that you included in the argument.

MONTH Formula

A formula that is more commonly used than the **DAY** formula is the **MONTH** formula. The **MONTH** formula returns the numeric month of a date. Therefore, if you want to get the numeric month from the date, February 14th, then the **MONTH** formula would display the number 2 because February is the 2nd month of the year.

Example of the MONTH formula:

=MONTH(C2)

To create a **MONTH** formula:

- Click on a cell where you want to create your **MONTH** formula.

A	B
Date	Month
4/7/1967	

- In the cell, begin typing the **MONTH** formula as follow: =MONTH(

A	B
Date	Month
4/7/1967	=MONTH(

- In the argument, select a cell that contains a date.

A	B
Date	Month
4/7/	=MONTH(A2)

- Hit the **Enter** key on your keyboard to complete your formula.

A	B
Date	Month
4/7/1967	4

If done correctly, the **MONTH** formula will display the month as a number.

YEAR Formula

Another formula that is more commonly used is the **YEAR** formula. The **YEAR** formula returns the year given in a date. This is helpful in the event that you want to extract somehow the year of a date.

Example of the YEAR formula:

=YEAR(C2)

To create a **YEAR** formula:

1. Click on a cell where you want to create your **YEAR** formula.

A	B
Date	Year
4/7/1967	

2. In the cell, begin typing the **YEAR** formula as follow: =YEAR(

A	B
Date	Year
4/7/1967	=YEAR(

3. In the argument, select a cell that contains a date.

A	B
Date	Year
4/7/1967	=YEAR(A2)

4. Hit the **Enter** key on your keyboard to complete your formula.

A	B
Date	Year
4/7/1967	1967

If done correctly, the **YEAR** formula will display the year only.

Working with Tables

In this section, you'll learn about the terminology that Excel uses when working with Tables, the difference between lists and tables and how to format your lists and use them as table.

List vs Tables

Technically, Excel does not recognize any organized data as a table unless it is formatted as a table. Although you may not be using tables, you can still use all the functions available in Excel. If your data is organized, you can basically use your data as a table. When data is not formatted as a table, Excel recognizes it only as a list. Let's explore the difference.

What Are Lists?

Any data organized in rows or columns is automatically considered a list in Excel. For example, in the screenshot below, you'll see that we technically have a list with 9 columns and 10 rows. Even if color is added to the headers and the list looks presentable, it still does not make this list a table, according to Excel.

	A	B	C	D	E	F	G	H	I
1	Transactic	Store ID	Date of Transaction	Time of Transaction	Item No	Item Desc	Qty	Price	Amount
2	897	003	11/19/2014	9:02:00 AM	100145	Peach Daisy	1	1.1	1.1
3	898	004	11/19/2014	9:06:00 AM	100136	Yellow Orchids	18	1.5	27
4	899	005	11/19/2014	9:10:00 AM	100145	Peach Daisy	9	1.1	9.9
5	900	003	11/19/2014	9:14:00 AM	100132	Peach Carnations	8	1.3	10.4
6	900	003	11/19/2014	9:14:00 AM	100146	Tigerlilly	4	0.99	3.96
7	900	003	11/19/2014	9:14:00 AM	100124	Yellow Lillys	10	0.99	9.9
8	900	003	11/19/2014	9:14:00 AM	100136	Yellow Orchids	21	1.5	31.5
9	904	003	11/19/2014	9:20:00 AM	100137	Red Orchids	18	1.5	27
10	904	003	11/19/2014	9:20:00 AM	100141	Pink Daisy	14	1.1	15.4

Why are Lists Not Considered Tables?

Typically for the average user, any spreadsheet that we create and add data, can be considered a table. In fact, many of us may be calling our data a "table". Yet, the technical terminology is wrong because Excel does not recognize the format as a table. The main reason why these differences are explained in detail in this booklet is because we do not want you to get confused if we use the technical terminology used by Excel.

What is a Table?

To the eye, telling the difference between a table and a list may be difficult. This is especially true if the list has been heavily formatted. A table is an Excel format that allows you to manage your entries quicker, organize your data much better and format your cells in a consistent manner. A table is nothing more than a formatted database. Most of the time, a person can spot a “table” because Excel styles are used (such as the one pictured below).

	A	B	C	D	E	F	G	H	I
1	Transaction No	Store ID	Date of Transaction	Time of Transaction	Item No	Item Desc	Qty	Price	Amount
2	897	003	11/19/2014	9:02:00 AM	100145	Peach Daisy	1	1.1	1.1
3	898	004	11/19/2014	9:06:00 AM	100136	Yellow Orchids	18	1.5	27
4	899	005	11/19/2014	9:10:00 AM	100145	Peach Daisy	9	1.1	9.9
5	900	003	11/19/2014	9:14:00 AM	100132	Peach Carnations	8	1.3	10.4
6	900	003	11/19/2014	9:14:00 AM	100146	Tigerlilly	4	0.99	3.96
7	900	003	11/19/2014	9:14:00 AM	100124	Yellow Lillys	10	0.99	9.9
8	900	003	11/19/2014	9:14:00 AM	100136	Yellow Orchids	21	1.5	31.5
9	904	003	11/19/2014	9:20:00 AM	100137	Red Orchids	18	1.5	27
10	904	003	11/19/2014	9:20:00 AM	100141	Pink Daisy	14	1.1	15.4

What are the Benefits of Using A Table?

There are some benefits of converting a list into a table:

1. The formatting (color, style, etc.) is consistent and automatically done by Excel
2. Filters are automatically added to your table
3. Any new column or row is automatically formatted
4. Formulas are automatically duplicated across the table
5. The table can be easily named and referenced
6. The table headers are always visible

What Are Some Limitations to Using Tables?

Although tables seem like the way to go when working with data on Excel, they do have their limitations.

1. The table's format may not be available in other (previous) versions of Excel
2. Using inconsistent formulas will make you reset your cells
3. The styles of the tables are limited to the styles available on Excel

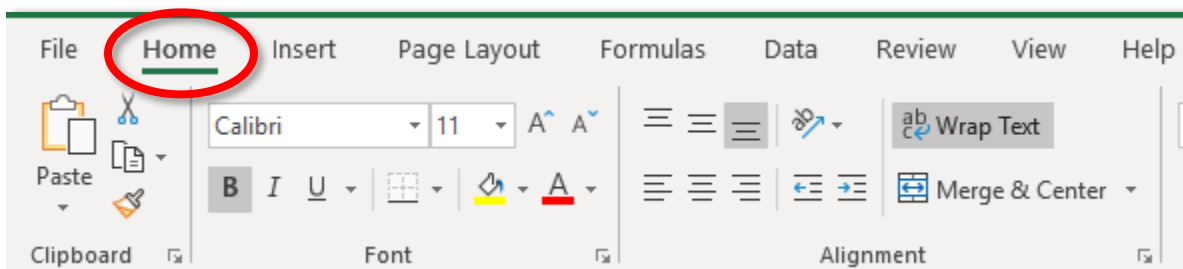
For the Excel user who likes to heavily customize the data, then shying away from using tables is probably the best option. Anything that you can do in a table, you can basically do on a list as well.

Converting Your List into A Table

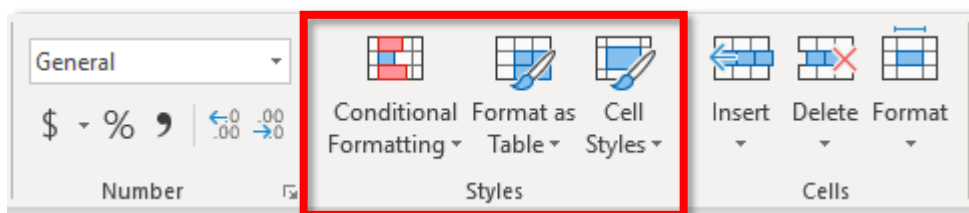
Now that you understand the benefits of converting your list (or data) into a table, let's explore the steps to create a table.

To convert your list into a table.

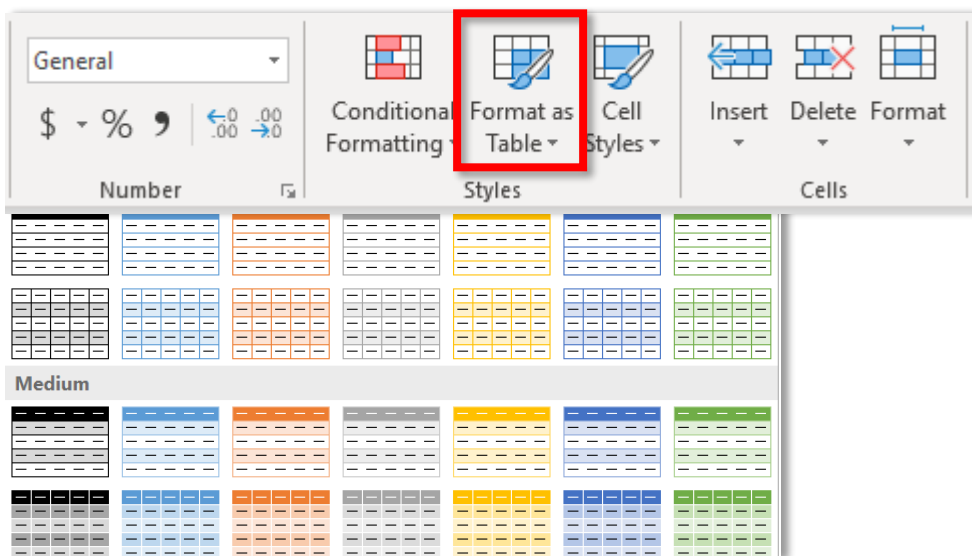
1. Click in any cell within your list.
2. Navigate to the **Home** tab.



3. Locate the **Styles** group.



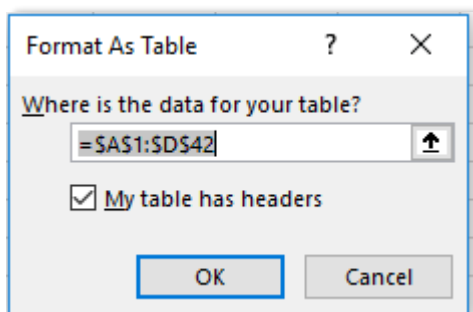
4. Select the **Format as Table** command.



5. The **Format as Table** command will display a gallery of formats for you to choose. Choose a table style.
6. Upon selecting a table style, Excel will ask you to confirm the data range of your table. Excel will typically recognize your list and automatically display it in this

window to convert. Verify your range and ensure that the box titled *My table has headers* is checked.

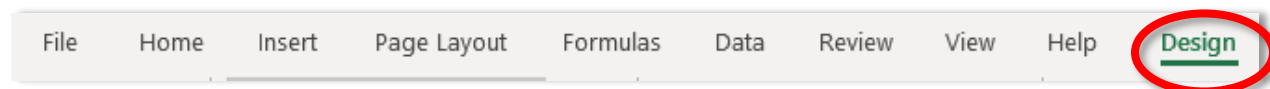
7. Click the **OK** button



You'll know that your list was converted to a table because your list will now be formatted in the color scheme that you chose from the gallery of options.

Editing & Customizing Tables

Now that you have learned how to convert your list into an official Excel table, you'll be able to customize your data and format your data in a more consistent way. Moving forward, any time that you click anywhere in your table, Excel will display a new tab called **Design**.



Navigating Through Your Table

One of the benefits of converting your list into a table is that the headers of your table are always visible. This makes it easier to scroll down your table when you have lots of data. As you scroll down your spreadsheet, you'll see that the typical column letters now display the names of your headers instead.

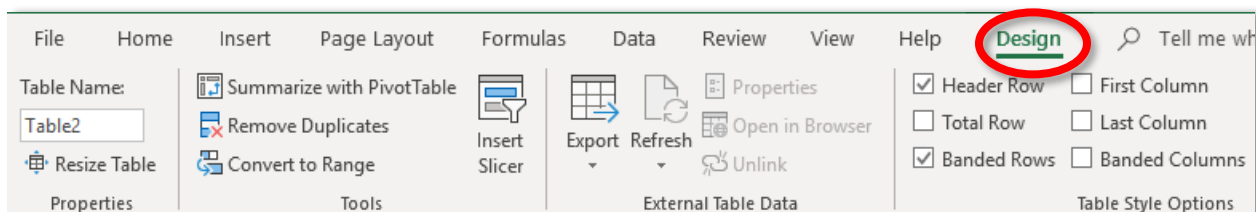
	Transaction No	Store ID	Date of Transaction	Time of Transaction	Item No	Item Desc	Qty	Price	Amount
27	917	005	11/19/2014	10:32:00 AM	100136	Yellow Orchids	13	1.5	19.5
28	918	003	11/19/2014	10:36:00 AM	100140	Violet Violets	20	1.25	25
29	919	003	11/19/2014	10:40:00 AM	100145	Peach Daisy	21	1.1	23.1
30	920	003	11/19/2014	10:44:00 AM	100130	Red Carnations	23	1.3	29.9
31	921	004	11/19/2014	10:48:00 AM	100145	Peach Daisy	9	1.1	9.9
32	921	004	11/19/2014	10:48:00 AM	100124	Yellow Lillys	17	0.99	16.83
33	922	003	11/19/2014	11:01:00 AM	100134	Pink Orchids	24	1.5	36
34	922	003	11/19/2014	11:01:00 AM	100124	Yellow Lillys	20	0.99	19.8
35	922	003	11/19/2014	11:01:00 AM	100128	Red Roses	10	1.25	12.5
36	922	003	11/19/2014	11:01:00 AM	100127	White Roses	16	1.25	20
37	923	005	11/20/2014	9:02:00 AM	100134	Pink Orchids	8	1.5	12
38	924	004	11/20/2014	9:06:00 AM	100130	Red Carnations	8	1.3	10.4
39	925	004	11/20/2014	9:10:00 AM	100125	White Lillys	5	0.99	4.95

How to Name/Rename Your Table

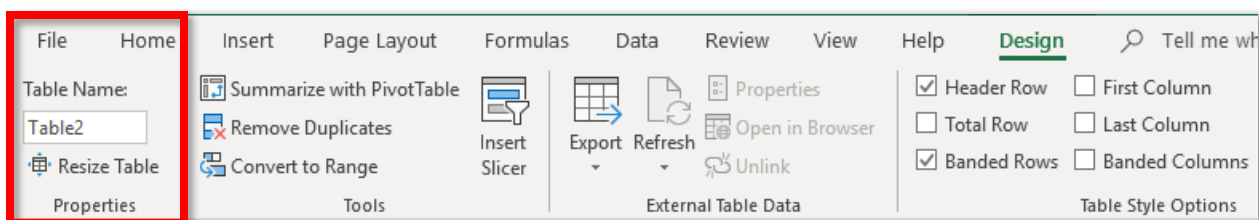
Any range, list or cell can have a specific name in Excel. When using a table, you can easily name or rename your table. Editing the table's name allows Excel to easily reference the table. This is particularly practical when working with formulas that need to reference this table.

To change the name of the table:

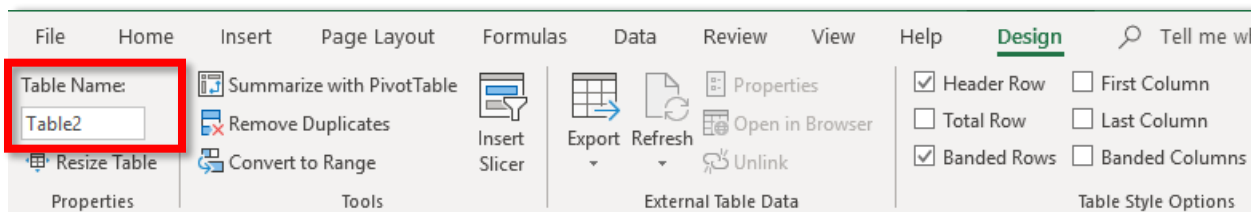
1. Click on any cell within your table.
2. Navigate to the **Design** tab.



3. Locate the **Properties** group in the ribbon.



4. In the **Properties** group, click on the white bar underneath the **Table Name** section and type a name for your table. Excel will default to naming the table "Table" with a number.



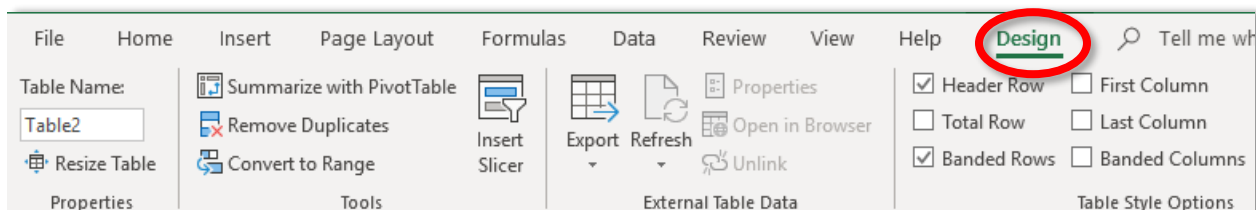
How to Update or Change the Range of Your Table

If you recall, when you first converted your list into a table, you selected the range of your table which would let Excel know what cells should be included with the table formatting. Typically, if you add new columns or rows, Excel will apply your table's formatting to those new columns or rows. However, there may be some instances in which you may need to

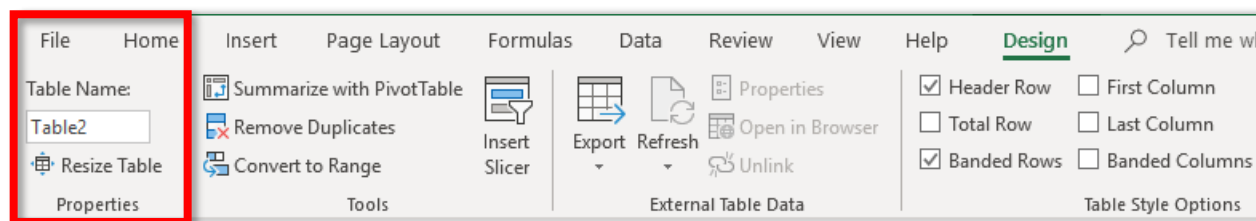
change the data range to include other data that is not formatted as your table. In this case, you'll need to change the data source.

To update or change the range of your table:

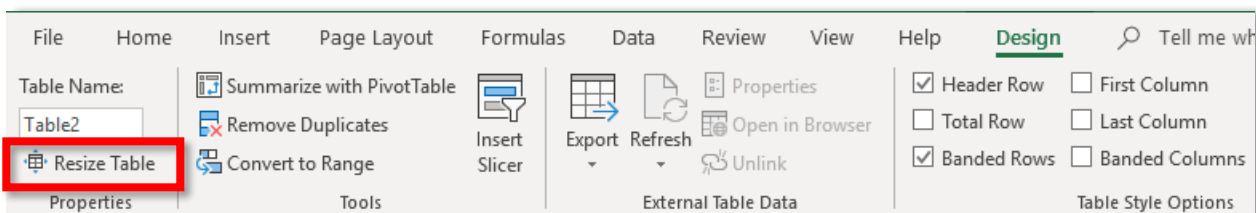
1. Click on any cell within your table.
2. Navigate to the **Design** tab.



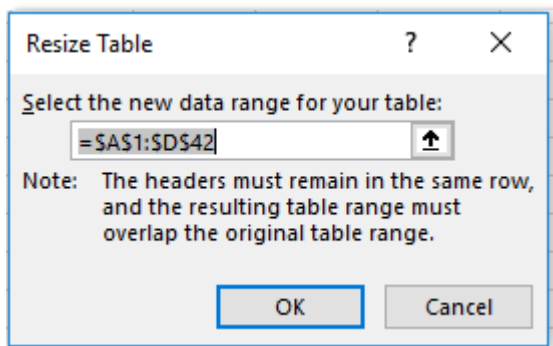
3. Locate the **Properties** group in the ribbon.



4. In the **Properties** group, click on the **Resize Table** command.



5. Clicking on the **Resize Table** command will prompt a window where you can reselect the range in your data. Select the new data range for your table and click the **OK** button when finished.



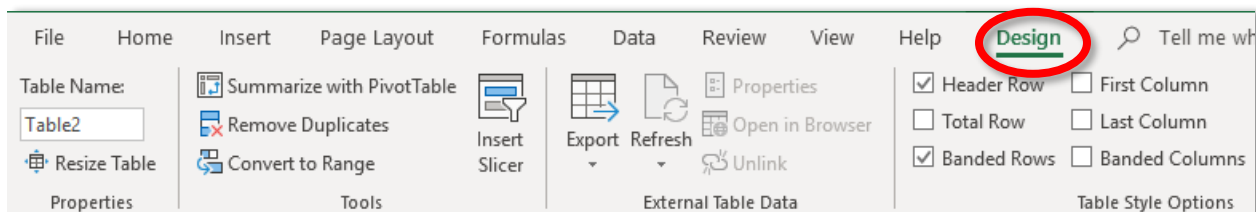
If you have followed these steps correctly, you'll notice that the boundaries of your table have been modified and the area you selected is now formatted.

How to Change the Style of Your Table

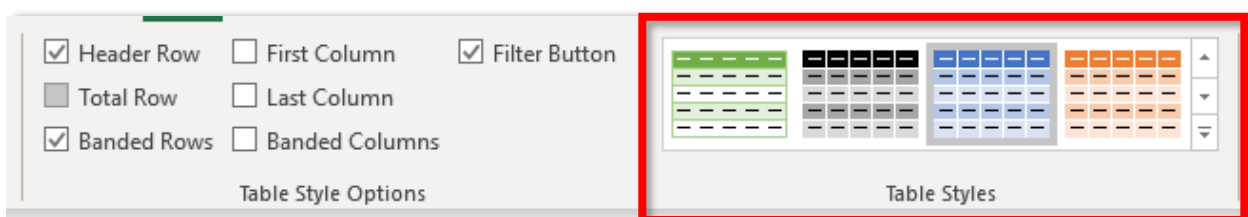
When you converted your list into a table, you selected a table style format. Excel gives you the flexibility to change the format even after you selected an original style.

To change the table style format:

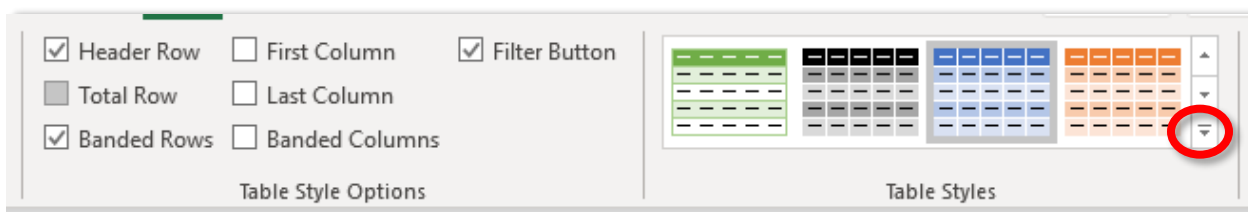
1. Click on any cell within your table.
2. Navigate to the **Design** tab.



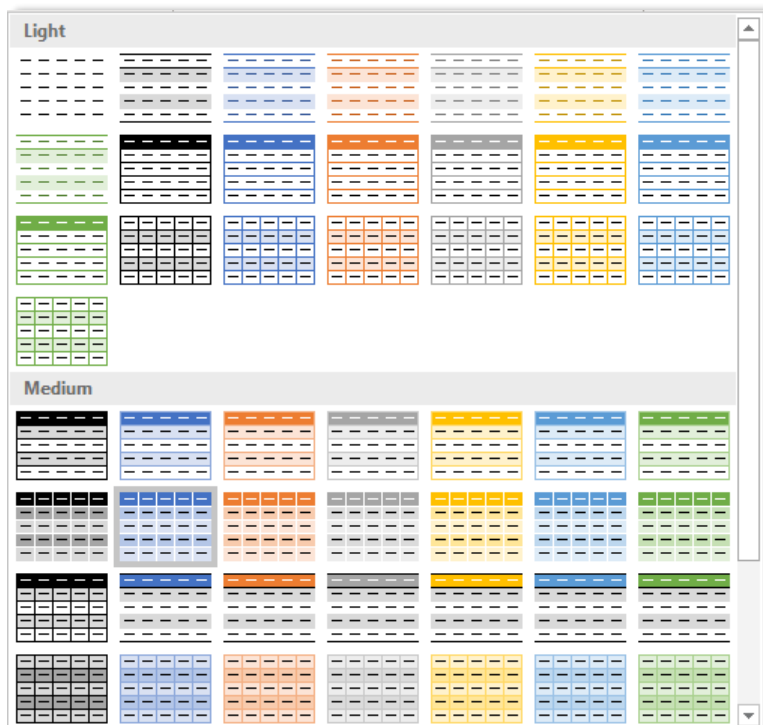
3. In the ribbon, locate the **Table Styles** group.



4. Click on the arrow in the lower-right hand corner of the group to display a gallery of styles.



5. Select the style of your choice from the gallery.

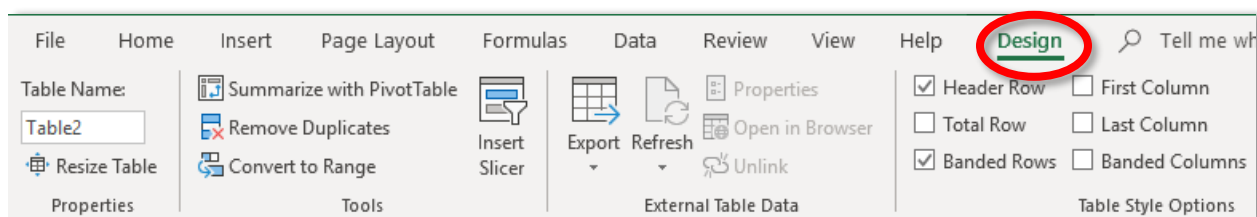


How to Get Rid of The Table Formatting

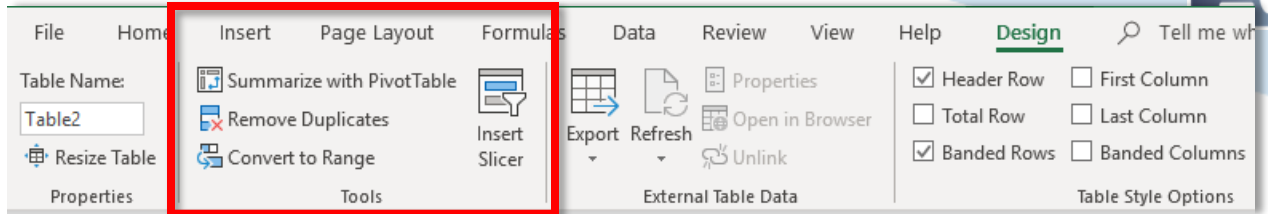
Excel makes it easy for users to convert their table back to a list. If you decide to do this, please note that the table color scheme will remain.

To convert your table back to a list:

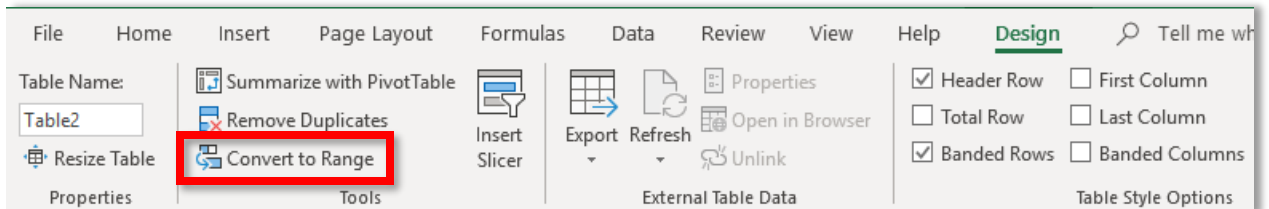
1. Click on any cell within your table.
2. Navigate to the **Design** tab.



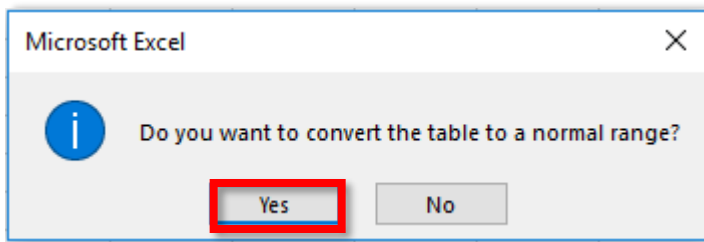
3. Locate the **Tools** group in the ribbon.



4. In the **Tools** group, click on the **Convert to Range** command.



5. Clicking on the **Convert to Range** command will display a window. Excel just wants to confirm that you want to convert your table back to a *normal range* or a list. Click on the **Yes** button.



After completing these steps, the table formatting will disappear and Excel will only recognize your data as a list, not a table.

Working with Advanced Excel Formulas

The formulas you will be learning in this Advanced Excel booklet are complex, take time to learn but will help you do your job much quicker and smarter. To use and understand these formulas, we rely on the assumption that you are comfortable and familiar with some of the more basic Excel formulas such as the SUM formula, COUNT formulas and AVERAGE formula.

5 Tips to Remember About Excel Formulas

The following tips will hopefully help you learn and understand the structure of formulas, how to approach using the Advanced Excel formulas and when to use them.

Excel speaks its own language

To make things simplistic, assume that your goal is to learn a language called Excel. By learning Excel's language, you can tell Excel what you want it to do by *writing* in Excel's language. Luckily, most of the way we think and speak can be easily "translated" into Excel's language. Keep this concept in mind while you work on these more Advanced Excel formulas and pretend that you are the translator.

An Excel Formula cannot read words

In more advanced formulas, you'll want Excel to return certain values. For example, if you create a formula that will tell you when employees have completed all compliance training, then you might want Excel to show the word 'Complete' next to the employees' name. In your formula, you'll need to tell Excel to return the word 'Complete', but the only way Excel will know that you want it to return a word (or text) is if you include those words inside quotation marks. Therefore, anytime you include a word in Excel that is not a formula, you'll need to place it inside quotations marks (i.e. "Complete").

If you're stuck with a formula, read it out loud

The best habit to develop as an Excel beginner is the habit of reading the formulas out loud. Remember, you're basically learning to write a new language and it may take you some time to get the hang of this. If you read the formulas out loud, it will help you find a mistake if there is one. Additionally, if you say out loud what you want Excel to do, it will also help you to appropriately write a flawless formula.

In Excel, there are multiple ways to do the same thing

In previous sections of this booklet, you learned that one Excel function can be accessed in multiple ways. In fact, there could be a button in Excel that exists in two or three different ribbons. This is also true with Excel formulas. For example, there are multiple ways to add in Excel. You learned about the AutoSum function, but there are two other formulas that you can use that will also add numbers for you. Just like there are separate ways to say things in the English language, there are diverse ways that you can tell Excel to do something. Much of it depends on how your brain works.

Work on the first entry or row before moving on

Since we plan to use the auto-fill handle quite often, we need to make sure that we access a cell with a perfect formula. This way, we can select that cell and use the auto-fill handle to copy the formula into the other cells. This is also important when you're fixing a formula in a cell. Always make sure to work on the first entry and fix that formula so that you can use the auto-fill handle.

The Auto Fill Handle

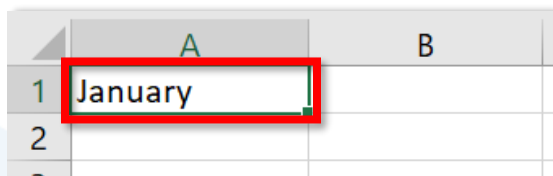
Microsoft Excel has a useful tool called the **Auto Fill Handle**. The **Auto Fill Handle** helps you become more efficient in Excel by quickly copying patterns or formulas across multiple cells. The **Auto Fill Handle** is recognized as a little, black, flat cross that appears in the lower-right hand corner of a cell. There are two main ways to use the **Auto Fill Handle** to copy information across cells. Let's explore both options.

How to Drag the Auto Fill Handle When Using Patterns

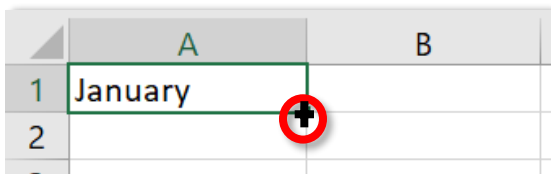
The first way to use the **Auto Fill Handle** is by *dragging* the contents of a cell onto other cells. Remember, *dragging* the **Auto Fill Handle** will copy a pattern or formula onto other cells.

To *drag* the Auto Fill Handle:

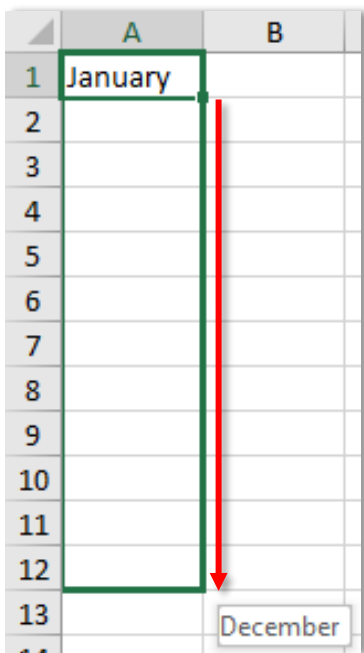
1. Select a cell that contains content or a formula that you wish to apply to other cells.



- Place your cursor in the lower-right hand corner of the cell you selected until you see a black, flat cross. This cross is the **Auto Fill Handle**.



- Once you see the **Auto Fill Handle**, click with your mouse and hold, dragging your cursor to the desired area.



- Let go of the mouse so that Excel will apply the pattern to the cells you selected.



How to Use the Auto Fill Handle to Copy Formulas

The **Auto Fill Handle** is a great tool when you have an organized list or table and are trying to quickly make calculations. Besides patterns, the **Auto Fill Handle** can also be used to apply a formula to other cells and referencing the appropriate cells based on your calculation.

To use the **Auto Fill Handle** to *drag (or copy) a formula*:

1. Select the cell that includes the formula you want to apply to other cells.

Expense Type	Kelly's Expenses	Raul's Expenses	Robert's Expenses	Totals
CAR INSURANCE	\$106.00	\$98.00	\$101.00	\$305.00
FAST FOOD	\$688.00	\$721.00	\$499.00	
RENT	\$853.00	\$899.00	\$1,000.00	
MISC	\$7.00	\$10.00	\$54.00	
CAR PAYMENT	\$398.00	\$450.00	\$259.00	
STUDENT LOAN	\$759.00	\$0.00	\$338.00	
TIME SHARE PAYMENT	\$877.00	\$0.00	\$0.00	
ELECTRICITY BILL	\$68.00	\$74.00	\$76.00	

2. Place your cursor in the lower-right hand corner of the cell you selected until you see a black, flat cross. This cross is the **Auto Fill Handle**.

Expense Type	Kelly's Expenses	Raul's Expenses	Robert's Expenses	Totals
CAR INSURANCE	\$106.00	\$98.00	\$101.00	\$305.00
FAST FOOD	\$688.00	\$721.00	\$499.00	
RENT	\$853.00	\$899.00	\$1,000.00	
MISC	\$7.00	\$10.00	\$54.00	
CAR PAYMENT	\$398.00	\$450.00	\$259.00	
STUDENT LOAN	\$759.00	\$0.00	\$338.00	
TIME SHARE PAYMENT	\$877.00	\$0.00	\$0.00	
ELECTRICITY BILL	\$68.00	\$74.00	\$76.00	

3. Once you see the **Auto Fill Handle**, click with your mouse and hold, dragging your cursor to the desired area

Expense Type	Kelly's Expenses	Raul's Expenses	Robert's Expenses	Totals
CAR INSURANCE	\$106.00	\$98.00	\$101.00	\$305.00
FAST FOOD	\$688.00	\$721.00	\$499.00	
RENT	\$853.00	\$899.00	\$1,000.00	
MISC	\$7.00	\$10.00	\$54.00	
CAR PAYMENT	\$398.00	\$450.00	\$259.00	
STUDENT LOAN	\$759.00	\$0.00	\$338.00	
TIME SHARE PAYMENT	\$877.00	\$0.00	\$0.00	
ELECTRICITY BILL	\$68.00	\$74.00	\$76.00	

- Once you select your desired cells, let go of your mouse and Excel will apply the formula to the cells that you selected, referencing the appropriate cells in those calculations.

Expense Type	Kelly's Expenses	Raul's Expenses	Robert's Expenses	Totals
CAR INSURANCE	\$106.00	\$98.00	\$101.00	\$305.00
FAST FOOD	\$688.00	\$721.00	\$499.00	\$1,908.00
RENT	\$853.00	\$899.00	\$1,000.00	\$2,752.00
MISC	\$7.00	\$10.00	\$54.00	\$71.00
CAR PAYMENT	\$398.00	\$450.00	\$259.00	\$1,107.00
STUDENT LOAN	\$759.00	\$0.00	\$338.00	\$1,097.00
TIME SHARE PAYMENT	\$877.00	\$0.00	\$0.00	\$877.00
ELECTRICITY BILL	\$68.00	\$74.00	\$76.00	\$218.00

Your formulas should now be applied to the rest of the entries in the table.

Double-Clicking the Auto Fill Handle to copy formulas

There is an alternative to *dragging* the **Auto Fill Handle**. The alternative to *dragging* the **Auto Fill Handle** is double-clicking on the auto-fill handle. When double-clicking the **Auto Fill Handle**, the formulas will automatically copy down to the last entry it finds on your list.

To use **Auto Fill Handle** in an alternate way:

- Select the cell that includes the formula you want to apply to other cells.

Expense Type	Kelly's Expenses	Raul's Expenses	Robert's Expenses	Totals
CAR INSURANCE	\$106.00	\$98.00	\$101.00	\$305.00
FAST FOOD	\$688.00	\$721.00	\$499.00	
RENT	\$853.00	\$899.00	\$1,000.00	
MISC	\$7.00	\$10.00	\$54.00	
CAR PAYMENT	\$398.00	\$450.00	\$259.00	
STUDENT LOAN	\$759.00	\$0.00	\$338.00	
TIME SHARE PAYMENT	\$877.00	\$0.00	\$0.00	
ELECTRICITY BILL	\$68.00	\$74.00	\$76.00	

- Place your cursor in the lower-right hand corner of the cell you selected until you see a black, flat cross. This cross is the **Auto Fill Handle**.

Expense Type	Kelly's Expenses	Raul's Expenses	Robert's Expenses	Totals
CAR INSURANCE	\$106.00	\$98.00	\$101.00	\$305.00
FAST FOOD	\$688.00	\$721.00	\$499.00	
RENT	\$853.00	\$899.00	\$1,000.00	
MISC	\$7.00	\$10.00	\$54.00	
CAR PAYMENT	\$398.00	\$450.00	\$259.00	
STUDENT LOAN	\$759.00	\$0.00	\$338.00	
TIME SHARE PAYMENT	\$877.00	\$0.00	\$0.00	
ELECTRICITY BILL	\$68.00	\$74.00	\$76.00	

- Once you see the **Auto Fill Handle**, double-click with your mouse. And Excel will automatically apply the formula to the cells in your table.

Expense Type	Kelly's Expenses	Raul's Expenses	Robert's Expenses	Totals
CAR INSURANCE	\$106.00	\$98.00	\$101.00	\$305.00
FAST FOOD	\$688.00	\$721.00	\$499.00	\$1,908.00
RENT	\$853.00	\$899.00	\$1,000.00	\$2,752.00
MISC	\$7.00	\$10.00	\$54.00	\$71.00
CAR PAYMENT	\$398.00	\$450.00	\$259.00	\$1,107.00
STUDENT LOAN	\$759.00	\$0.00	\$338.00	\$1,097.00
TIME SHARE PAYMENT	\$877.00	\$0.00	\$0.00	\$877.00
ELECTRICITY BILL	\$68.00	\$74.00	\$76.00	\$218.00

Anchors in Formulas

Now that you have learned how to use the **Auto Fill Handle**, you may also have a need to learn how to use **Anchors** in Excel. **Anchors** allow users to lock cells in a formula, allowing you to use the **Auto Fill Handle** or to copy formulas without changing one or various cell references.

Why do I need to use Anchors?

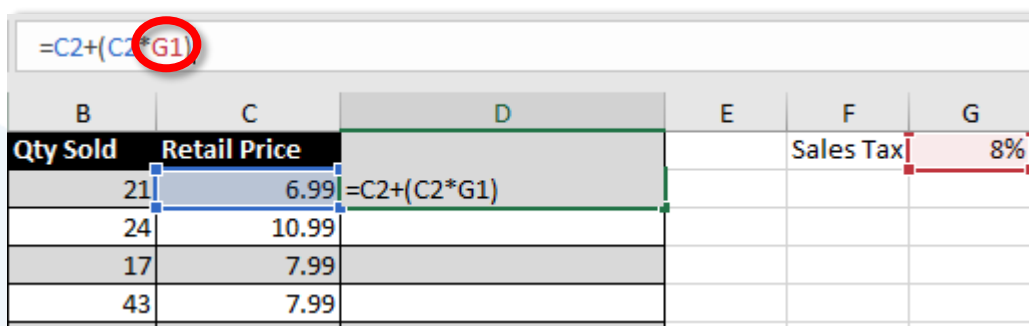
If you need to apply a formula to an entire column for example, but you need each cell in that row to reference the *same* cell, then you can only lock that cell by using an **Anchor**. By default, when you use the **Auto Fill Handle**, the cell references will change. When you use an **Anchor**, the cell reference will not change and instead will display a dollar sign surrounding the column and row in the formula bar (i.e. \$I\$3). To *anchor* a cell in a formula, use the **F4** key in your keyboard.

How to use Anchors in Formulas

Remember, **Anchors** will lock a cell inside a formula so that the cell reference does not change. You lock cells by hitting the **F4** key on your keyboard.

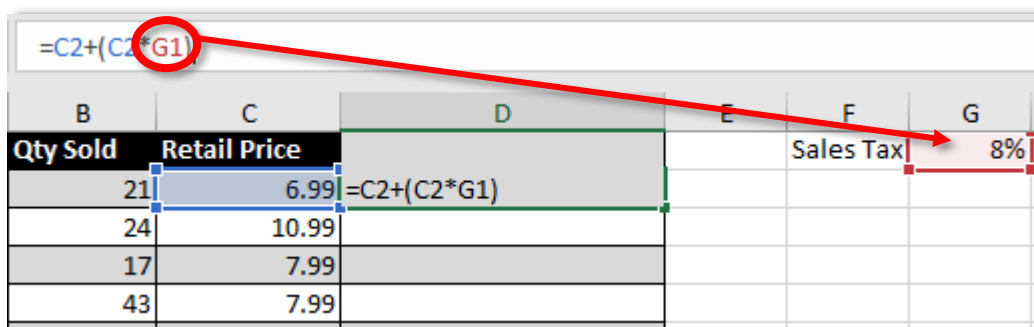
To use anchors in your formula:

- Access the formula bar and identify the cell reference that needs to be anchored.



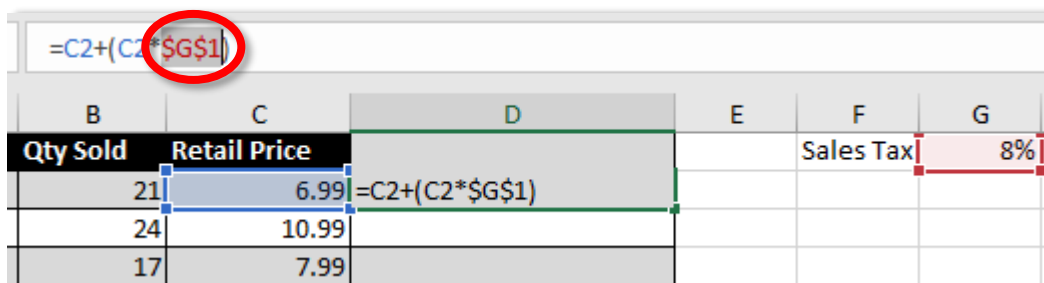
B	C	D	E	F	G
Qty Sold	Retail Price			Sales Tax	8%
21	6.99	=C2+(C2*G1)			
24	10.99				
17	7.99				
43	7.99				

- Click on the cell reference you want to **Anchor** from inside the formula bar.



B	C	D	E	F	G
Qty Sold	Retail Price			Sales Tax	8%
21	6.99	=C2+(C2*G1)			
24	10.99				
17	7.99				
43	7.99				

- Press the **F4** key on your keyboard to add the **Anchors**.

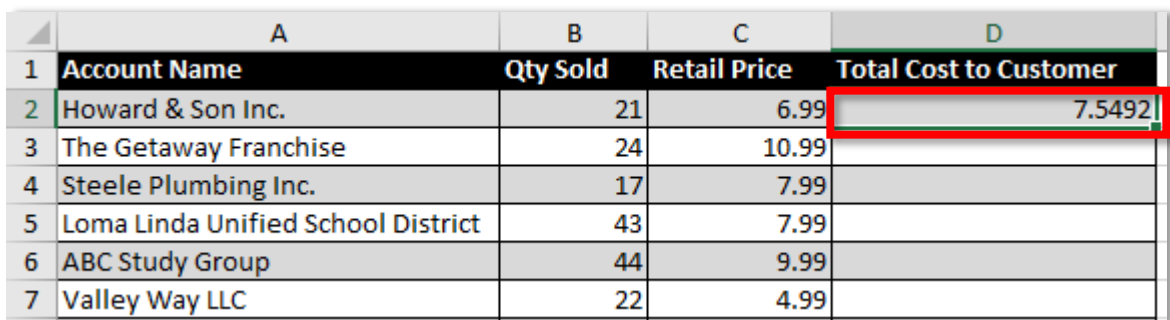


B	C	D	E	F	G
Qty Sold	Retail Price			Sales Tax	8%
21	6.99	=C2+(C2*\$G\$1)			
24	10.99				
17	7.99				

- Select the **Enter** key on your keyboard to complete your formula.

	A	B	C	D
1	Account Name	Qty Sold	Retail Price	Total Cost to Customer
2	Howard & Son Inc.	21	6.99	7.5492
3	The Getaway Franchise	24	10.99	
4	Steele Plumbing Inc.	17	7.99	
5	Loma Linda Unified School District	43	7.99	
6	ABC Study Group	44	9.99	
7	Valley Way LLC	22	4.99	

- Click back on the cell that contains your formula.



	A	B	C	D
1	Account Name	Qty Sold	Retail Price	Total Cost to Customer
2	Howard & Son Inc.	21	6.99	7.5492
3	The Getaway Franchise	24	10.99	
4	Steele Plumbing Inc.	17	7.99	
5	Loma Linda Unified School District	43	7.99	
6	ABC Study Group	44	9.99	
7	Valley Way LLC	22	4.99	

- Use the **Auto Fill Handle** to copy down the formula in your table or list.

	A	B	C	D
1	Account Name	Qty Sold	Retail Price	Total Cost to Customer
2	Howard & Son Inc.	21	6.99	7.5492
3	The Getaway Franchise	24	10.99	11.8692
4	Steele Plumbing Inc.	17	7.99	8.6292
5	Loma Linda Unified School District	43	7.99	8.6292
6	ABC Study Group	44	9.99	10.7892
7	Valley Way LLC	22	4.99	5.3892

If you did this process correctly, you'll find that each formula that you copied down has the same cell reference.

D5							
	A	B	C	D	E	F	G
1	Account Name	Qty Sold	Retail Price	Total Cost to Customer		Sales Tax	8%
2	Howard & Son Inc.	21	6.99	7.5492			
3	The Getaway Franchise	24	10.99	11.8692			
4	Steele Plumbing Inc.	17	7.99	8.6292			
5	Loma Linda Unified School District	43	7.99	8.6292			
6	ABC Study Group	44	9.99	10.7892			
7	Valley Way LLC	22	4.99	5.3892			

Advanced Text Formulas & Functions

Now that you explored some common functionality of Excel formulas as an Advanced Excel user, let's dig in to some of the most commonly used Excel formulas that Advanced Excel users use.

LEFT Formula

The **LEFT** formula allows Excel to display the content of a certain cell reference with the number of characters that you specify starting from the *left* side of the cell. The **LEFT** formula consists of two parts.

Example of the **LEFT** formula:

=LEFT(A1,5)

Example of how the **LEFT** formula works:

GEORGE WASHINGTON → *LEFT formula with 5 characters* → GEORGE WASHINGTON

The **LEFT** formula consists of two parts. The first part of the **LEFT** formula is used to select a cell reference. The second part of the **LEFT** formula is used to tell Excel how many characters you want to display in your formula.

=LEFT(Cell Reference , Number of characters to display)

To create a **LEFT** formula:

1. Click on the cell where you want to create the LEFT formula.

	A	B	C
1	ID	Account Name	USER ID
2	USER-0061-4891	Howard & Son Inc.	
3	USER-0089-8674	The Getaway Franchise	
4	USER-0041-1982	Steele Plumbing Inc.	

2. In the cell, type **=LEFT(** to begin creating your formula.

	A	B	C
1	ID	Account Name	USER ID
2	USER-0061-4891	Howard & Son Inc.	=LEFT(
3	USER-0089-8674	The Getaway Franchise	
4	USER-0041-1982	Steele Plumbing Inc.	

3. Select the cell reference and type a **comma** afterwards.

	A	B	C
1	ID	Account Name	USER ID
2	USER-0061-4891	Howard & Son Inc.	=LEFT(A2,
3	USER-0089-8674	The Getaway Franchise	
4	USER-0041-1982	Steele Plumbing Inc.	

4. In the formula, type the number of characters you want Excel to display in this cell.

	A	B	C
1	ID	Account Name	USER ID
2	USER-0061-4891	Howard & Son Inc.	=LEFT(A2,9
3	USER-0089-8674	The Getaway Franchise	
4	USER-0041-1982	Steele Plumbing Inc.	

5. Press the **ENTER** key on your keyboard to complete the formula.

	A	B	C
1	ID	Account Name	USER ID
2	USER-0061-4891	Howard & Son Inc.	USER-0061
3	USER-0089-8674	The Getaway Franchise	
4	USER-0041-1982	Steele Plumbing Inc.	

RIGHT Formula

The **RIGHT** formula allows Excel to display the content of a certain cell reference with a number of characters that you specify starting from the *right* side of the cell reference. The **RIGHT** formula consists of two parts.

Example of the **RIGHT** formula:

=RIGHT(A1,5)

Example of how the **RIGHT** formula works

GEORGE WASHINGTON → *RIGHT formula with 5 characters* → GEORGE WASHINGTON

The first part of the **RIGHT** formula is used to select a cell reference. The second part of the **RIGHT** formula is used to tell Excel how many characters you want to display in your formula.

=RIGHT(Cell Reference , Number of characters to display)

To create a **RIGHT** formula:

1. Click on the cell where you want to create the **RIGHT** formula.

	A	B	C
1	ID	Account Name	USER ID
2	USER-0061-4891	Howard & Son Inc.	
3	USER-0089-8674	The Getaway Franchise	
4	USER-0041-1982	Steele Plumbing Inc.	

2. In the cell, type **=RIGHT(** to begin creating your formula.

	A	B	C
1	ID	Account Name	USER ID
2	USER-0061-4891	Howard & Son Inc.	=RIGHT(
3	USER-0089-8674	The Getaway Franchise	
4	USER-0041-1982	Steele Plumbing Inc.	

3. Select the cell reference followed by a ,

	A	B	C
1	ID	Account Name	USER ID
2	USER-0061-4891	Howard & Son Inc.	=RIGHT(A2,
3	USER-0089-8674	The Getaway Franchise	
4	USER-0041-1982	Steele Plumbing Inc.	

4. In the formula, type the number of characters you want Excel to display in this cell.

	A	B	C
1	ID	Account Name	USER ID
2	USER-0061-4891	Howard & Son Inc.	=RIGHT(A2,4
3	USER-0089-8674	The Getaway Franchise	
4	USER-0041-1982	Steele Plumbing Inc.	

5. Press the **ENTER** key on your keyboard to complete the formula.

	A	B	C
1	ID	Account Name	USER ID
2	USER-0061-4891	Howard & Son Inc.	4891
3	USER-0089-8674	The Getaway Franchise	
4	USER-0041-1982	Steele Plumbing Inc.	

MID Formula

The **MID** formula allows Excel to display the content of a certain cell reference with a number of characters that you specify starting from the *middle* of the cell reference. Unlike the LEFT and RIGHT formulas, the **MID** formula consists of three parts.

Example of the **MID** formula:

=MID(A1,2,5)

Example of how the **MID** formula works:

GEORGE WASHINGTON → MID formula with 5 characters → GEORGE WASHINGTON

The **MID** formula consists of three parts. The first part follows the pattern of the **LEFT** and **RIGHT** formula: select the cell reference.

=MID(Cell Reference, _____, _____)

The second part of the **MID** formula consists of selecting a starting point. In part two, you'll need to enter a number. This number will represent the number of characters excel will count from the left side to determine the starting point. In a simplistic example, imagine that your cell reference has 20 characters and you select the number 5 for part 2 of this formula. Excel will then decide to *start* the **MID** formula in the 5th character (starting from the left) of the cell reference.

=MID(Cell Reference, Starting point (from the left),

Finally, enter the number of characters to display beginning with the starting point.

=MID(Cell Reference, Starting point (from the left), No of characters to display)

To create a **MID** formula:

1. Click on the cell where you want to create the MID formula.

	A	B	C
1	ID	Account Name	USER ID
2	USER-0061-4891	Howard & Son Inc.	
3	USER-0089-8674	The Getaway Franchise	
4	USER-0041-1982	Steele Plumbing Inc.	

2. In the cell, type =MID(to begin creating your formula.

	A	B	C
1	ID	Account Name	USER ID
2	USER-0061-4891	Howard & Son Inc.	=MID(
3	USER-0089-8674	The Getaway Franchise	
4	USER-0041-1982	Steele Plumbing Inc.	

3. Select the cell reference and type a comma afterwards.

	A	B	C
1	ID	Account Name	USER ID
2	USER-0061-4891	Howard & Son Inc.	=MID(A2,
3	USER-0089-8674	The Getaway Franchise	
4	USER-0041-1982	Steele Plumbing Inc.	

4. In the formula, type a number that represents how many characters from the right side of the cell should Excel start. Follow the formula with a comma.

	A	B	C
1	ID	Account Name	USER ID
2	USER-0061-4891	Howard & Son Inc.	=MID(A2,6
3	USER-0089-8674	The Getaway Franchise	
4	USER-0041-1982	Steele Plumbing Inc.	

5. In the third section of the formula, type how many characters Excel should display.

	A	B	C
1	ID	Account Name	USER ID
2	USER-0061-4891	Howard & Son Inc.	=MID(A2,6,4
3	USER-0089-8674	The Getaway Franchise	
4	USER-0041-1982	Steele Plumbing Inc.	

6. Press the **ENTER** key on your keyboard to complete the formula.

	A	B	C
1	ID	Account Name	USER ID
2	USER-0061-4891	Howard & Son Inc.	0061
3	USER-0089-8674	The Getaway Franchise	
4	USER-0041-1982	Steele Plumbing Inc.	

CONCATENATE Formula

The **CONCATENATE** formula allows users to select the content from different cells and combine them into one cell. In the formula itself, the contents that will be displayed will be separated by a comma. Therefore, the **CONCATENATE** formula doesn't have a specific number of parts in its structure.

Example of the **CONCATENATE** formula:

=CONCATENATE(B2,C2,D2)

The **CONCATENATE** combines cell references and/or words into one cell. For example, let's say you had three cell references with the following words: *bear*, *yellow*, *three*. When you complete a **CONCATENATE** formula, you will end with one cell displaying all three cell references: *bearyellowthree*.

=CONCATENATE(Cell Reference , Cell Reference , Cell Reference)

How to use the CONCATENATE formula

The **CONCATENATE** formula is typically used to *combine cells* into one. However, you are not merging cells into one, but you are combining the content of different cells into one.

To create a **CONCATENATE** formula:

1. Select a cell where you want to create the **CONCATENATE** formula.

	A	B	C
1	Month	Day	Month & Day
2	September	4	
3	August	16	
4	July	30	

2. Begin typing the formula: **=CONCATENATE**(

	A	B	C
1	Month	Day	Month & Day
2	September	4	=CONCATENATE(
3	August	16	
4	July	30	

3. Select your first cell reference followed by a **comma**.

	A	B	C	D
1	Month	Day	Month & Day	
2	September	4	=CONCATENATE(A2,	
3	August	16		
4	July	30		

4. Select your second cell reference followed by a **comma**.

	A	B	C	D
1	Month	Day	Month & Day	
2	September	4	=CONCATENATE(A2,B2,	
3	August	16		
4	July	30		

5. Continue to select cell references as desired.

	A	B	C
1	Month	Day	Month & Day
2	September	4	September4
3	August	16	
4	July	30	

6. Press the **ENTER** button on your keyboard when finished.

How to Use Characters in Your Formula That Excel Cannot Read

Remember, Excel cannot read regular texts since it can only read its own language when you're writing formulas. Therefore, in **CONCATENATE** formula (and in other formulas), Excel will not be able to read spaces, words, letters and symbols that don't belong in the formula. To fix this issue, you'll need to use quotation marks.

To create a **CONCATENATE** formula with special characters in the formula:

1. Select a cell where you want to create the **CONCATENATE** formula.

	A	B	C
1	Month	Day	Month & Day
2	September	4	
3	August	16	
4	July	30	

2. Begin typing the formula: **=CONCATENATE**(

	A	B	C
1	Month	Day	Month & Day
2	September	4	=CONCATENATE(
3	August	16	
4	July	30	

3. Select your first cell reference followed by a **comma**.

	A	B	C	D
1	Month	Day	Month & Day	
2	September	4	=CONCATENATE(A2,	
3	August	16		
4	July	30		

4. Include a space by typing it in the formula surrounded by quotation marks: **" "**,

	A	B	C	D
1	Month	Day	Month & Day	
2	September	4	=CONCATENATE(A2," ",	
3	August	16		
4	July	30		

5. Select the next cell reference and continue to add cell references or other characters surrounded by quotation marks.

	A	B	C	D
1	Month	Day	Month & Day	
2	September	4	=CONCATENATE(A2," ",B2	
3	August	16		
4	July	30		

6. Press the **ENTER** button on your keyboard when finished.

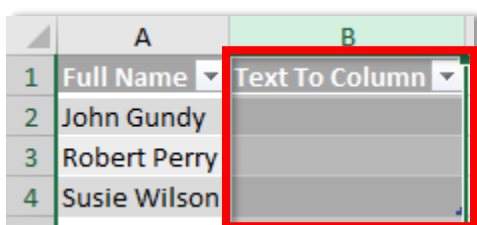
	A	B	C
1	Month	Day	Month & Day
2	September	4	September 4
3	August	16	
4	July	30	

Text to Columns

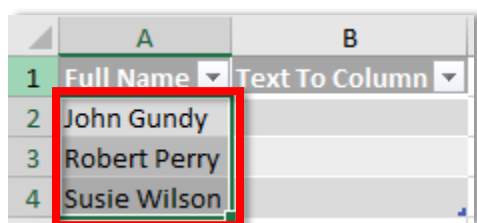
If you recall, the CONCATENATE formula combines the content of cells into one. You can also separate the content of one cell into multiple cells. To do this you would use a function called **Text to Columns**. In order to use **Text to Columns**, you'll need to make sure that the content you want to split has a delimiter (i.e. a space, comma or a character that separates the text in the current cell).

To use **Text to Columns**:

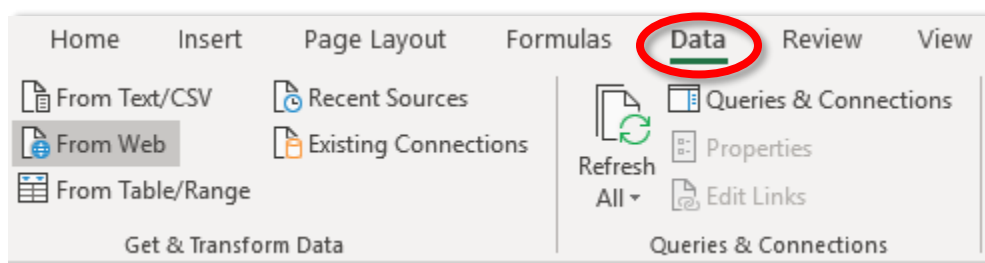
1. Locate the column or cell that you wish to split the content and add a blank cell or column to the right. This will allow Excel to place the content in empty cells instead of placing the content in cells that already have content inside.



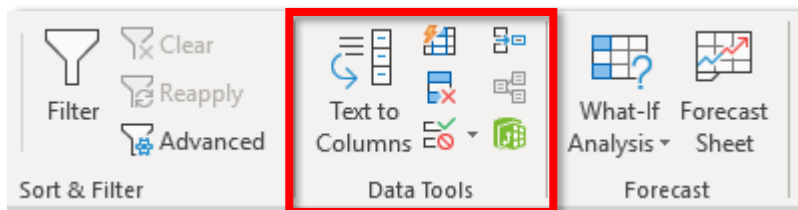
2. Select the cell or cells whose content you want to split.



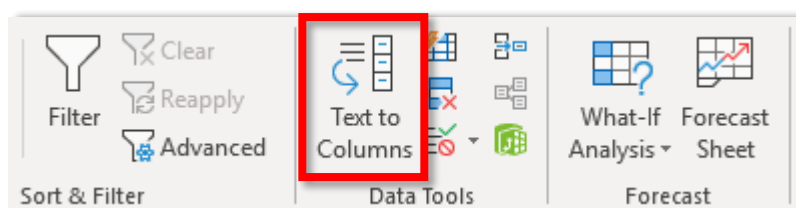
3. Navigate to the **Data** tab.



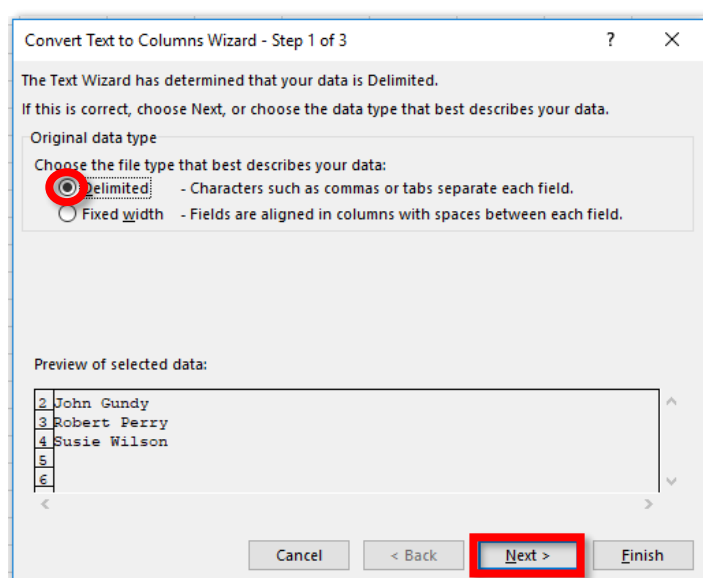
4. Locate the **Data Tools** group.



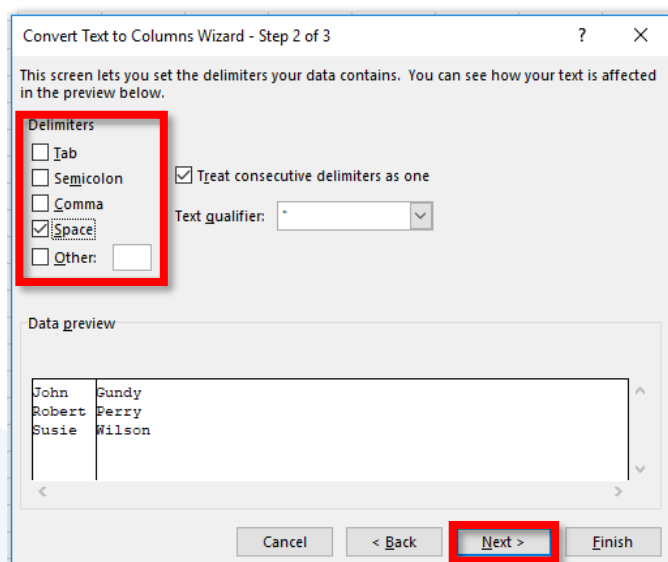
5. Select the **Text to Columns** command.



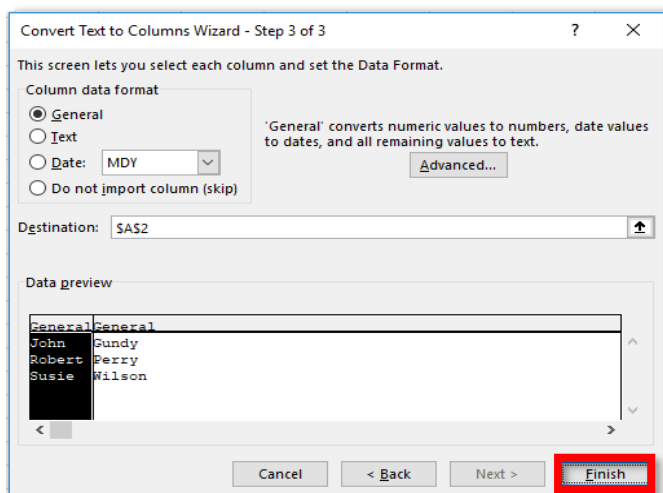
6. After selecting the **Text to Columns** command, you will see a window displayed that will allow you to follow along through certain steps to successfully complete the **Text to Columns** function. In the first step, select the **Delimited** option and click the **Next** button.



7. In *Step 2*, select the *Delimiter*. This can be a tab, space, comma or another character that you can identify in the content of the cell you're planning on splitting into a column or columns. Check the appropriate box and click on the **Next** button.



8. In *Step 3*, verify that the formatting of the column you'll be using and click the **Finish** button once you're done.



You'll know that you followed these steps correctly because the contents of the data in the original cells will now be split into one or more columns.

	A	B
1	Full Name	Text To Column
2	John	Gundy
3	Robert	Perry
4	Susie	Wilson

Advanced Numerical Formulas

In the following section, you'll learn about more advanced formulas that will help you compute data based on conditions. Most of the formulas combine a logical formula (such as the *IF* formula) with basic formulas (such as the *SUM* and *AVERAGE* formulas).

***IFERROR* Formula**

Many times, when working with Excel formulas, you can't avoid error messages. This typically happens when you use a formula that should technically be used to calculate numbers but some of your cells may have words or text instead. In these cases, you may want to keep your formula but don't want to display an error message. Excel allows you to use the ***IFERROR*** formula which will basically ask you what content you would want to display *if an error* were to occur when using your formula.

	A	B	C	D	E
1	ID	Account Name	1st Quarter Sales	2nd Quarter Cells	Total
2	USER-0061-4891	Howard & Son Inc.	\$ 29,107.00	\$ 27,224.00	\$ 56,331.00
3	USER-0089-8674	The Getaway Franchise	NO DATA	\$ 25,647.00	#VALUE!
4	USER-0041-1982	Steele Plumbing Inc.	\$ 23,970.00	\$ 17,216.00	\$ 41,186.00

Example of the **IFERROR** formula:

=IFERROR(SUM(B2,B5),"N/A")

The **IFERROR** formula consists of two parts in its argument:

=IFERROR (Formula or Value , Content to be displayed if error is found)

To use the **IFERROR** formula:

1. Select the cell where you want to include your formula.

B	C	D	E
Account Name	1st Quarter Sales	2nd Quarter Cells	Total
Howard & Son Inc.	\$ 29,107.00	\$ 27,224.00	
The Getaway Franchise	NO DATA	\$ 25,647.00	
Steele Plumbing Inc.	\$ 23,970.00	\$ 17,216.00	

2. In the cell, begin the formula by typing **=IFERROR(**

B	C	D	E
Account Name	1st Quarter Sales	2nd Quarter Cells	Total
Howard & Son Inc.	\$ 29,107.00	\$ 27,224.00	=IFERROR(
The Getaway Franchise	NO DATA	\$ 25,647.00	
Steele Plumbing Inc.	\$ 23,970.00	\$ 17,216.00	

3. In the first part of the formula, select a cell or create a calculation in the argument. Complete the first part of the argument with a comma.

B	C	D	E
Account Name	1st Quarter Sales	2nd Quarter Cells	Total
Howard & Son Inc.	\$ 29,107.00	\$ 27,224.00	=IFERROR(C2+D2,
The Getaway Franchise	NO DATA	\$ 25,647.00	
Steele Plumbing Inc.	\$ 23,970.00	\$ 17,216.00	

4. In the second (and last part) of the formula, include the content you want to display if there is an error with the formula you just included in the first part of the

argument. In this second part, you can type a word, number or include another cell reference, but remember, if you decide to use words of your own, you will need to surround that content with quotation marks.

B	C	D	E
Account Name	1st Quarter Sales	2nd Quarter Cells	Total
Howard & Son Inc.	\$ 29,107.00	\$	=IFERROR(C2+D2,"N/A")
The Getaway Franchise	NO DATA	\$	
Steele Plumbing Inc.	\$ 23,970.00	\$ 17,216.00	

- Press the **Enter** key on your keyboard and use the **Auto Fill Handle** as necessary. Any entry that would normally display an error message would display the content you included in your argument.

B	C	D	E
Account Name	1st Quarter Sales	2nd Quarter Cells	Total
Howard & Son Inc.	\$ 29,107.00	\$ 27,224.00	\$ 56,331.00
The Getaway Franchise	NO DATA	\$ 25,647.00	N/A
Steele Plumbing Inc.	\$ 23,970.00	\$ 17,216.00	\$ 41,186.00

SUMIF Formula vs. SUMIFS Formula

There are two formulas that basically do the same thing but differ slightly in how they are structured and when you can use them. The **SUMIF** formula allows users to add cells or a range of cells when a condition is met. The **SUMIFS** formula allows users to add cells or a range of cells when one *or more* conditions are met. This means that the **SUMIFS** formula can do the same thing that a **SUMIF** formula can and more. Let's explore these two formulas in detail.

SUMIF Formula

The **SUMIF** formula allows users to sum the value of cells (or a range of cells) when a condition is met.

Example of the **SUMIF** formula:

=SUMIF(D:D,F2,B:B)

The **SUMIF** formula consists of three parts in its argument:

=SUMIF (Column with criteria, Cell reference, Column containing values to add)

To use the **SUMIF** formula:

1. Select the cell where you want to create your **SUMIF** formula.

G	H
State	Total orders in 5 years
CA	
IL	
NY	
TX	
WA	
OR	

2. Begin typing the formula: **=SUMIF(**

G	H
State	
CA	=SUMIF(
IL	
NY	
TX	
WA	
OR	

3. Select the range or column that includes the criteria that you want Excel to find. This data is typically found in a separate table. Type a comma after you selected the range to conclude the first part of the formula.

	A	B	C	D	E	F	G	H
1	Customer Name	State	Orders in past 5 years				State	
2	Dominguez, Barbara	CA	3				CA	=SUMIF(B:B,
3	Anthony, Rob	CA	12				IL	
4	Williams, Debon	CA	19				NY	
5	Hernandez, Harold	IL	17				TX	
6	Ochoa, Jose	IL	3				WA	
7	Houston, Steven	IL	8				OR	

4. Select the cell that includes the criteria you want Excel to find in the previous step. Type a comma to complete part two of the formula.

G	H
State	
CA	=SUMIF(B:B,G2,
IL	
NY	
TX	
WA	
OR	

5. Select the range or column that includes the data you want Excel to add.

	A	B	C	D	E	F	G	H
1	Customer Name	State	Orders in past 5 years				State	
2	Dominguez, Barbara	CA	3				CA	=SUMIF(B:B, G2, C:C)
3	Anthony, Rob	CA	12				IL	
4	Williams, Debon	CA	19				NY	
5	Hernandez, Harold	IL	17				TX	
6	Ochoa, Jose	IL	3				WA	
7	Houston, Steven	IL	8				OR	

6. Press the **Enter** key on your keyboard. Use the **Auto Fill Handle** to apply the formula to other rows.

G	H
State	Total orders in 5 years
CA	181
IL	88
NY	34
TX	47
WA	74
OR	32

Once you complete these steps, you'll find that the table where you are making all calculations will correctly include the sum totals of the criterion that you selected.

SUMIFS Formula

As previously mentioned, the **SUMIFS** formula can be used to make calculations with data that includes one criterion or many. Typically, it is recommended that you learn to use the **SUMIFS** formula since this formula will allow you to do the same things that a **SUMIF** formula does plus more.

Example of the **SUMIFS** formula

=SUMIFS(D:D,B:B,G4)

The **SUMIFS** formula consists of a *minimum* of three parts in its argument:

=SUMIFS (Column to add values , Column with criteria #1 , Criteria #1)

If you have more than one criterion, then continue adding commas and the last two parts of the argument.

To use the **SUMIFS** formula:

1. Select the cell where you want to create your **SUMIFS** formula.

H	I
Area	Active Yearly Amounts
Los Angeles	
Fresno	
San Diego	
San Bernardino	
Riverside	
Orange	

2. Begin typing the formula: **=SUMIFS(**

H	I
Area	
Los Angeles	=SUMIFS(
Fresno	
San Diego	
San Bernardino	
Riverside	
Orange	

3. Select the range or column that includes the data you want Excel to add. Complete the first part of the argument by adding a comma.

	A	B	C	D	E	F	G
1	Customer Name	Area	Account Active	Membership Amount/Year		Area	
2	Dominguez, Barbara	Los Angeles	YES	\$ 239.88		Los Angeles	=SUMIFS(D:D,
3	Anthony, Rob	Los Angeles	NO	\$ 179.88		Fresno	
4	Williams, Debon	Los Angeles	YES	\$ 119.88		San Diego	
5	Hernandez, Harold	Fresno	NO	\$ 119.88		San Bernardino	
6	Ochoa, Jose	Fresno	NO	\$ 119.88		Riverside	
7	Houston, Steven	Fresno	NO	\$ 119.88		Orange	

4. Select the range or column that includes the *first* criteria that you want Excel to find. This data is typically found in a separate table. Type the comma sign after you selected the range to conclude the second part of the formula.

	A	B	C	D	E	F	G
1	Customer Name	Area	Account Active	Membership Amount/Year		Area	
2	Dominguez, Barbara	Los Angeles	YES	\$ 239.88		Los Angeles	=SUMIFS(D:D,C:C,
3	Anthony, Rob	Los Angeles	NO	\$ 179.88		Fresno	
4	Williams, Debon	Los Angeles	YES	\$ 119.88		San Diego	
5	Hernandez, Harold	Fresno	NO	\$ 119.88		San Bernardino	
6	Ochoa, Jose	Fresno	NO	\$ 119.88		Riverside	
7	Houston, Steven	Fresno	NO	\$ 119.88		Orange	

5. Select the cell that includes the *first* criteria you want Excel to find from the previous step or type the criteria directly onto the formula. Type a comma to complete part three of the formula.

	A	B	C	D	E	F	G
1	Customer Name	Area	Account Active	Membership Amount/Year		Area	
2	Dominguez, Barbara	Los Angeles	YES	\$ 239.88		Los Angeles	=SUMIFS(D:D,C:C,"YES",
3	Anthony, Rob	Los Angeles	NO	\$ 179.88		Fresno	
4	Williams, Debon	Los Angeles	YES	\$ 119.88		San Diego	
5	Hernandez, Harold	Fresno	NO	\$ 119.88		San Bernardino	
6	Ochoa, Jose	Fresno	NO	\$ 119.88		Riverside	
7	Houston, Steven	Fresno	NO	\$ 119.88		Orange	

6. If you have other criterion to include, you would have to include the criteria's column/range along with the criteria itself. In the next step of the formula, select another column for the *second* criteria followed with a comma.

	A	B	C	D	E	F	G
1	Customer Name	Area	Account Active	Membership Amount/Year		Area	
2	Dominguez, Barbara	Los Angeles	YES	\$ 239.88		Los Angeles	=SUMIFS(D:D,C:C,"YES",B:B,
3	Anthony, Rob	Los Angeles	NO	\$ 179.88		Fresno	
4	Williams, Debon	Los Angeles	YES	\$ 119.88		San Diego	
5	Hernandez, Harold	Fresno	NO	\$ 119.88		San Bernardino	
6	Ochoa, Jose	Fresno	NO	\$ 119.88		Riverside	
7	Houston, Steven	Fresno	NO	\$ 119.88		Orange	

7. If you include another criterion, add a column and criteria as a pair. Since you included the column in Step 6, you'll now have to include the criteria for that column.

	A	B	C	D	E	F	G	H
1	Customer Name	Area	Account Active	Membership Amount/Year		Area		
2	Dominguez, Barbara	Los Angeles	YES	\$ 239.88		Los Angeles	=SUMIFS(D:D,C:C,"YES",B:B,"Los Angeles",F:F,	
3	Anthony, Rob	Los Angeles	NO	\$ 179.88		Fresno		
4	Williams, Debon	Los Angeles	YES	\$ 119.88		San Diego		
5	Hernandez, Harold	Fresno	NO	\$ 119.88		San Bernardino		
6	Ochoa, Jose	Fresno	NO	\$ 119.88		Riverside		
7	Houston, Steven	Fresno	NO	\$ 119.88		Orange		

8. Press the **Enter** key on your keyboard. Use the **Auto Fill Handle** to apply the formula to other rows.

COUNTIFS Formula

As previously mentioned, the **SUMIFS** formula is a SUM formula that allows you to include one or more conditions in the formula. The **COUNTIFS** formula is a **COUNT** formula that allows you to count cells based on certain conditions as well. The **COUNTIFS** formula has a minimum of two parts that should be used in pairs. Basically, you'll need to include a column for Excel to investigate and the criteria that Excel will have to find in that column.

Example of the **COUNTIFS** formula:

=COUNTIFS(D:D,G4,A:A,H4)

The **COUNTIFS** formula consists of a *minimum* of two parts in its argument, always used in pairs:

=COUNTIFS (Column to count #1 , Criteria #1 , Column to count #2 , Criteria #2)

To create a **COUNTIFS** formula:

1. Select the cell where you want to create your **COUNTIFS** formula.

	A	B	C	D	E	F
1	Customer Name	Area	Account Active		Area	No. of Active Accounts
2	Dominguez, Barbara	Los Angeles	YES		Los Angeles	
3	Anthony, Rob	Los Angeles	NO		Fresno	
4	Williams, Debon	Los Angeles	YES		San Diego	
5	Hernandez, Harold	Fresno	NO		San Bernardino	
6	Ochoa, Jose	Fresno	NO		Riverside	
7	Houston, Steven	Fresno	NO		Orange	

2. Begin typing the formula: =COUNTIFS(

E	F
Area	
Los Angeles	=COUNTIFS(
Fresno	
San Diego	
San Bernardino	
Riverside	
Orange	

3. Select the range or column of the *first criteria* that includes the data you want Excel to count. Complete the first part of the formula with a comma.

	A	B	C	D	E	F
1	Customer Name	Area	Account Active		Area	
2	Dominguez, Barbara	Los Angeles	YES		Los Angeles	=COUNTIFS(C:C,
3	Anthony, Rob	Los Angeles	NO		Fresno	
4	Williams, Debon	Los Angeles	YES		San Diego	
5	Hernandez, Harold	Fresno	NO		San Bernardino	
6	Ochoa, Jose	Fresno	NO		Riverside	
7	Houston, Steven	Fresno	NO		Orange	

4. Select the cell that includes the *first criteria* you want Excel to find from the previous step or type the criteria directly onto the formula. Type a comma to complete part two of the formula.

	A	B	C	D	E	F
1	Customer Name	Area	Account Active		Area	
2	Dominguez, Barbara	Los Angeles	YES		Los Angeles	=COUNTIFS(C:C,"YES",
3	Anthony, Rob	Los Angeles	NO		Fresno	
4	Williams, Debon	Los Angeles	YES		San Diego	
5	Hernandez, Harold	Fresno	NO		San Bernardino	
6	Ochoa, Jose	Fresno	NO		Riverside	
7	Houston, Steven	Fresno	NO		Orange	

- If you have multiple criterion that you want to use in your formula, you'll have to continue with another pair adding a column for Excel to count along with the criteria to find in that column. In this step, include the column or range followed by a comma.

	A	B	C	D	E	F
1	Customer Name	Area	Account Active		Area	
2	Dominguez, Barbara	Los Angeles	YES		Los Angeles	=COUNTIFS(C:C,"YES",B:B,
3	Anthony, Rob	Los Angeles	NO		Fresno	
4	Williams, Debon	Los Angeles	YES		San Diego	
5	Hernandez, Harold	Fresno	NO		San Bernardino	
6	Ochoa, Jose	Fresno	NO		Riverside	
7	Houston, Steven	Fresno	NO		Orange	

- Include the criteria you want Excel to find from the previous step.

	A	B	C	D	E	F
1	Customer Name	Area	Account Active		Area	
2	Dominguez, Barbara	Los Angeles	YES		Los Angeles	=COUNTIFS(C:C,"YES",B:B,E2
3	Anthony, Rob	Los Angeles	NO		Fresno	
4	Williams, Debon	Los Angeles	YES		San Diego	
5	Hernandez, Harold	Fresno	NO		San Bernardino	
6	Ochoa, Jose	Fresno	NO		Riverside	
7	Houston, Steven	Fresno	NO		Orange	

- Press the **Enter** button to complete your formula and use the **Auto Fill Handle** if needed.

E	F
Area	No. of Active Accounts
Los Angeles	13
Fresno	3
San Diego	3
San Bernardino	2
Riverside	2
Orange	1

AVERAGE IFS Formula

As previously mentioned, the **SUMIFS** formula can be used to make calculations with data that includes one criterion or many. The **AVERAGEIFS** formulas also makes calculations with data with more than one criterion. The only difference is that the **AVERAGEIFS** formula calculates the average.

Example of the **AVERAGEIFS** formula:

=AVERAGEIFS(D:D,B:B,G4)

The **AVERAGEIFS** formula consists of a *minimum* of three parts in its argument:

=AVERAGEIFS (Column to average , Column with criteria #1 , Criteria #1)

If you have more than one criterion, then continue adding commas and pair the column with the criteria.

To use the **AVERAGEIFS** formula:

1. Select the cell where you want to create your **AVERAGEIFS** formula.

F	G
Area	AVG Active Yearly Amounts
Los Angeles	
Fresno	
San Diego	
San Bernardino	
Riverside	
Orange	

2. Begin typing the formula: =AVERAGEIFS(

F	G
Area	
Los Angeles	=AVERAGEIFS(
Fresno	
San Diego	
San Bernardino	
Riverside	
Orange	

3. Select the range or column that includes the data you want Excel to average. Complete the first part of the argument by adding a comma.

	A	B	C	D	E	F	G
1	Customer Name	Area	Account Active	Membership Amount/ Year		Area	
2	Dominguez, Barbara	Los Angeles	YES	\$ 239.88		Los Angeles	=AVERAGEIFS(D:D,
3	Anthony, Rob	Los Angeles	NO	\$ 179.88		Fresno	
4	Williams, Debon	Los Angeles	YES	\$ 119.88		San Diego	
5	Hernandez, Harold	Fresno	NO	\$ 119.88		San Bernardino	
6	Ochoa, Jose	Fresno	NO	\$ 119.88		Riverside	
7	Houston, Steven	Fresno	NO	\$ 119.88		Orange	

- Select the range or column that includes the *first* criteria that you want Excel to find. This data is typically found in a separate table. Type the comma sign after you selected the range to conclude the second part of the formula.

	A	B	C	D	E	F	G
1	Customer Name	Area	Account Active	Membership Amount/Year		Area	
2	Dominguez, Barbara	Los Angeles	YES	239.88		Los Angeles	=AVERAGEIFS(D:D,C:C,"
3	Anthony, Rob	Los Angeles	NO	179.88		Fresno	
4	Williams, Debon	Los Angeles	YES	119.88		San Diego	
5	Hernandez, Harold	Fresno	NO	119.88		San Bernardino	
6	Ochoa, Jose	Fresno	NO	119.88		Riverside	
7	Houston, Steven	Fresno	NO	119.88		Orange	

- Select the cell that includes the *first* criteria you want Excel to find from the previous step or type the criteria directly onto the formula. Type a comma to complete part three of the formula.

	A	B	C	D	E	F	G
1	Customer Name	Area	Account Active	Membership Amount/Year		Area	
2	Dominguez, Barbara	Los Angeles	YES	\$ 239.88		Los Angeles	=AVERAGEIFS(D:D,C:C,"YES",
3	Anthony, Rob	Los Angeles	NO	\$ 179.88		Fresno	
4	Williams, Debon	Los Angeles	YES	\$ 119.88		San Diego	
5	Hernandez, Harold	Fresno	NO	\$ 119.88		San Bernardino	
6	Ochoa, Jose	Fresno	NO	\$ 119.88		Riverside	
7	Houston, Steven	Fresno	NO	\$ 119.88		Orange	

- If you have other criterion to include, you would have to include the criteria's column/range along with the criteria itself. In the next step of the formula, select another column for the *second* criteria followed with a comma.

	A	B	C	D	E	F	G
1	Customer Name	Area	Account Active	Membership Amount/Year		Area	
2	Dominguez, Barbara	Los Angeles	YES	\$ 239.88		Los Angeles	=AVERAGEIFS(D:D,C:C,"YES",B:B,"
3	Anthony, Rob	Los Angeles	NO	\$ 179.88		Fresno	
4	Williams, Debon	Los Angeles	YES	\$ 119.88		San Diego	
5	Hernandez, Harold	Fresno	NO	\$ 119.88		San Bernardino	
6	Ochoa, Jose	Fresno	NO	\$ 119.88		Riverside	
7	Houston, Steven	Fresno	NO	\$ 119.88		Orange	

- If you include another criterion, always include the column and criteria as a pair. Since you included the column in Step 6, you'll now have to include the criteria for that column.

	A	B	C	D	E	F	G	H
1	Customer Name	Area	Account Active	Membership Amount/Year		Area		
2	Dominguez, Barbara	Los Angeles	YES	\$ 239.88		Los Angeles	=AVERAGEIFS(D:D,C:C,"YES",B:B,"Los Angeles",	
3	Anthony, Rob	Los Angeles	NO	\$ 179.88		Fresno		
4	Williams, Debon	Los Angeles	YES	\$ 119.88		San Diego		
5	Hernandez, Harold	Fresno	NO	\$ 119.88		San Bernardino		
6	Ochoa, Jose	Fresno	NO	\$ 119.88		Riverside		
7	Houston, Steven	Fresno	NO	\$ 119.88		Orange		

8. Press the **Enter** key on your keyboard. Use the **Auto Fill Handle** to apply the formula to other rows.

F	G
Area	AVG Active Yearly Amounts
Los Angeles	\$ 166.03
Fresno	\$ 119.88
San Diego	\$ 219.88
San Bernardino	\$ 149.88
Riverside	\$ 179.88
Orange	\$ 179.88

Logical Formulas

Formulas such as the **SUMIFS** and **AVERAGEIFS** help us understand how Excel uses conditions to provide the computation. In other words, we tell Excel to add numbers *if* something is found in a column. This type of thinking opens the door to the next set of formulas presented in this booklet. In this section you will learn how to use logical formulas.

Logical formulas are formulas that determine if a statement is true or false. The most common logical formula is the **IF** formula, known to create conditions to tell Excel to do something IF something is true and then do something else. **IF** formulas help users automate their tables by following a set of rules (or conditions).

IF Formula

As previously mentioned, the **IF** formula is one of the most popular logical formulas. The **IF** formula helps us create conditions that will tell Excel what to display if those conditions are met or not met.

To give a more practical example, imagine a room filled with 100 people. Let's say that we ask everyone who wears glasses to stand up. If we were to use an **IF** formula to communicate this instruction to the audience, we may say something like: *If you are wearing glasses, then stand up.* By default, those that do not wear glasses would remain sitting. Keep this example in mind as we explain how the formula is structured.

Example of an **IF** formula:

=IF(C2>10,"Yes","No")

The **IF** formula consists of a *minimum* of three parts in its argument. Let's break down the three parts.

=IF (Enter Condition, _____, _____)

The condition of a formula is technically called a *logical test*. Basically, you want to use one of the following three types of logical tests: the equal sign (=), the greater than sign (>) or the less than sign (<). Therefore, in the first part of the **IF** formula, you can include a statement that asks if a cell reference is *greater than* a number or another cell reference (i.e. C2>10).

The second part of the **IF** formula is a computation, a word, a phrase or a cell reference that you want Excel to display or compute *if* the condition is true.

=IF (Enter Condition, TRUE , _____)

The last part of the **IF** formula is a computation, word, phrase or a cell reference that you want Excel to display, or compute, *if* the condition is false. The "false" part of the argument can also be considered as the last choice, or the default choice. In our practical example, we discussed that the audience members that do not wear glasses remain sitting down. We didn't have to tell them "if you don't wear glasses remain sitting". By default, the members knew that the only other option was to remain sitting.

=IF (Enter Condition, TRUE , FALSE)

How to use an IF Formula with one condition

IF formula can be used with one condition or many. Let's first discuss how to use a simple **IF** formula that only contains a single condition.

To write an **IF** formula:

1. Select the cell where you want to include your **IF** formula.

	A	B	C
1	Name	State Exam	PASS OR DOES NOT PASS
2	Sinbad Q	80	
3	Robert F	85	
4	Helen S	90	
5	Roberta L	95	

2. Begin your formula with: **=IF(**

	A	B	C
1	Name	State Exam	
2	Sinbad Q	80	=IF(
3	Robert F	85	
4	Helen S	90	
5	Roberta L	95	

3. In the first part of the formula, include your condition. Remember, you'll need to say if something is equal to, greater than or less than something else. After writing your condition, add a comma.

	A	B	C
1	Name	State Exam	
2	Sinbad Q	80	=IF(B2>85,
3	Robert F	85	
4	Helen S	90	
5	Roberta L	95	

4. In the second part of the formula, include a computation, a word, phrase or cell reference you would like displayed if the condition is true. End the second part with a comma.

	A	B	C
1	Name	State Exam	
2	Sinbad Q	80	=IF(B2>85,"PASS",
3	Robert F	85	
4	Helen S	90	
5	Roberta L	95	

5. In the last part of the formula, include a computation, word, phrase or cell reference you would like Excel to display if the condition is false. Type the **Enter** key on your keyboard to complete your formula.

	A	B	C
1	Name	Sta	
2	Sinbad Q		=IF(B2>85,"PASS","FAIL")
3	Robert F	85	
4	Helen S	90	
5	Roberta L	95	

The **IF** formula can be tricky so it's always a good idea to check your work to make sure you did it correctly.

	A	B	C
1	Name	State Exam	PASS OR DOES NOT PASS
2	Sinbad Q	80	FAIL
3	Robert F	85	FAIL
4	Helen S	90	PASS
5	Roberta L	95	PASS

How to use the IF Formula with more than one condition

Previously, you learned how to use the **IF** formula with a single condition. But what if you need to include additional conditions? Much of this depends on what you're trying to accomplish. Let's look at a very practical and simple example. If I have a group of 100 people in a room and I say, *"if you are older than 50 years old, stand up and if you are younger than 20 years old hop on one foot."* This example actually has three options: those that are older than 50 years old, those that are younger than 20 years old and those that are in between.

Think of the **IF** formula in the same way. Here's what an **IF** formula may look like for the first part of our example:

=IF(Person>50, stand up, FALSE)

To continue with our example, we would have to add another condition. This means that we would have to add another **IF** formula in the FALSE part of the formula because our statement would be false according to the first condition. This is what the **IF** formula would look like:

=IF(Person>50, stand up, IF(Person<20, hop on foot, FALSE))

Lastly, we have one group remaining: everyone in between. By default, this group would be the last option; the last resort. The final formula would look something like this:

=IF(Person>50, stand up, IF(Person<20, hop on foot, remain seated))

Since you are using two **IF** formulas, you will need to close the final argument with two parentheses.

Hopefully, the example made sense. Let's see how this will work in Excel.

An Easy way to use an IF Formula with multiple conditions

In our practical example, we described using multiple conditions in Excel by adding to the FALSE part of the argument. This is probably the easiest way to create an **IF** formula with multiple conditions.

To write an **IF** formula with multiple conditions:

1. Select the cell where you want to include your **IF** formula.

D	E	F
Name	Age	Action
Robert F.	34	
Clovis D.	25	
Arthur H.	68	
Perla S.	39	

2. Begin your formula with **=IF(**

D	E	F
Name	Age	Action
Robert F.	34	=IF(
Clovis D.	25	
Arthur H.	68	
Perla S.	39	

3. Create your first condition by using an equal sign, a greater than sign or a less than sign and include a comma at the end.

	A	B	C	D	E	F
1	Age	Action		Name	Age	Action
2	50	Stand		Robert F.	34	=IF(E2>A2,
3	20-50	Sit		Clovis D.	25	
4	20	Hop		Arthur H.	68	
5				Perla S.	39	

4. In the second part of the argument, include what you would want Excel to display if the first condition is true. End the second part with a comma.

	A	B	C	D	E	F
1	Age	Action		Name	Age	Action
2	50	Stand		Robert F.	34	=IF(E2>A2,\$B\$2,
3	20-50	Sit		Clovis D.	25	
4	20	Hop		Arthur H.	68	
5				Perla S.	39	

- Since you have other options, begin another IF statement immediately after the second part of the argument and begin the argument.

	A	B	C	D	E	F
1	Age	Action		Name	Age	Action
2	50	Stand		Robert F.	34	=IF(E2>A2,\$B\$2,IF(
3	20-50	Sit		Clovis D.	25	
4	20	Hop		Arthur H.	68	
5				Perla S.	39	

- Inside the argument of the *second* IF statement, type your second condition (and include an equal sign, greater than sign or less than sign) and add a comma at the end.

	A	B	C	D	E	F	G
1	Age	Action		Name	Age	Action	
2	50	Stand		Robert F.	34	=IF(E2>A2,\$B\$2,IF(E2<A4,	
3	20-50	Sit		Clovis D.	25		
4	20	Hop		Arthur H.	68		
5				Perla S.	39		

- Include a phrase, word, computation or cell reference you would want Excel to display if the second condition is true. Add a comma.

	A	B	C	D	E	F	G
1	Age	Action		Name	Age	Action	
2	50	Stand		Robert F.	34	=IF(E2>A2,\$B\$2,IF(E2<A4,\$B\$4,	
3	20-50	Sit		Clovis D.	25		
4	20	Hop		Arthur H.	68		
5				Perla S.	39		

- For the last condition of the formula, include the default condition and close the arguments with two closed parentheses.

	A	B	C	D	E	F	G	H
1	Age	Action		Name	Age	Action		
2	50	Stand		Robert F.	34	=IF(E2>A2,\$B\$2,IF(E2<A4,\$B\$4,\$B\$3))		
3	20-50	Sit		Clovis D.	25			
4	20	Hop		Arthur H.	68			
5				Perla S.	39			

If you have more than two conditions, then you would just need to add another **IF** statement in the FALSE part of the argument and continue to add **IF** statements as you see fit. Remember, the *last* **IF** statement would need a FALSE part and as many closed parentheses as there are **IF** statements.

D	E	F
Name	Age	Action
Robert F.	34	Sit
Clovis D.	25	Sit
Arthur H.	68	Stand
Perla S.	39	Stand

Using IF Formulas as the TRUE statement of an argument

In the previous example, we created an **IF** formula with multiple conditions. In that example, the **IF** formulas would continue in the FALSE part of the argument. However, there are instances in which you may need to add an **IF** statement for conditions that are true. Let's go back to the example of our audience with 100 people. Let's assume that we want tell the audience, "if you are over 50, raise your hand if you wear glasses". Let's break down this statement by using an argument, like we do in formulas. First of all, our **IF** formula begins with the condition: if a person is over fifty.

=IF(Person>50, TRUE, FALSE)

Next, we are saying that if that statement is true, that we want people to raise their hand *if* they wear glasses. This means that we would need to add an entire **IF** formula in the second part of the argument. It may look something like this:

=IF(Person>50, IF(Person=Glasses, Raise Hand, Don't Raise Hand), FALSE)

Our formula is now describing a statement *for the condition if it's true*. Therefore, in the TRUE **IF** formula we would need to include the three parts: condition, true statement and false statement. In our example, if a person wears glasses they will need to raise their hand. For the people not wearing glasses, they don't need to raise their hand (by default).

There is one missing piece to this formula. What about all the people who are not over 50? Well, by default, they belong in the FALSE statement of the original **IF** formula. Our complete formula would look something like this:

=IF(Person>50, IF(Person=Glasses, Raise Hand, Don't Raise Hand), Do nothing)

To create an **IF** formula like this in Excel:

1. Select the cell where you want to write your **IF** formula.

C	D	E
Name	Age	Action
Robert F.	34	
Clovis D.	25	
Arthur H.	68	
Perla S.	39	

2. Begin your **IF** formula like this: **=IF(**

C	D	E
Name	Age	Action
Robert F.	34	=IF(
Clovis D.	25	
Arthur H.	68	
Perla S.	39	

3. Write your first condition. Remember, you'll need an equal sign, a greater than sign or a less than sign. End this part with a comma.

	A	B	C	D	E
1	Age		Name	Age	Action
2	50		Robert F.	34	=IF(D2>A2,
3	20-50		Clovis D.	25	
4	20		Arthur H.	68	
5			Perla S.	39	

4. Begin your second **IF** formula and open the argument.

C	D	E
Name	Age	Action
Robert F.	34	=IF(D2>A2,IF(
Clovis D.	25	
Arthur H.	68	
Perla S.	39	

5. Write a second condition for this **IF** formula and make sure that you include an equal sign, a greater than sign or a less than sign. Add a comma at the end.

	A	B	C	D	E	F
1	Age		Name	Age	Action	
2	50		Robert F.	34	=IF(D2>A2,IF(A2="Glasses",	
3	20-50		Clovis D.	25		
4	20		Arthur H.	68		
5			Perla S.	39		

6. Next, select a cell reference or write a word, phrase or formula you want to display if this second condition is true. Add a comma at the end.

	A	B	C	D	E	F	G
1	Age		Name	Age	Action		
2	50		Robert F.	34	=IF(D2>A2,IF(A2="Glasses","Hand Up",		
3	20-50		Clovis D.	25			
4	20		Arthur H.	68			
5			Perla S.	39			

7. Select a default cell reference, word, phrase or formula you want displayed if this second condition is false. End the *second IF* formula with a closed parenthesis *and* a comma.

	A	B	C	D	E	F	G	H
1	Age		Name	Age	Action			
2	50		Robert F.	34	=IF(D2>A2,IF(A2="Glasses","Hand Up","No Hands"),			
3	20-50		Clovis D.	25				
4	20		Arthur H.	68				
5			Perla S.	39				

8. Complete the final step of the *first IF* statement by selecting a cell reference or writing a formula, word or phrase if the *first* condition is false. End the entire argument with a closed parenthesis.

	A	B	C	D	E	F	G	H	I
1	Age		Name	Age	Action				
2	50		Robert F.	34	=IF(D2>A2,IF(A2="Glasses","Hand Up","No Hands"),"Nothing")				
3	20-50		Clovis D.	25					
4	20		Arthur H.	68					
5			Perla S.	39					

The final result should not result with an error message. Regardless, always check your work to make sure that the logic makes sense and the formula is correct.

C	D	E
Name	Age	Action
Robert F.	34	Nothing
Clovis D.	25	Nothing
Arthur H.	68	No Hands
Perla S.	39	No Hands

AND Formula

The **AND** formula works well with **IF** formulas because they provide an opportunity to include additional conditions and make a statement true *if* all conditions are true. Typically, the **AND** formula is not used on its own because it only returns the words "True" or "False". The **AND** formula has an argument that exclusively contains conditions. That means, that all parts of the **AND** formula must contain an equal sign, greater than sign or a less than sign.

Example of the **AND** formula:

=AND(C2>=10,C2<50)

The best way to think of the **AND** formula is by reading it in the following way:

C2>=10 AND C2<50

Basically, the argument is saying that both conditions have to be met: cell C2 needs to be greater than or equal to 10 *and* cell C2 is less than 50.

To create an **AND** formula:

1. Select the cell where you want to write your **AND** formula.

	A	B	C	D	E
1	More than	100	AND	less than	200
2					
3	1.	145			

2. Begin your formula with **=AND(**

	A	B	C	D	E
1	More than	100	AND	less than	200
2					
3	1.	145	=AND(		

3. Create the first condition by using an equal sign, a greater than sign or a less than sign. To add another condition, add a comma.

	A	B	C	D	E
1	More than	100	AND	less than	200
2					
3	1.	145	=AND(B3>B\$1		

4. Add a second condition in the argument and if you need to add more conditions add another comma. When you are done adding all conditions that must be true, end the argument with a closed parenthesis.

	A	B	C	D	E
1	More than	100	AND	less than	200
2					
3	1.	145	=AND(B3>\$B\$1,B3<\$E\$1)		

Remember, the **AND** formula will return a computation that will say either the word *true* or *false*.

	A	B	C	D	E
1	More than	100	AND	less than	200
2					
3	1.	145	TRUE		

If you don't want Excel to return either the word *true* or *false*, then you can use both the **AND** and the **IF** formula together.

Using the AND Formula with an IF Formula

Since using the **AND** formula by itself returns the words *true* or *false*, the **IF** formula can be used to display something else other than those words.

To use the **IF** formula and the **AND** formula together:

1. Click on the cell where you want to write your formula.

D	E	F
Name	Age	Action
Robert F.	12	
Clovis D.	25	
Arthur H.	68	
Perla S.	39	

2. Begin the **IF** formula: =IF(

D	E	F
Name	Age	Action
Robert F.	12	=IF(
Clovis D.	25	
Arthur H.	68	
Perla S.	39	

- Begin the condition in the first part of the formula by adding a logical formula. In this case, begin the **AND** formula with an open argument.

D	E	F
Name	Age	Action
Robert F.	12	=IF(AND(
Clovis D.	25	
Arthur H.	68	
Perla S.	39	

- The following parts of the **AND** argument will include conditions that all have to be met. Begin by entering the first condition (which should include an equal sign, a greater than sign or a less than sign). Complete the first part with a comma.

	A	B	C	D	E	F
1	Lowest Age	Highest Age		Name	Age	Action
2	25	45		Robert F.	12	=IF(AND(E2>A2,
3				Clovis D.	25	
4				Arthur H.	68	
5				Perla S.	39	

- Include a second part of the argument (if necessary) and any additional conditions (followed with commas). Once you include all conditions, close the argument and include a comma to continue with the **IF** formula.

	A	B	C	D	E	F
1	Lowest Age	Highest Age		Name	Age	Action
2	25	45		Robert F.	12	=IF(AND(E2>A2,E2<B2),
3				Clovis D.	25	
4				Arthur H.	68	
5				Perla S.	39	

- Add a computation, a word, cell reference or phrase to display if the **AND** formula is true. Include a comma at the end.

	A	B	C	D	E	F	G	H	I
1	Lowest Age	Highest Age		Name	Age	Action			
2	25	45		Robert F.	12	=IF(AND(E2>A2,E2<B2),"Meets Requirements"			
3				Clovis D.	25				
4				Arthur H.	68				
5				Perla S.	39				

- Add the a computation, word, cell reference or phrase to display if the **AND** formula is false. Close the argument with a closed paranthesis.

	A	B	C	D	E	F	G	H	I
1	Lowest Age	Highest Age		Name	Age	Action			
2	25	45		Robert F.	12	=IF(AND(E2>A2,E2<B2),"Meets Requirements","N/A")			
3				Clovis D.	25				
4				Arthur H.	68				
5				Perla S.	39				

Check your formula for any errors and spot check your data.

D	E	F
Name	Age	Action
Robert F.	12	N/A
Clovis D.	25	N/A
Arthur H.	68	N/A
Perla S.	39	Meets Requirements

OR Formula

The **OR** formula also works well with **IF** formulas because the **OR** formula provides an opportunity to include additional conditions and make a statement true *if* any of the conditions are met. Typically, the **AND** and **OR** formula are not used on their own because these two formulas only return the words "True" or "False". The **OR** formula has an argument that exclusively contains conditions. That means, that all parts of the **OR** formula must contain an equal sign, greater than sign or a less than sign.

Example of the **OR** formula:

=OR(C2>=10,C2<50)

The best way to think of the **OR** formula is by reading it in the following way:

C2>=10 OR C2<50

Basically, the argument is saying that any conditions has to be met: cell C2 is greater than or equal to 10 *or* cell C2 is less than 50.

To create an **OR** formula:

1. Select the cell where you want to write your **OR** formula.

	A	B	C	D	E
1	More than	100	OR	less than	200
2					
3	1.	145			

2. Start by typing you **OR** formula: **=OR(**

	A	B	C	D	E
1	More than	100	OR	less than	200
2					
3	1.	145	=OR(		

3. Type your first condition and complete the first part with a comma.

	A	B	C	D	E
1	More than	100	OR	less than	200
2					
3	1.	145	=OR(B3>B1,		

4. Add a second condition in the argument and if you need to add more conditions add another comma. When you are done adding all conditions, end the argument with a closed parenthesis.

	A	B	C	D	E
1	More than	100	OR	less than	200
2					
3	1.	145	=OR(B3>B1,B3<E1)		

As mentioned previously, the **OR** formula will only return the words “True” or “False”, letting you know that any condition was met. Next, we’ll take a look at how the **OR** formula and the **IF** formula can be used together.

	A	B	C	D	E
1	More than	100	OR	less than	200
2					
3	1.	145	TRUE		

Using the OR Formula with an IF Formula

Since using the **OR** formula on its own returns the words *true* or *false*, the **IF** formula can be used to display something else other than those two words.

To use the **IF** formula and the **OR** formula together:

1. Click on the cell where you want to write your formula.

D	E	F
Name	Age	Action
Robert F.	12	
Clovis D.	25	
Arthur H.	68	
Perla S.	39	

2. Begin the **IF** formula: =IF(

D	E	F
Name	Age	Action
Robert F.	12	=IF(
Clovis D.	25	
Arthur H.	68	
Perla S.	39	

- Begin the condition in the first part of the formula by adding a logical formula. In this case, begin the **OR** formula with an open argument.

	A	B	C	D	E	F
1	Lowest Age	Highest Age		Name	Age	Action
2	25	45		Robert F.	12	=IF(OR(
3				Clovis D.	25	
4				Arthur H.	68	
5				Perla S.	39	

- The following parts of the **OR** argument will include conditions. Keep in mind that using the **OR** formula will allow any of the conditions in the argument to be met. Begin by entering the first condition (which should include an equal sign, a greater than sign or a less than sign). Complete the first part with a comma.

	A	B	C	D	E	F
1	Lowest Age	Highest Age		Name	Age	Action
2	25	45		Robert F.	12	=IF(OR(E2>\$A\$2,
3				Clovis D.	25	
4				Arthur H.	68	
5				Perla S.	39	

- Include a second part of the argument (if necessary) and any additional conditions (followed with commas). Once you include all conditions, close the argument and include a comma to continue with the **IF** formula.

	A	B	C	D	E	F	G
1	Lowest Age	Highest Age		Name	Age	Action	
2	25	45		Robert F.	12	=IF(OR(E2>\$A\$2,E2<\$B\$2),	
3				Clovis D.	25		
4				Arthur H.	68		
5				Perla S.	39		

- Add a computation, a word, cell reference or phrase to display if the **OR** formula is true. Include a comma at the end.

	A	B	C	D	E	F	G	H
1	Lowest Age	Highest Age		Name	Age	Action		
2	25	45		Robert F.	12	=IF(OR(E2>\$A\$2,E2<\$B\$2),"Meets Age"		
3				Clovis D.	25			
4				Arthur H.	68			
5				Perla S.	39			

- Add the a computation, word, cell reference or phrase to display if the **OR** formula is false. Close the argument with a closed paranthesis.

	A	B	C	D	E	F	G	H	I
1	Lowest Age	Highest Age		Name	Age	Action			
2	25	45		Robert F.	12	=IF(OR(E2>\$A\$2,E2<\$B\$2),"Meets Age","N/A")			
3				Clovis D.	25				
4				Arthur H.	68				
5				Perla S.	39				

Check your formula for any errors and spot check your data.

	A	B	C	D	E	F
1	Lowest Age	Highest Age		Name	Age	Action
2	25	45		Robert F.	12	Meets Age
3				Clovis D.	25	Meets Age
4				Arthur H.	68	Meets Age
5				Perla S.	39	Meets Age

More Advanced Functions in Excel

The following functions are advanced techniques to accomplish certain tasks in Excel. These functions range from setting up an easier process for your formulas, correcting formulas and accessing information in a more efficient manner.

Name Ranges

Many times, you'll need to toggle back and forth between spreadsheets to complete a formula. Using **Name Ranges** may drastically assist with this process. **Name Ranges** allow you to title, or name, a column, table, area, location or range. This way, if you are writing a formula and plan to use a table or column from another spreadsheet, you can easily enter the name of the table or column without the need of toggling back and forth.

How to Apply Name Ranges

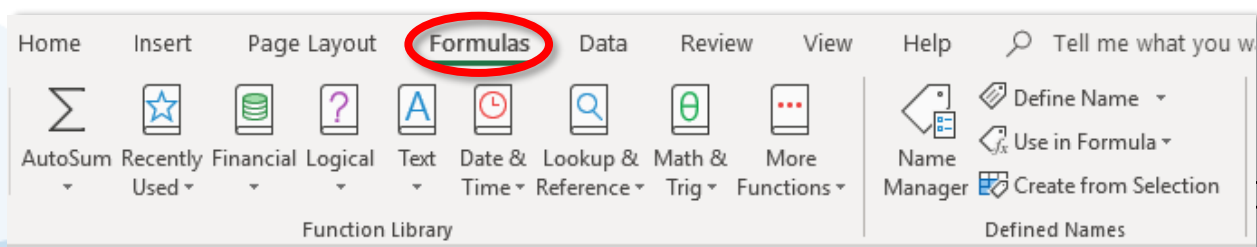
Naming a table or a column is relatively easy. Remember, when done correctly, this step will facilitate the process of completing a formula that requires you to go back and forth between spreadsheets.

To create a **Name Range**:

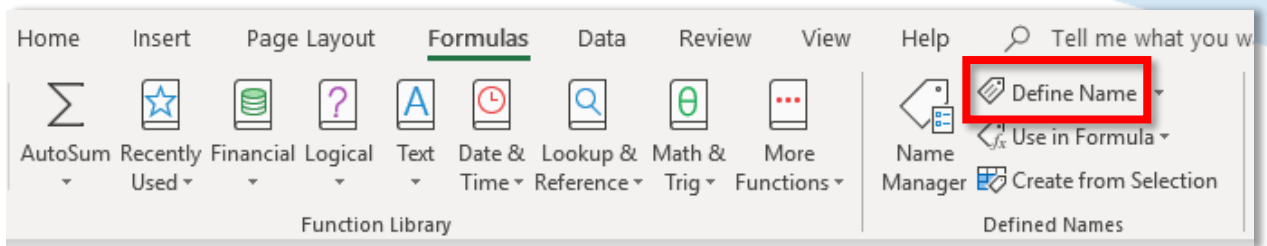
1. Select a column, table, area or cells that you would like to name.

	A	B	C	D
1	Customer Name	Area	Account Active	Membership Amount/Year
2	Dominguez, Barbara	Los Angeles	YES	\$ 239.88
3	Anthony, Rob	Los Angeles	NO	\$ 179.88
4	Williams, Debon	Los Angeles	YES	\$ 119.88
5	Hernandez, Harold	Fresno	NO	\$ 119.88

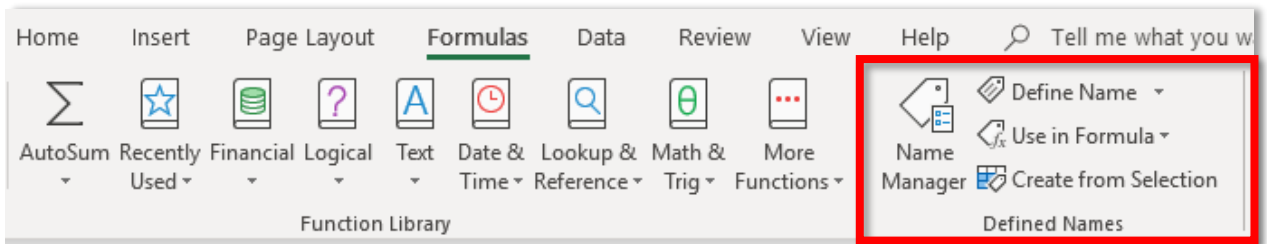
2. Navigate to the **Formulas** tab.



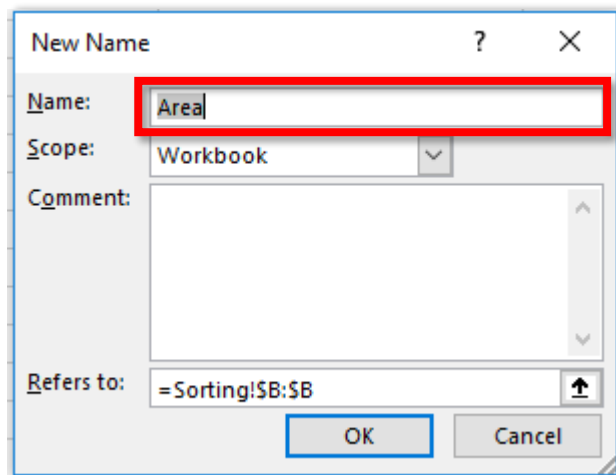
3. Locate the **Defined Names** group.



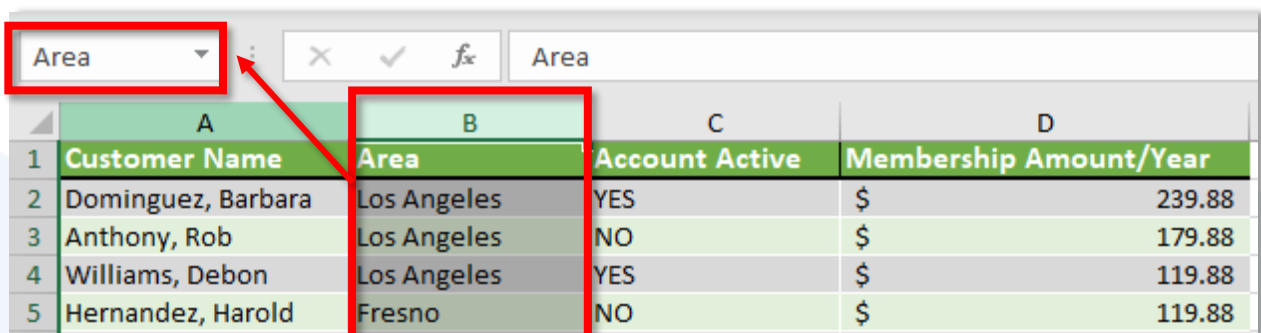
4. Select the command called **Define Name**.



5. After selecting the **Define Name** command, Excel will display a window. Name the range in the *Name* box. Pick a name you can easily remember and one that will not interfere with other ranges you have named. Select the **OK** button when done.



You'll know that you successfully named your range when you select the newly named range and the name of your range appears in the **Name Box**.



How to quickly name and access your tables

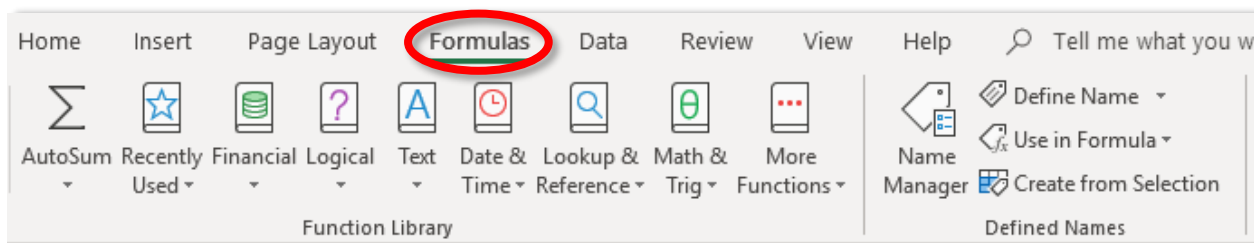
You can quickly and easily name your tables as well. Naming your tables allows you to quickly identify them when you're including a range in a formula or to toggle back and forth between spreadsheets. Let's discuss how you can name a table and access it quickly by naming it.

To name a table:

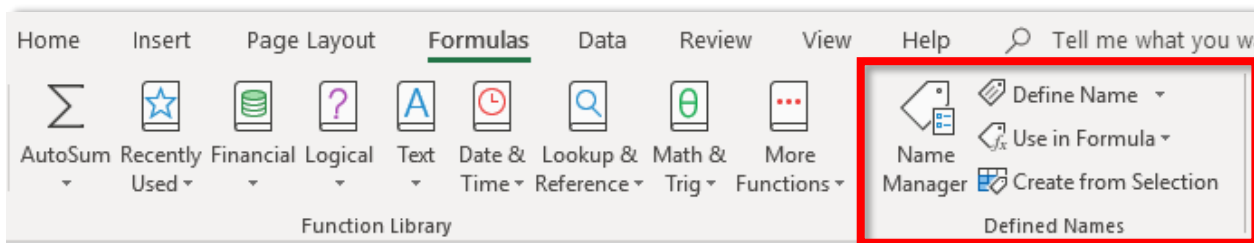
1. Select the entire range of your table.

	A	B	C	D	E	F
1	Count	Account ID	Account Name	Account Manager	Location	
2	1	11368	Bright Minds Non-Profit	Sebastian D.	CA	
3	2	11457	JFK Online College	Claudia R.	CA	
4	3	11498	Rock Learning Centers	Maria G.	IL	
5	4	11500	ITT Technical Institute - Palm Springs	Matthew J.	IL	
6	5	11459	Los Angeles USD	Horacio M.	CA	
7	6	11458	Jupiter International	Francisco Y.	CA	
8	7	11474	Educacion Escolar Para Ninos, SA de CV	William W.	IL	
9	8	11487	Cloud Works, Inc.	George K.	CA	
10	9	11488	STEM Worldwide Academy	Isaac K.	CA	
11	10	11465	Institution of Math CRL	Debra S.	CA	
12						

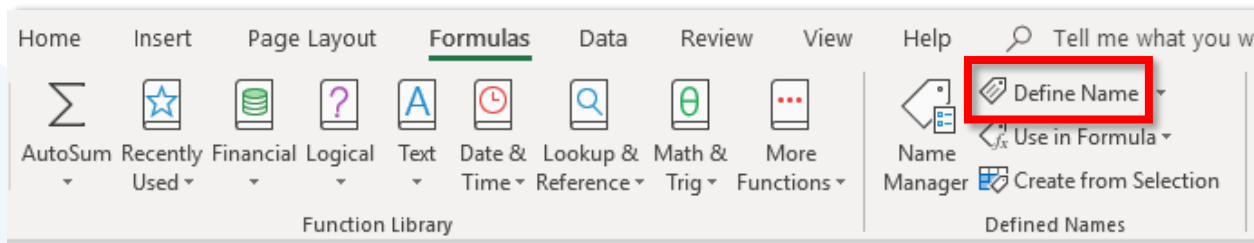
2. Access the **Formulas** tab.



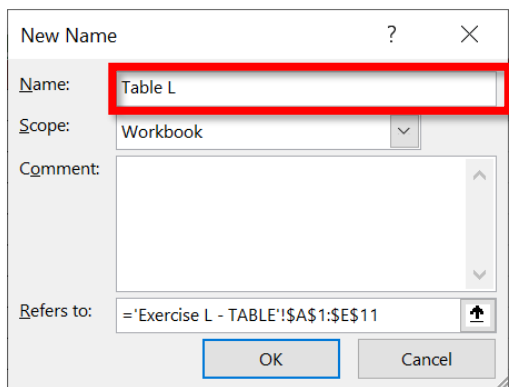
3. Find the **Defined Names** group.



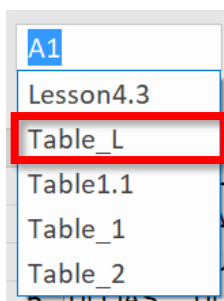
4. In the **Defined Names** group, select the **Define Name** command.



5. In the pop-up window, name the table in the *Name* box. Be careful because Excel will not accept space characters. Therefore, you'll need to include dashes or underscores to name your tables. No spaces. Click the **OK** button.



6. Moving forward, when you need to locate the table you just named, you can use the **Name Box** and find your table from the dropdown menu.

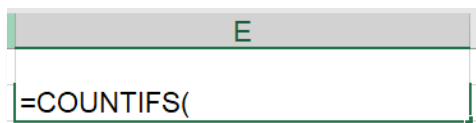


How to use Name Ranges in your formulas

The best part about naming your ranges or tables is that you can use the name ranges in a formula. If a formula asks you for a range, a table array or a lookup array, you can use the name of the table or column instead of having to select the range.

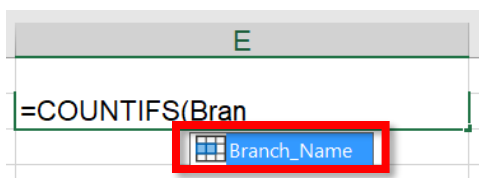
To use name ranges in your formulas:

1. First, make sure that your tables or columns have been named.
2. Begin your formula.

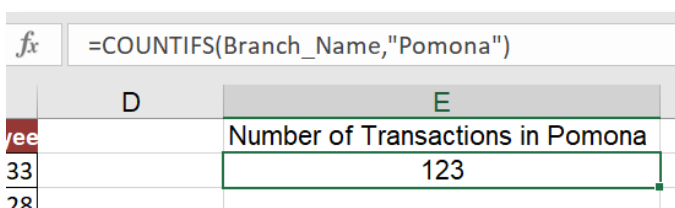


3. If the formula requires you to select a range (such as a column or area), type the name of the table or column instead. This will prompt Excel to display a short menu

of options that should include the ranges or tables that you named. Select the name range.



4. Complete the formula and you will find that you just saved some time and energy by avoiding having to select a range or (in some cases) going back and forth between spreadsheets.



Auditing Formulas

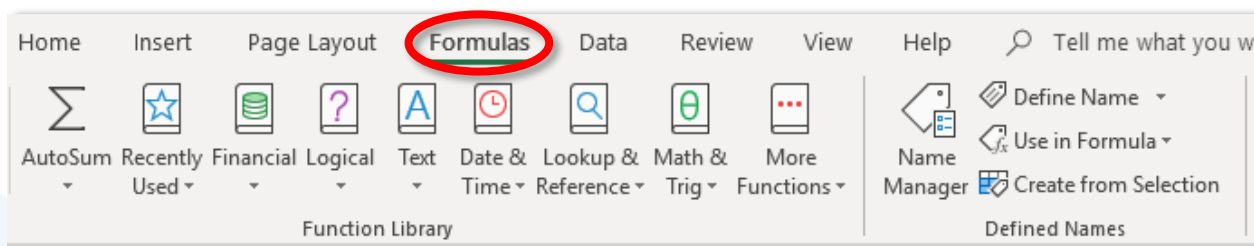
Excel understands that we may sometimes work with tons of data in spreadsheets and that mistakes can happen. The **Formula Auditing** group helps users check for errors, trace cell references and display the formula for analysis. This helps users quickly identify any problems with the formulas or with the calculations. In this section, we'll explore the different ways that Excel allows us to audit formulas.

The Show Formulas Command

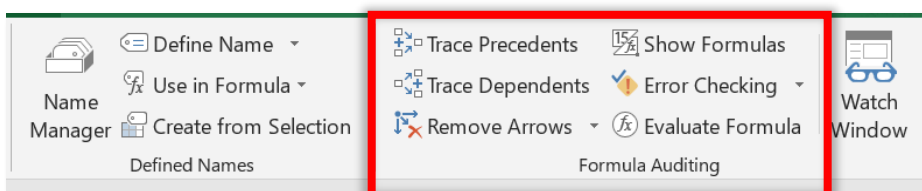
As you know, when we create formulas, the cell will display the computation and the formula bar will include the formula itself. There may be instances in which you have a table with tons of formulas, but maybe one of those formulas seems to be incorrect. In this case, the **Show Formulas** command in the **Formula Auditing** group, allows you to display all formulas in their respective cells within your spreadsheet.

To use the **Show Formulas** command:

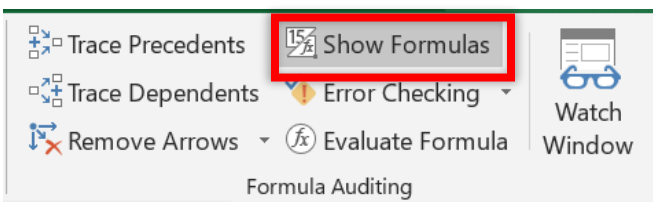
1. Navigate to the **Formulas** tab.



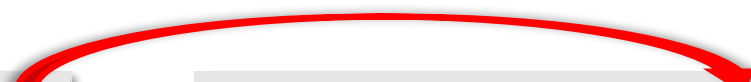
2. Locate the **Formula Auditing** group.



3. Click on the **Show Formulas** command.



Selecting the **Show Formulas** command will display all formulas in the cells. Below is a comparison of what a table may look before and after selecting the **Show Formulas** command.



D	E	
Account	User ID	Account
11368	10145	Bright
11368	10081	Bright
11368	10107	Bright
11368	10709	Bright
11368	10216	Bright
11368	10097	Bright
11368	10135	Bright
11368	10464	Bright

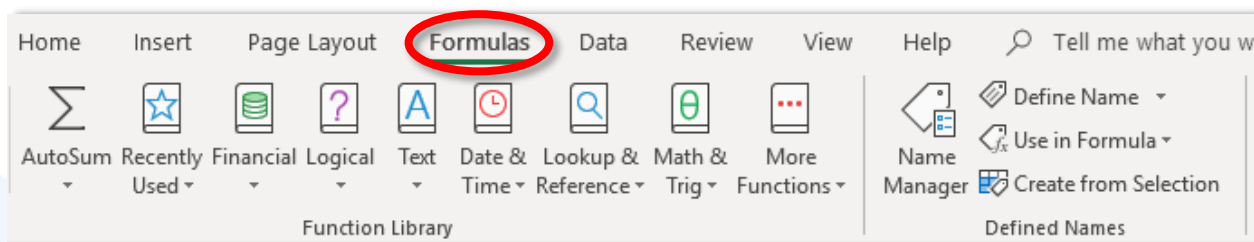
D	E	F
Account ID	User ID	Account Name
11368	10145	=VLOOKUP(\$D2,'Exercise L - TABLE'!B:C,2,FALSE)
11368	10081	=VLOOKUP(\$D3,'Exercise L - TABLE'!B:C,2,FALSE)
11368	10107	=VLOOKUP(\$D4,'Exercise L - TABLE'!B:C,2,FALSE)
11368	10709	=VLOOKUP(\$D5,'Exercise L - TABLE'!B:C,2,FALSE)
11368	10216	=VLOOKUP(\$D6,'Exercise L - TABLE'!B:C,2,FALSE)
11368	10097	=VLOOKUP(\$D7,'Exercise L - TABLE'!B:C,2,FALSE)
11368	10135	=VLOOKUP(\$D8,'Exercise L - TABLE'!B:C,2,FALSE)
11368	10464	=VLOOKUP(\$D9,'Exercise L - TABLE'!B:C,2,FALSE)

How to remove the Show Formulas function

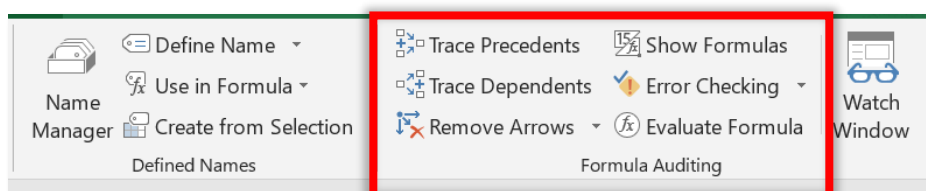
Follow these easy steps to no longer use the **Show Formulas** option in Excel.

To discontinue the use of the **Show Formulas** command:

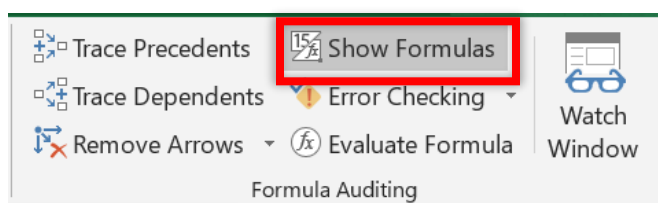
1. Navigate to the **Formulas** tab.



2. Locate the **Formula Auditing** group.



3. Deselect the **Show Formulas** command.



Introduction to Error Checking

Typically, when you create a formula and there is an issue, Excel will display a dialog box telling you that there is an error message with the formula. Additionally, if the formula worked well, it may return an error message such as #N/A or #NAME?. In these cases, you can quickly go back and fix the formulas.

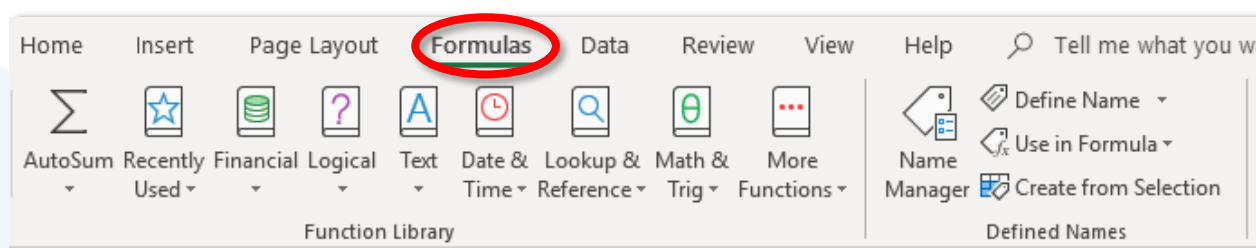
There is an additional step that will help you check for errors in formulas in Excel, in case you need it. Excel allows users to use the **Error Checking...** command to check for particular errors. The most commonly used commands to check for errors are the following:

Error Checking

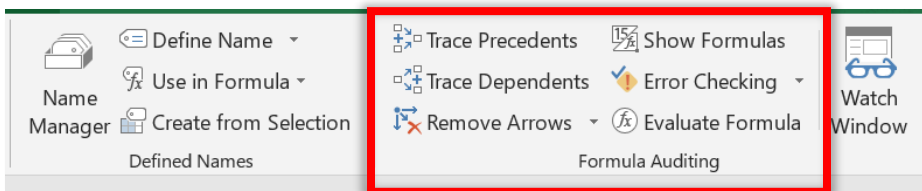
If your spreadsheet contains any errors, this command will display the *Error Checking* pop-up window, allowing you check errors one-by-one. The reason why you would want to use this feature is because you get tons of information on why the error occurred in the first place and have different options to correct (or ignore) this error message.

To use **Error Checking**:

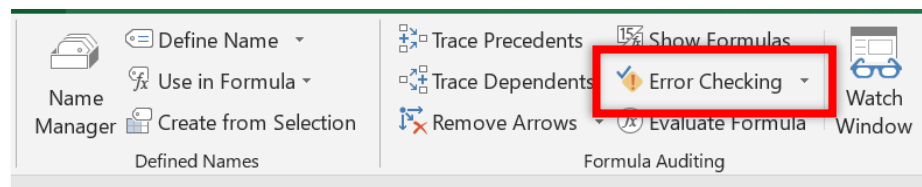
1. Navigate to the **Formulas** Tab.



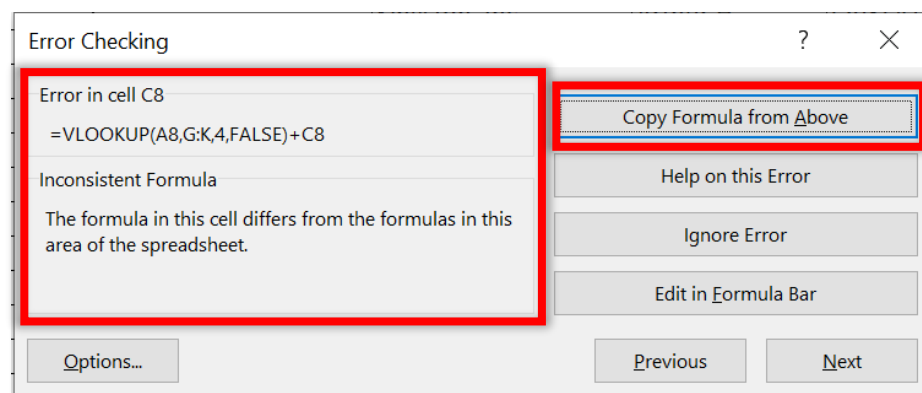
2. Locate the **Formula Auditing** group.



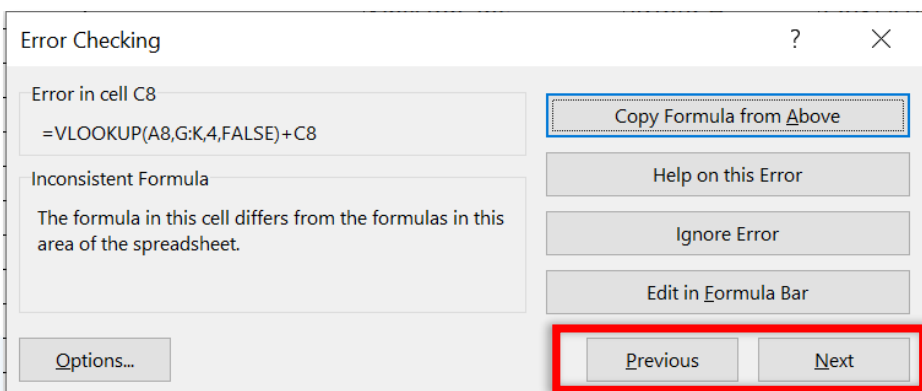
3. Click on the **Error Checking** command.



4. A window will display next with a few options. On the left side, you'll see the formula containing the error and below that you will find the reason for the error message. If the error is an inconsistent formula, then you can easily just use the *Copy Formula from Above* button to update the formula with the formula used in the cell above.

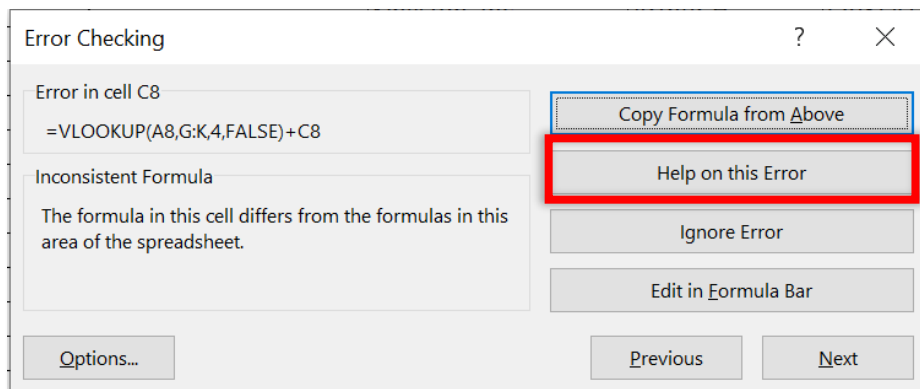


5. To continue to edit errors, use the *Previous* and *Next* buttons in the pop-up window.

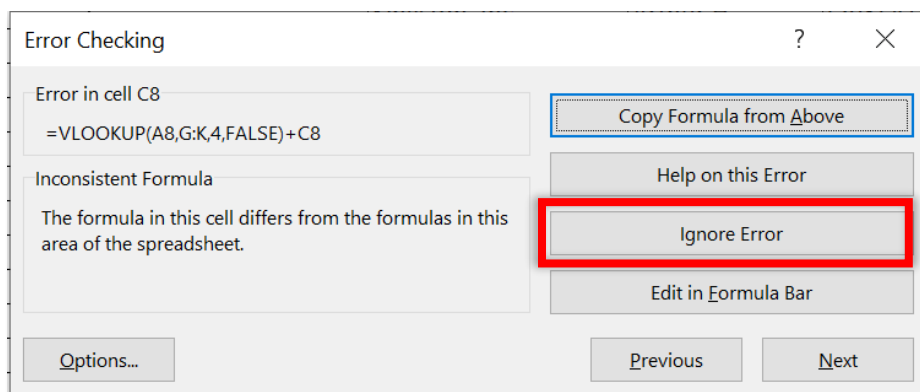


There are a few more options you can use when checking for errors. In the dialog box, there are three more options for you to choose from besides *Copy Formula from Above*:

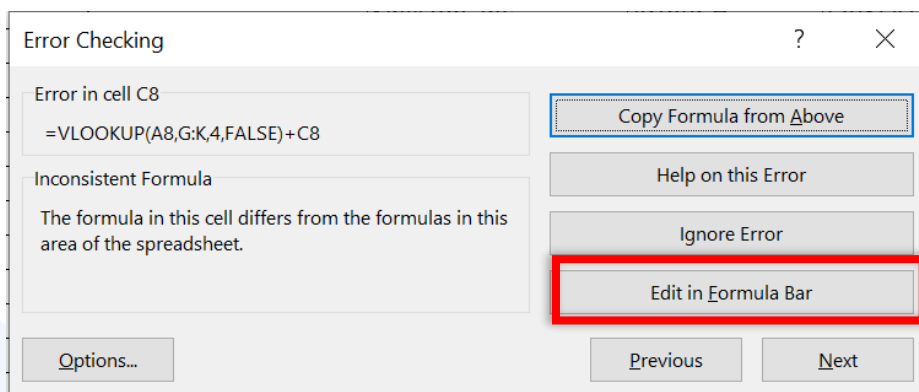
- **Help on this Error:** Use this option to get additional information about your error by visiting Microsoft's website and receive a more detailed comment about the error message you are encountering.



- **Ignore Error:** Use the *Ignore Error* option to disregard the errors in your formula and ensure that Excel doesn't flag the error message anymore.



- **Edit In Formula Bar:** Use this option to go back to the formula bar and manually make edits to your formula.



Trace Error

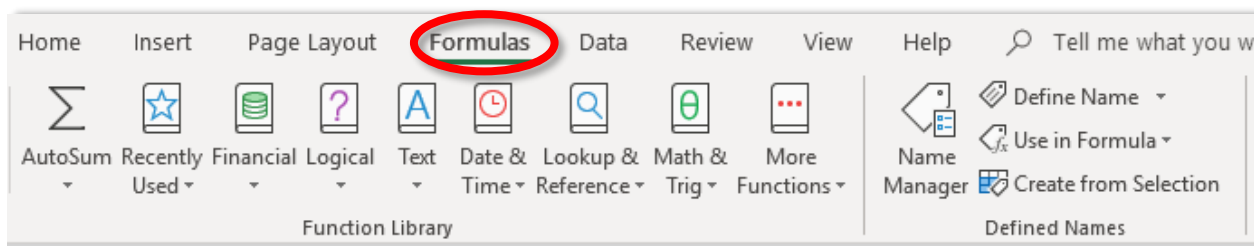
If Excel does, indeed, find errors with your functions, you can use the *Trace Error* command and use arrows that trace back to cells with error values. Remember, this means that this feature will only work if your formula returns an error value such as #N/A or #NAME?

To use the **Trace Error** feature:

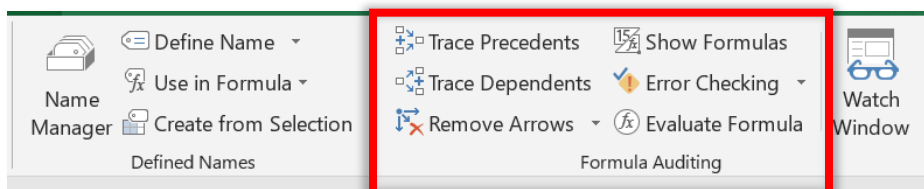
1. Select the cell that displays an error message.

7	Robert Lewis Law	2	\$60.00
8	Drew S. Wilson, MD	3	#N/A
9	Drew S. Wilson, MD	7	\$55.00

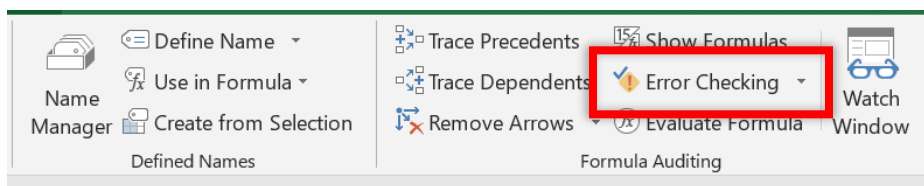
2. Navigate to the **Formulas** Tab.



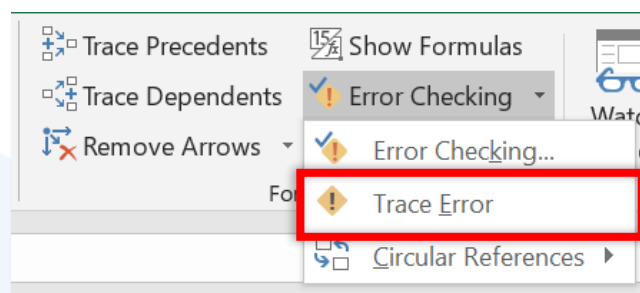
3. Locate the **Formula Auditing** group.



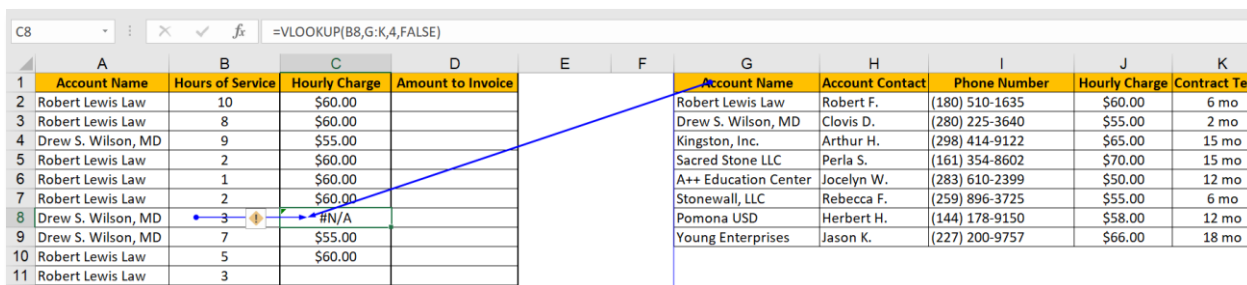
4. Select the **Error Checking** command to display a dropdown menu.



5. From the dropdown menu select the **Trace Error** option.



- Excel will display blue arrows that point from the beginning cell references in your formula to other tables and cell references that you use. This is a helpful, visual way to find out what you're calculating. Now, you can fix your formula errors so that the *Trace Error* function goes away.



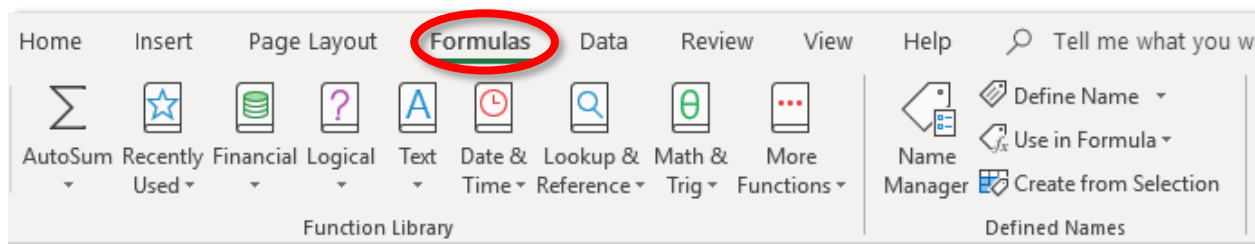
	A	B	C	D	E	F	G	H	I	J	K
1	Account Name	Hours of Service	Hourly Charge	Amount to Invoice			Account Name	Account Contact	Phone Number	Hourly Charge	Contract Ter
2	Robert Lewis Law	10	\$60.00				Robert Lewis Law	Robert F.	(180) 510-1635	\$60.00	6 mo
3	Robert Lewis Law	8	\$60.00				Drew S. Wilson, MD	Clovis D.	(280) 225-3640	\$55.00	2 mo
4	Drew S. Wilson, MD	9	\$55.00				Kingston, Inc.	Arthur H.	(298) 414-9122	\$65.00	15 mo
5	Robert Lewis Law	2	\$60.00				Sacred Stone LLC	Perla S.	(161) 354-8602	\$70.00	15 mo
6	Robert Lewis Law	1	\$60.00				A++ Education Center	Jocelyn W.	(283) 610-2399	\$50.00	12 mo
7	Robert Lewis Law	2	\$60.00				Stonewall, LLC	Rebecca F.	(259) 896-3725	\$55.00	6 mo
8	Drew S. Wilson, MD	3	#N/A				Pomona USD	Herbert H.	(144) 178-9150	\$58.00	12 mo
9	Drew S. Wilson, MD	7	\$55.00				Young Enterprises	Jason K.	(227) 200-9757	\$66.00	18 mo
10	Robert Lewis Law	5	\$60.00								
11	Robert Lewis Law	3									

Circular References

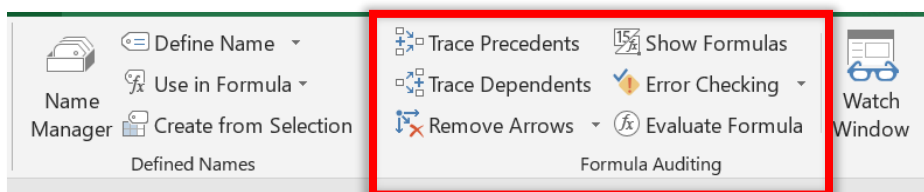
Circular references occur when formulas are created with cells that trace back to itself in one way or another. They are basically a formula that depends on this own value. Excel typically provides a notice when circular references occur but will not automatically correct the circular references. Sometimes these circular references appear because there was a mistake on your end, but they are easy to identify when using the *Error Checking* Command.

To identify and correct a **Circular Reference**:

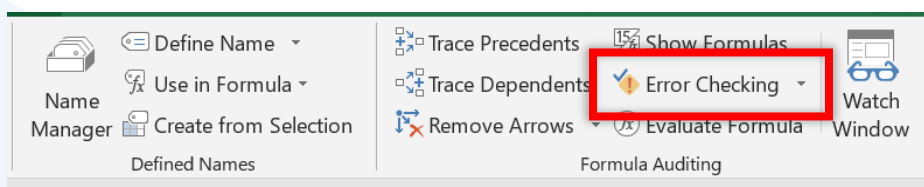
- Navigate to the **Formulas** Tab.



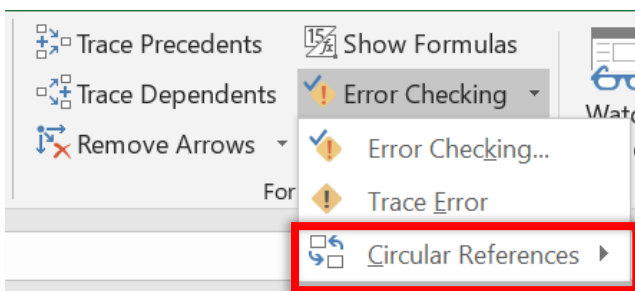
- Locate the **Formula Auditing** group.



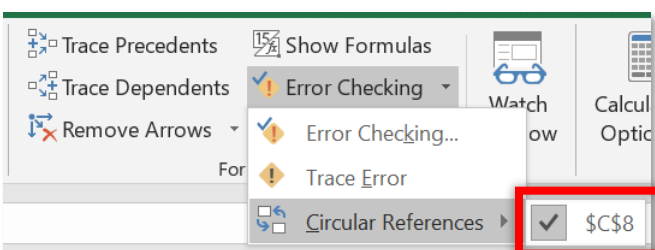
- Select the **Error Checking** command to display a dropdown menu.



- From the dropdown menu select the **Circular References** option.



- The **Circular References** option will only appear if Excel has detected a circular reference. This option will display a submenu with the cell location where the circular reference occurs. Select the cell.



- Check for any circular reference mistakes. The best way to do this is by checking to see if you included the same cell in the formula (i.e. you created a formula in cell C8 but for some reason you are doing a computation by adding C8). Remove the circular reference.

C8				=VLOOKUP(A8,G:K,4,FALSE)+C8
	A	B	C	D
1	Account Name	Hours of Service	Hourly Charge	Amount to Invoice
2	Robert Lewis Law	10	\$60.00	
3	Robert Lewis Law	8	\$60.00	
4	Drew S. Wilson, MD	9	\$55.00	
5	Robert Lewis Law	2	\$60.00	
6	Robert Lewis Law	1	\$60.00	
7	Robert Lewis Law	2	\$60.00	
8	Drew S. Wilson, MD	3	\$0.00	
9	Drew S. Wilson, MD	7	\$55.00	
10	Robert Lewis Law	5	\$60.00	

Removing the circular reference will remove the **Circular References** option in the ribbon.

Trace Dependents

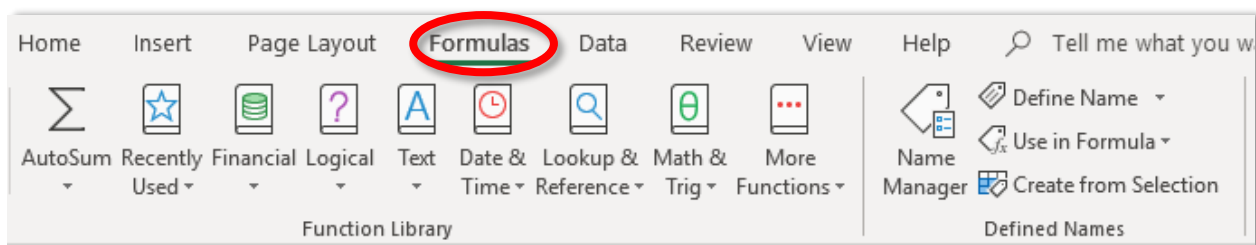
The **Trace Dependents** option of the **Formula Auditing Group** is helpful to determine which cells have formulas that depend on the cell you selected. Therefore, it traces the cell reference to any cell that contains a formula where that cell reference is needed. The **Trace Dependents** option traces cell references by adding blue arrows.

To use the **Trace Dependents** option:

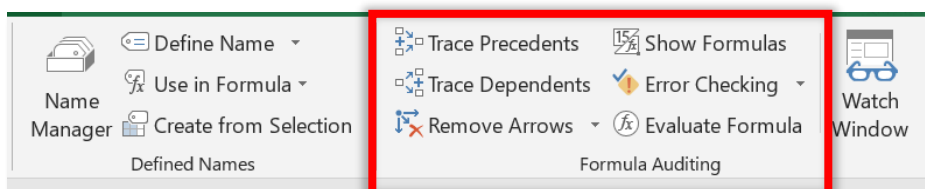
1. Select the cell that you believe is used in a formula.

D	E	F
Retail Price	Quantity in Stock	Revenue Potential
\$5.99	337	\$2,018.63
\$5.99	474	\$2,839.26

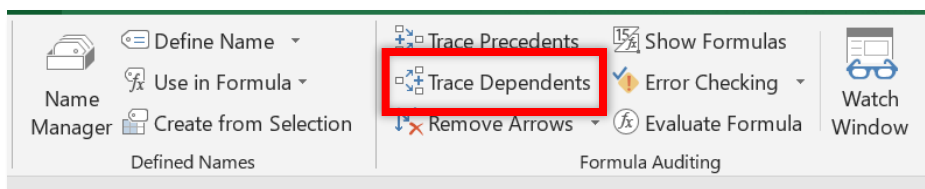
2. Navigate to the **Formulas** tab.



3. Locate the **Formula Auditing** group.



4. Select the **Trace Dependents** command.



Selecting the **Trace Dependents** command will add a blue arrow from the cell reference you selected in step one to the cell that uses the cell reference in its formula.

D	E	F
Retail Price	Quantity in Stock	Revenue Potential
\$5.99	337	\$2,018.63
\$5.99	474	\$2,839.26

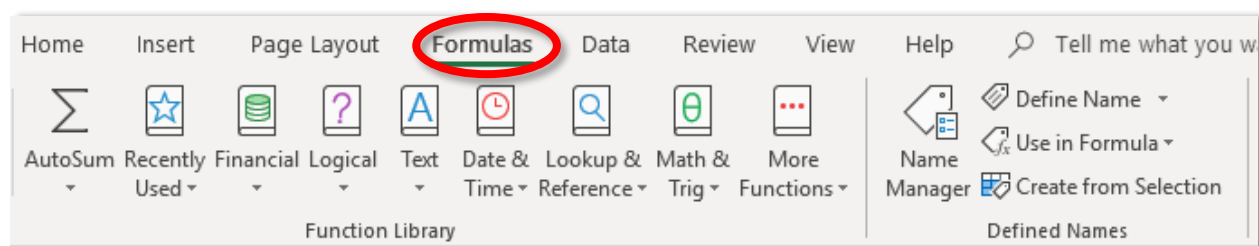
Trace Precedents

The **Trace Precedents** command allows you to click on a cell with a formula and traces all the cells references used in the formula. This command is helpful when trying to understand what kind of calculations are being made and you need to track the cell references to make any corrections or edits.

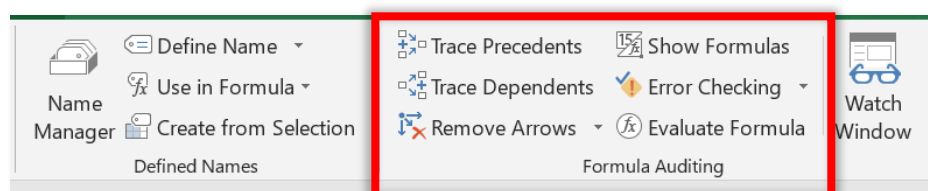
1. Select the cell that you believe is used in a formula.

D	E	F
Retail Price	Quantity in Stock	Revenue Potential
\$5.99	337	\$2,018.63
\$5.99	474	\$2,839.26

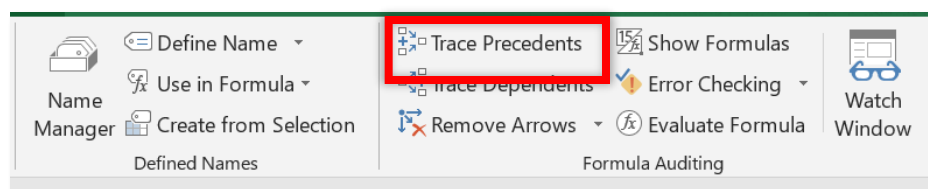
2. Navigate to the **Formulas** tab.



3. Locate the **Formula Auditing** group.



4. Select the **Trace Precedents** command.



Using the **Trace Precedents** command will add arrows to your cell references, allowing you to track the cells included in your formula.

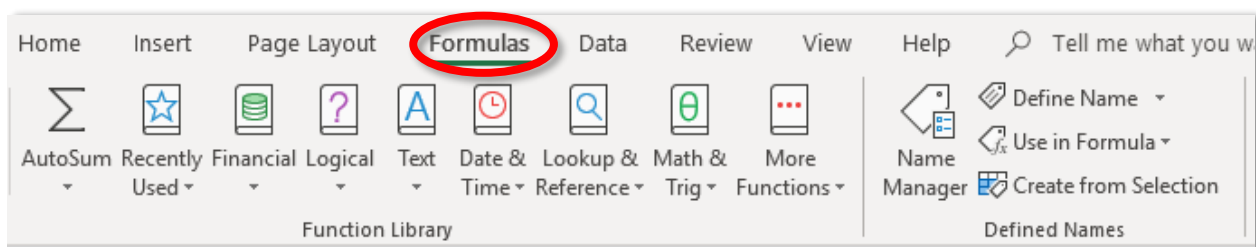
D	E	F
Retail Price	Quantity in Stock	Revenue Potential
\$5.99	337	\$2,018.63
\$5.99	474	\$2,839.26

How to remove Arrows

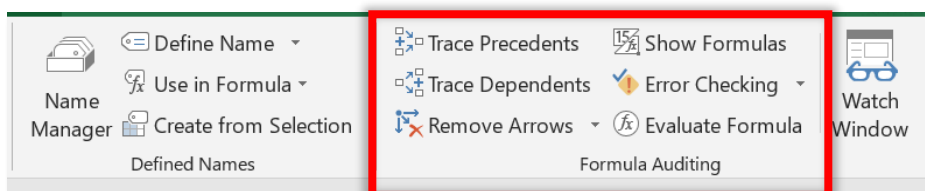
When using some of the commands in the **Formula Auditing** group, you'll notice that blue arrows will be displayed to trace or track your cell references. Although the blue arrows help you quickly and easily identify the sources of your data, they don't go away by themselves.

To remove the blue arrows from your spreadsheet:

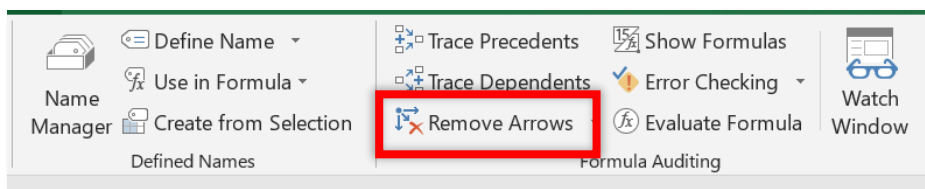
1. Navigate to the **Formulas** tab.



2. Locate the **Formula Auditing** group.



3. Select the **Remove Arrows** command.



Lookup Formulas

Lookup formulas allow you to transfer information from one table to another. Lookup formulas use an important detail from one table and use that detail to *lookup* information

in another table to transfer over. There are a few lookup formulas that are typically used in Excel. Those are the ones we will be exploring next.

VLOOKUP Formula

A **VLOOKUP** is a good formula to use when you want to transfer data from one table to the other that is typically organized in the same manner. To use the **VLOOKUP** formula, you need to ensure that each table has one key element that is the same. This key element is a unique identifier such as an ID, a SKU number, a reference number, a name, a social security number or anything that is distinctive of the entry.

Example of the **VLOOKUP** formula:

=VLOOKUP(A2,F:M,8,FALSE)

The **VLOOKUP** formula consists of four parts in the argument:

=VLOOKUP (Unique Identifier, Range, Number of Columns, False entry)

Let's explore each part of the argument in detail. First, the argument needs a unique identifier in both tables. When creating the formula, make sure to select the unique identifier of table #1.

=VLOOKUP (Unique Identifier, _____, _____, _____)

Next, move over to table #2 and select the range that includes the unique identifier *and* the data you want to transfer. You'll need to make sure that the first column of the range is the unique identifier in table #2.

=VLOOKUP (Unique Identifier, Range starting with Unique Identifier, _____, _____)

In the third part of the argument, enter a number. This number will correspond with the number of columns that set apart the unique identifier from the data you want transferred. Therefore, if there are 8 columns from the unique identifier to the column that includes the data that you want transferred, then enter the number eight.

=VLOOKUP (Unique Identifier, Range, Number of Columns, _____)

The last part of the argument is a true or false statement, but not the TRUE or FALSE statements typically used in Logic formulas. In a VLOOKUP, the word TRUE means

approximate match and the word FALSE means *exact match*. Most of the time, you would most likely include the word FALSE.

=VLOOKUP (Unique Identifier, Range, Number of Columns, FALSE)

To write a **VLOOKUP**:

1. Select a cell to write your **VLOOKUP**.

	A	B	C
1	Account Name	Hours of Service	Hourly Charge
2	Robert Lewis Law	10	
3	Robert Lewis Law	8	
4	Drew S. Wilson, MD	9	

2. Begin writing the **VLOOKUP** in this way: =VLOOKUP(

	A	B	C
1	Account Name	Hours of Service	
2	Robert Lewis Law	10	=VLOOKUP(
3	Robert Lewis Law	8	
4	Drew S. Wilson, MD	9	

3. Select the unique identifier. Add a comma at the end.

	A	B	C
1	Account Name	Hours of Service	
2	Robert Lewis Law	10	=VLOOKUP(A2,
3	Robert Lewis Law	8	
4	Drew S. Wilson, MD	9	

4. Continue writing your formula by moving on to the second table and select the column that contains the unique identifier.

	A	B	C	D	E	F	G
1	Account Name						Account Name
2	Robert Lewis Law		=VLOOKUP(A2,G:G				Robert Lewis Law
3	Robert Lewis Law	8					Drew S. Wilson, MD

5. As you select the column with the unique identifier, hold on to the click of the mouse and work your way to the right side of the table. Select the appropriate number of columns. There are two reminders in this step: 1) you can only move to the right of the table; 2) you need to make sure that the data you want to transfer is included *somewhere* in the range you are selecting. Add a comma.

	A	B	C	D	E	F	G	H	I	J	K
1	Account Name						Account Name	Account Contact	Phone Number	Hourly Charge	Contract Terms
2	Robert Lewis Law		=VLOOKUP(A2,G:K				Robert Lewis Law	Robert F.	(180) 510-1635	\$60.00	6 mo
3	Robert Lewis Law	8					Drew S. Wilson, MD	Clovis D.	(280) 225-3640	\$55.00	2 mo
4	Drew S. Wilson, MD	9					Kingston, Inc.	Arthur H.	(298) 414-9122	\$65.00	15 mo

- Count the number of columns from the unique identifier to the data you want transferred. Enter this number in the third part of the argument and complete the part with a comma.

	A	B	C	D
1	Account Name			
2	Robert Lewis Law		=VLOOKUP(A2,G:K,5	
3	Robert Lewis Law	8		

- In the last part of the argument, type the word FALSE to have Excel look up an exact match. End the argument and press the **Enter** key on your keyboard.

	A	B	C	D
1	Account Name			
2	Robert Lewis Law		=VLOOKUP(A2,G:K,5,FALSE)	
3	Robert Lewis Law	8		

After completing the formula, you will see the data transferred from the second table to the original table where you wrote the formula.

	A	B	C	D
1	Account Name	Hours of Service	Hourly Charge	Amount to Invoice
2	Robert Lewis Law	10	\$60.00	
3	Robert Lewis Law	8	\$60.00	
4	Drew S. Wilson, MD	9	\$55.00	

HLOOKUP Formula

The **HLOOKUP** works in the same style as the **VLOOKUP** formula, but is instead used horizontally. Therefore, instead of selecting a range from left to right, you select a range from top to bottom. **HLOOKUP** aren't used too much since most tables are organized with rows. The **HLOOKUP** would be used if the tables are set from top to bottom.

Example of the **HLOOKUP** formula:

=HLOOKUP(A2,13:15,8,FALSE)

The **HLOOKUP** formula consists of four parts in the argument:

=HLOOKUP (Unique Identifier, Range, Number of Rows, False entry)

Let's explore the argument in detail. In the same fashions a **VLOOKUP**, the argument needs a unique identifier in both tables. When creating the formula, make sure to select the unique identifier of table #1.

=HLOOKUP (Unique Identifier, _____, _____, _____)

Next, navigate to table #2 and select the range that includes the unique identifier *and* the data you want to transfer. You'll need to make sure that the first row you select includes the unique identifier in table #2.

=HLOOKUP (Unique Identifier, Range starting with Unique Identifier, _____, _____)

In the third part of the argument, you'll enter a number. This number will correspond with the number of rows that sets apart the unique identifier from the data you want transferred. Therefore, if there are 8 rows from the unique identifier to the row that includes the data that you want transferred, then enter the number eight.

=HLOOKUP (Unique Identifier, Range, Number of Rows, _____)

The last part of the argument is a true or false statement. In an HLOOKUP, the word TRUE means *approximate match* and the word FALSE means *exact match*. Most of the time, you would most likely include the word FALSE.

=HLOOKUP (Unique Identifier, Range, Number of Columns, FALSE)

To write an **HLOOKUP** formula:

1. Select a cell to write your **HLOOKUP** formula.

	A	B
1	Account Name	Phone Number
2	Robert Lewis Law	
3	Drew S. Wilson, MD	
4	Kingston, Inc.	

2. Begin writing the **HLOOKUP** formula in this way: =HLOOKUP(

	A	B
1	Account Name	
2	Robert Lewis Law	=HLOOKUP(
3	Drew S. Wilson, MD	
4	Kingston, Inc.	

3. Select the unique identifier. Add a comma at the end.

	A	B
1	Account Name	
2	Robert Lewis Law	=HLOOKUP(A2,
3	Drew S. Wilson, MD	
4	Kingston, Inc.	

4. Continue your formula by moving to the second table. Select the row that contains the unique identifier first.

2	R	=HLOOKUP(A2,13:13)
3	Drew S. Wilson, MD	
4	Kingston, Inc.	
5	Sacred Stone LLC	
6	A++ Education Center	
7	Stonewall, LLC	
8	Pomona USD	
9	Young Enterprises	
10		
11		
12		
13	Account Name	Robert Lewis Law Drew S. Wilson, MD
14	Account Contact	Robert F. Clovis D.
15	Phone Number	(180) 510-1635 (280) 225-3640
16	Hourly Charge	\$60.00 \$55.00
17	Contract Terms	6 mo 2 mo

5. As you click on the row, hold with your mouse and work your way down the table until you make sure that the data that you want transferred is included in the range you just selected. There are two reminders in this step: 1) you can only move from top to bottom; 2) you need to make sure that the data you want to transfer is included *somewhere* in the range you are selecting. Add a comma.

1		
2	R	=HLOOKUP(A2,13:17)
3	Drew S. Wilson, MD	
4	Kingston, Inc.	
5	Sacred Stone LLC	
6	A++ Education Center	
7	Stonewall, LLC	
8	Pomona USD	
9	Young Enterprises	
10		
11		
12		
13	Account Name	Robert Lewis Law Drew S. Wilson, MD
14	Account Contact	Robert F. Clovis D.
15	Phone Number	(180) 510-1635 (280) 225-3640
16	Hourly Charge	\$60.00 \$55.00
17	Contract Terms	6 mo 2 mo

6. Count the number of rows from your unique identifier to the data you want transferred in the second table. Enter this number in the third part of the argument and add a comma.

1		
2	R	=HLOOKUP(A2,13:17,3,)
3	Drew S. Wilson, MD	
4	Kingston, Inc.	

- In the last part of the argument, type the word **FALSE** to have Excel look up an exact match. End the argument and press the **Enter** key on your keyboard.

1		
2	R	=HLOOKUP(A2,13:17,3, FALSE)
3	Drew S. Wilson, MD	
4	Kingston, Inc.	

After completing the formula, you will see the data transferred from the second table to the original table where you wrote the formula.

1	Account Name	Phone Number
2	Robert Lewis Law	(180) 510-1635
3	Drew S. Wilson, MD	(280) 225-3640
4	Kingston, Inc.	(298) 414-9122

LOOKUP Formula

Along the same family, the **LOOKUP** formula is also used to find data to transfer from one table to the other. Unlike the **VLOOKUP** and the **HLOOKUP** formulas, the **LOOKUP** formula only performs an *approximate match* in a single column or row. Although this may be an issue in some instances, the formula is still very useful because you are not restricted by the order of the columns. In other words, you don't have to select a range from left to right like you have to in a **VLOOKUP** formula.

For the best results, the table where you are trying to transfer the data must be organized in ascending order. If this table is not sorted in ascending order, your results may vary when using the **LOOKUP** formula.

Example of a **LOOKUP** formula:

=LOOKUP(A2,13:15,8,FALSE)

The **LOOKUP** formula consists of three parts in the argument:

=LOOKUP (Unique Identifier (UI), Column Or Row with UI, Column Or Row)

A **LOOKUP** formula needs to begin with the unique identifier. When creating the formula, make sure to select the unique identifier to begin your argument.

=LOOKUP (Unique Identifier, _____, _____)

Next, navigate to table #2 and select a column or row that contains all the unique identifiers.

=LOOKUP (Unique Identifier, **Column Or Row with Unique Identifier**, _____)

In the third part of the argument, you'll also select a column or row. This column or row is the data that you plan on transferring from this table to the other table.

=LOOKUP (Unique Identifier, Range, **Column or row containing data needed**)

To write a **LOOKUP** formula:

1. Make sure that the data in the *lookup* table (the one where you'll be transferring the data) is sorted in *ascending* order by the unique identifier.

	A	B	C
1	Store Branch	Store ID	Employees
2	Pomona	1234	29
3	Diamond Bar	4567	28
4	Glendale	7891	33

2. Click on the cell where you want to begin your **LOOKUP** formula.

F	G	H
Store ID	Store Manager	Employees
4567	R. Perez	
1234	C. Chavez	
7891	H. Williams	

3. Begin typing your **LOOKUP** formula in this manner: =LOOKUP(

F	G	H
Store ID	Store Manager	
4567	R. Perez	=LOOKUP(
1234	C. Chavez	
7891	H. Williams	

4. Select your unique identifier to begin your argument and add a comma.

F	G	H
Store ID	Store Manager	
4567	R. Perez	=LOOKUP(F2,
1234	C. Chavez	
7891	H. Williams	

5. Navigate to the lookup table (the second table) and select the column or row that contains all the unique identifiers. Add a comma.

	A	B	C	D	E	F	G	H	I
1	Store Branch	Store ID	Employees			Store ID	Store Manager		
2	Pomona	1234	29			4567	R. Perez	=LOOKUP(F2,B:B,	
3	Diamond Ba	4567	28			1234	C. Chavez		
4	Glendale	7891	33			7891	H. Williams		

6. Select the row or column that contains the data you want transferred from the lookup table. Hit the **Enter** key on your keyboard to complete the **LOOKUP** formula.

	A	B	C	D	E	F	G	H	I
1	Store Branch	Store ID	Employees			Store ID	Store Manager		
2	Pomona	1234	29			4567	R. Perez	=LOOKUP(F2,B:B,C:C)	
3	Diamond Bar	4567	28			1234	C. Chavez		
4	Glendale	7891	33			7891	H. Williams		

Check your data to ensure the formula is working properly. If you notice that the data transferred does not look right correct the formula. One great way to correct the formula is by checking that the lookup table is, indeed, sorted by the unique identifier in *ascending* order.

Store ID	Store Manager	Employees
4567	R. Perez	28
1234	C. Chavez	29
7891	H. Williams	33

INDEX Formula

Although some may not consider the **INDEX** formula as a lookup formula, the **INDEX** formula does help find data and transfer it from one table to another. Unlike the other lookup formulas, the **INDEX** formula returns a value *based on a position* you include in the argument.

Example of an **INDEX** formula:

=INDEX(A:D,8,3)

The **INDEX** formula consists of three parts in the argument:

=INDEX (Range, Number of Rows, Number of Columns)

The first part of the argument in an **INDEX** formula includes a range. As it's common in most of these formulas, the range must contain the data you're trying to transfer from one table to another table.

=INDEX (Range, _____, _____)

Next, you'll need to tell Excel how many rows it should count from top to bottom. Therefore, if the data you want extracted is located in the 8th row (from the top), then you will enter the number eight in the second part of the formula.

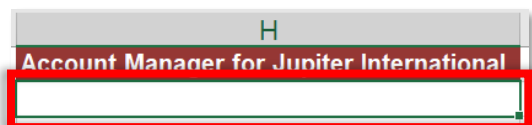
=INDEX (Range, Number of Rows, _____)

Finally, end the formula with the number of columns starting from the first column in your range. Therefore, if the data you want transferred is located in the 3rd column (starting from the first column in your range), then you will include the number three in your formula.

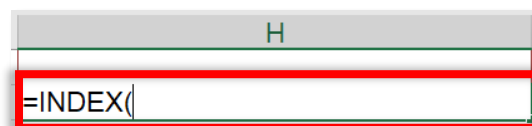
=INDEX (Range, Number of Rows, Number of Columns)

How to use an **INDEX** formula:

1. Click on the cell where you want to write your **INDEX** formula.



2. Begin your **INDEX** formula in the form =INDEX(



3. Move your cursor to the table that contains the data you want transferred and make sure that the range includes the data you're looking for. Add a comma after selecting the range.



- Count the number of rows starting with the first row (at the top) of your range until you reach the row that contains the data you want transferred. Enter the number in the argument and include a comma.

	A	B	C	D	E	F	G	H
1	Count	Account ID	Account Name	Account Manager	Location			
2	1	11368	Bright Minds Non-Profit	Sebastian D.	CA			=INDEX(A
3	2	11457	JFK Online College	Claudia R.	CA			
4	3	11498	Rock Learning Centers	Maria G.	IL			
5	4	11500	ITT Technical Institute - Palm Springs	Matthew J.	IL			
6	5	11459	Los Angeles USD	Horacio M.	CA			
7	6	11458	Jupiter International	Francisco Y.	CA			
8	7	11474	Educacion Escolar Para Ninos, SA de CV	William W.	IL			

- Count the number of rows starting from the first column in your range until you find the column that includes the data you want transferred. Enter this number as the last part of the argument and close the argument by hitting **ENTER** on your keyboard.

	A	B	C	D	E	F	G	H
1	Count	Account ID	Account Name	Account Manager	Location			
2	1	11368	Bright Minds Non-Profit	Sebastian D.	CA			=INDEX(A
3	2	11457	JFK Online College	Claudia R.	CA			
4	3	11498	Rock Learning Centers	Maria G.	IL			
5	4	11500	ITT Technical Institute - Palm Springs	Matthew J.	IL			
6	5	11459	Los Angeles USD	Horacio M.	CA			
7	6	11458	Jupiter International	Francisco Y.	CA			
8	7	11474	Educacion Escolar Para Ninos, SA de CV	William W.	IL			

If done correctly, the **INDEX** formula will display the data according to the coordinates (or arguments) you included.

	A	B	C	D	E	F	G	H
1	Count	Account ID	Account Name	Account Manager	Location			
2	1	11368	Bright Minds Non-Profit	Sebastian D.	CA			
3	2	11457	JFK Online College	Claudia R.	CA			
4	3	11498	Rock Learning Centers	Maria G.	IL			
5	4	11500	ITT Technical Institute - Palm Springs	Matthew J.	IL			
6	5	11459	Los Angeles USD	Horacio M.	CA			
7	6	11458	Jupiter International	Francisco Y.	CA			
8	7	11474	Educacion Escolar Para Ninos, SA de CV	William W.	IL			

MATCH Formula

A great lookup formula is the **MATCH** formula. However, the **MATCH** formula will not help you look up a specific value, but instead helps you identify the position of the value. In other words, the **MATCH** formula will return a number, specifying the location of the value you're searching for. Since using the **MATCH** formula helps you identify the position of a value, the **MATCH** formula is typically used with other formula (such as the **INDEX** formula) to include the position of a value.

Example of a **MATCH** formula:

=MATCH(G3,A:A,0)

The **MATCH** formula consists of three parts in the argument:

=MATCH (Unique Identifier, Column or Row, Match Type)

Let's explore the **MATCH** formula in detail. The first part of the formula's argument is the unique identifier. Remember, this can be text, a cell reference, an ID or anything that is unique to your entry.

=MATCH (Unique Identifier, _____, _____)

The second part of the argument is a range. Typically, this range is a column or a row. Remember, the range must contain the unique identifier you are looking for.

=MATCH (Unique Identifier, Column or Row, _____)

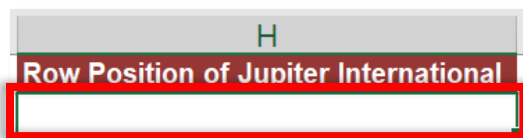
The last part of the argument may be new to most Excel users. The Match type requires you to enter the number 1, 0 or -1. Here is the difference between the three options:

- 1 = Finds the largest value that is less than or equal to the unique identifier. If this option is used, then the lookup table must be sorted by the unique identifier in *ascending* order.
- 0 = Exact match
- -1 = Finds the smallest value that is greater than or equal to the unique identifier. If this option is used, then the lookup table must be sorted by the unique identifier in *descending* order.

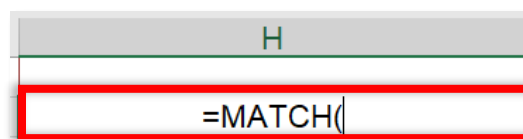
=MATCH (Unique Identifier, Column or Row, 0)

To use a **MATCH** formula:

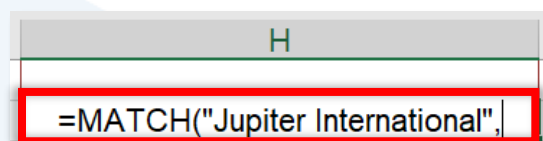
1. Select the cell where you want to write your **MATCH** formula.



2. Begin writing your **MATCH** formula: =MATCH(



3. Choose the cell reference, enter a value, ID or calculation for your unique identifier. Add a comma.



- In the table that contains the information you want, select the range that contains the unique identifier. Add a comma.

Account Name	Account Manager	Location			
Bright Minds Non-Profit	Sebastian D.	CA			=MATCH("Jupiter International",C:C,0)
JFK Online College	Claudia R.	CA			
Rock Learning Centers	Maria G.	IL			
ITT Technical Institute - Palm Springs	Matthew J.	IL			
Los Angeles USD	Horacio M.	CA			
Jupiter International	Francisco Y.	CA			
Educacion Escolar Para Ninos, SA de CV	William W.	IL			

- Include the number 0, 1, or -1 to complete the **MATCH** formula.

H
=MATCH("Jupiter International",C:C,0)

If done correctly, the **MATCH** formula will return a number. This number represents the position of the unique identifier depending if the **MATCH** formula's range was a row or a column. For example, if a **MATCH** formula returns the number 7, this means that the unique identifier was found in the 7th row.

Account Name	Account Manager	Location				Row Position of Jupiter International
Bright Minds Non-Profit	Sebastian D.	CA				7
JFK Online College	Claudia R.	CA				
Rock Learning Centers	Maria G.	IL				
ITT Technical Institute - Palm Springs	Matthew J.	IL				
Los Angeles USD	Horacio M.	CA				
Jupiter International	Francisco Y.	CA				
Educacion Escolar Para Ninos, SA de CV	William W.	IL				

Pivot Tables

Pivot Tables are one of the most powerful tools used in Excel because they allow to make computations and organize your data without the need of formulas. **Pivot Tables** are specialized tables created from data sets. This means that you will need to already have a table or data set created in order to use a **Pivot Table**.

What is a Pivot Table?

A **Pivot Table** is a specialized table that summarizes your data. **Pivot Tables** are created from data sets and allow you to make easy calculations based on the data that you have,

without the need of formulas. This powerful tool helps users analyze data and organize it in a *quick* way that regular tables may not be able to.

Why use a Pivot Table?

Pivot Tables are best used when you have a data set with a significant amount of entries. When working with tens of thousands of entries, using formulas may slow down your Excel workbook, but **Pivot Tables** can summarize your data in just a few clicks. **Pivot Tables** also set up the foundation for creating **Pivot Charts** and create a visually-appealing presentation of the data you are analyzing.

How to create a simple Pivot Table

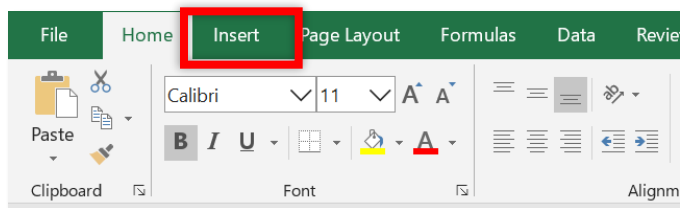
Excel makes it very easy to create **Pivot Tables**. Before you get started, you'll need a table with data. You will create a **Pivot Table** based on this data.

To create a simple **Pivot Table**:

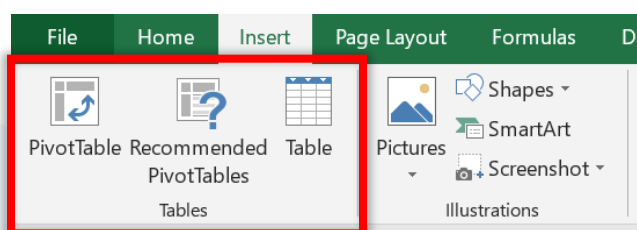
1. Select your table or data set.

	A	B	C	D	E
1	Sales Manager	Account ID	Account Name	Opportunity Status	Account Size
2	Raul Espinoza	00001	Howard & Son Inc.	Prospecting	\$49,963.00
3	Colette Robins	00002	The Getaway Franchise	Closed/Won	\$9,307.00
4	Bruce Corral	00003	Steele Plumbing Inc.	Closed/Lost	\$11,472.00
5	Stacey Nguyen	00004	Loma Linda Unified School District	Negotiating	\$40,902.00
6	Bruce Corral	00005	ABC Study Group	Closed/Lost	\$61,510.00
7	Stacey Nguyen	00006	Valley Way LLC	Negotiating	\$6,613.00
8	Bruce Corral	00007	Robotics R' Us	Prospecting	\$70,392.00
9	Raul Espinoza	00008	MarMendez Inc.	Closed/Won	\$53,472.00

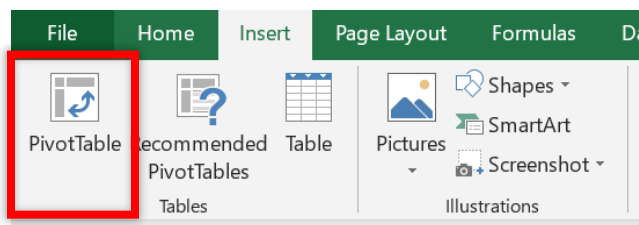
2. Navigate to the **Insert** tab.



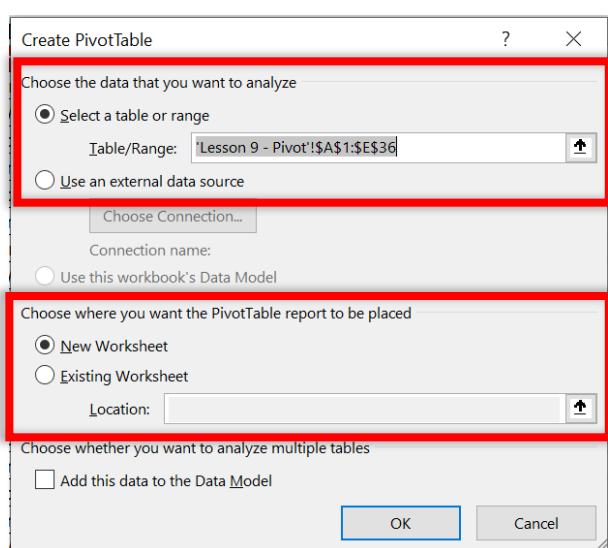
3. Locate the **Tables** group.



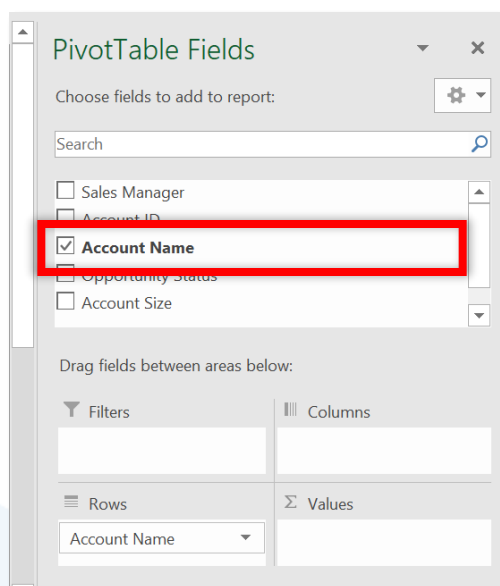
4. Click on the **Pivot Table** command.



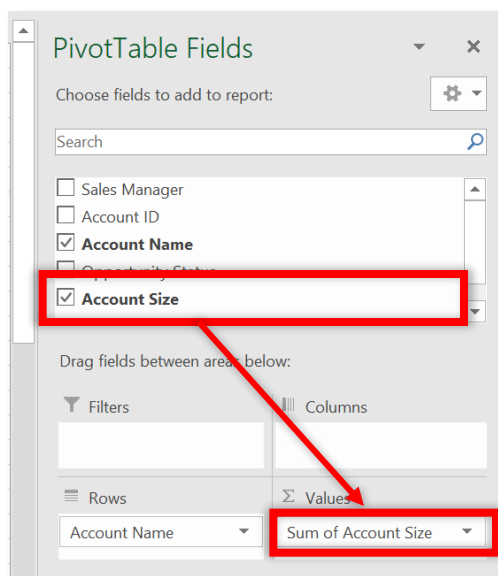
5. In the pop-up window, confirm the table or range and choose where you want the **Pivot Table** to be placed. By default, your **Pivot Table** can be created in a new spreadsheet. Click **OK** to continue.



6. On the right side of your screen, the **Field List** will appear. Select the data field you want included as a row by checking a box.



- Decide how you want to summarize your data and select a quantifiable field. Drag the quantifiable field from the available field bank at the top and move it to the **Values** box.



You can continue to manipulate your data in any way or form of your choosing. As you make updates to the fields, the **Pivot Table** will update accordingly.

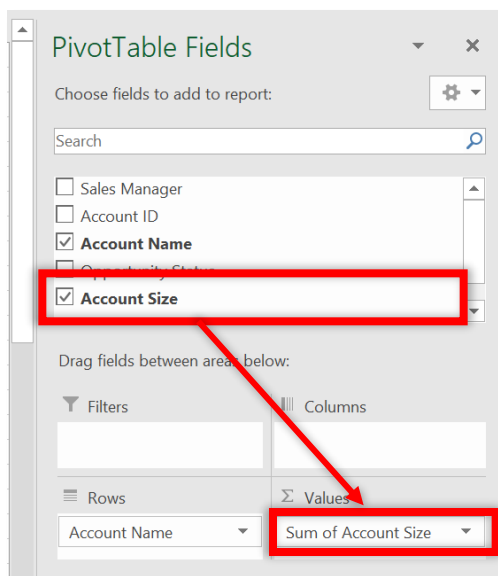
	A	B	C
1			
2			
3	Row Labels	Sum of Account Size	
4	ABC Study Group	61510	
5	ADA LLC	16734	
6	Azel Furniture	27525	
7	Brandy Branding	60958	
8	Corkie's LLC	64589	
9	Cruz Cruise Ships LLC	1352	
10	Drew's Italian Kitchen	13242	
11	Green B LLC	1745	
12	Howard & Son Inc.	49963	

How to make calculations in Pivot Tables

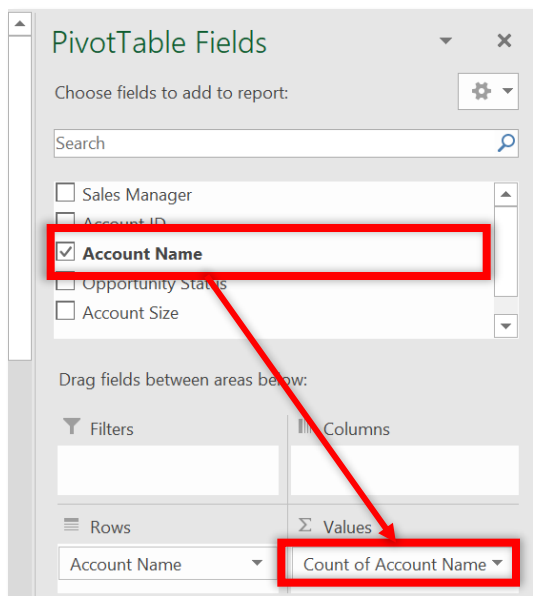
Pivot Tables are powerful because they allow you to make calculations of all sorts. There are two main ways to make calculations in **Pivot Tables**:

- Using quantifiable fields** – Excel quickly identifies quantifiable fields in **Pivot Tables**. This makes it easy to manipulate the calculation. You can use SUM functions, COUNT functions and AVERAGE functions (to name a few) with your **Pivot**

Tables. To make these calculations, just drag the appropriate quantifiable field to the **Values** quadrant of the **Pivot Table**.



2. **Using Non-Quantifiable Fields (Or Text fields)** – Technically, you can also use text fields (i.e. fields that are not numbers). If you use text fields, Excel will rightfully assume that you want to make a count of those fields. Therefore, when you move a non-quantifiable field to the **Values** quadrant, Excel will automatically make a COUNT function.

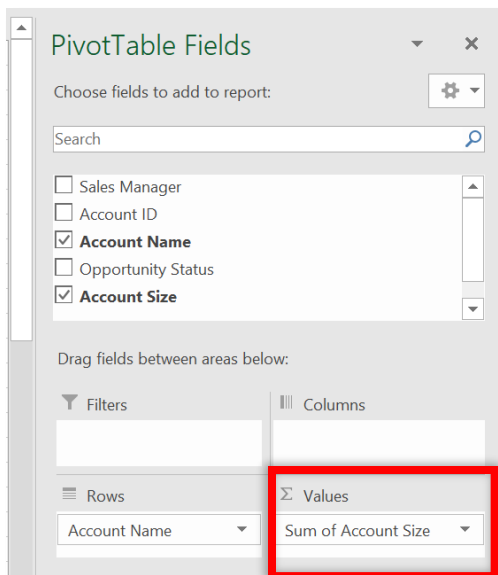


How to change the calculation type of a Pivot Table

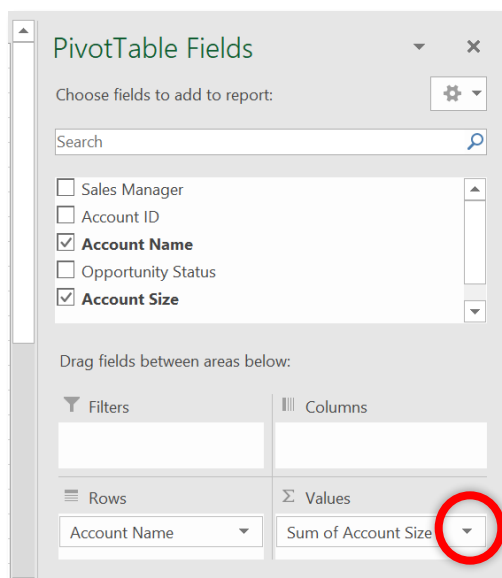
Excel will give you a default calculation when you move a field to the **Values** quadrant. You can always change the type of calculation in a **Pivot Table**.

To change the calculation type of a **Pivot Table**:

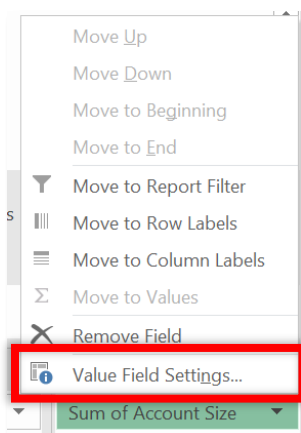
1. Locate the **Values** quadrant.



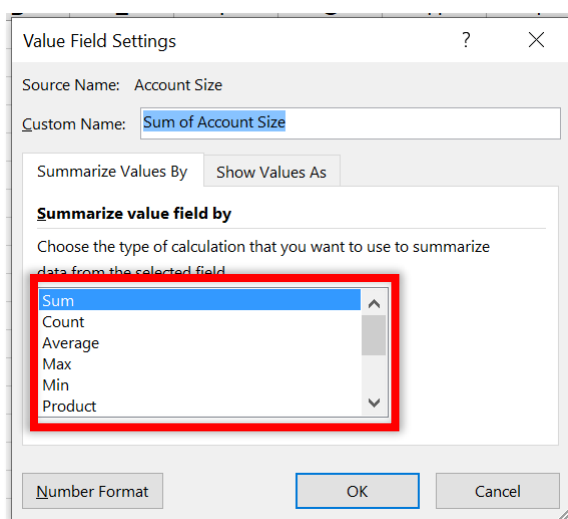
2. Next to the field, click on the drop-down arrow.



3. From the menu options, select the **Value Field Settings** option.



4. In the pop-up window, select the type of calculation you want for your **Pivot Table** from the options below. Click the **OK** button when you are done.



How to change the Data Source of a Pivot Table

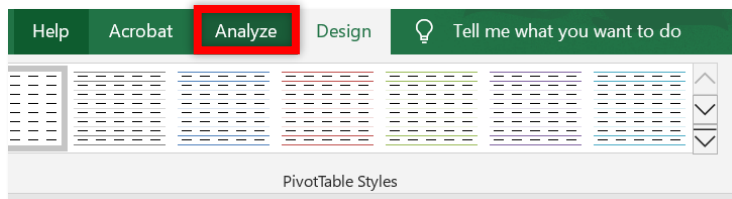
As mentioned previously, to create a **Pivot Table**, you need a data set. However, you may run into a situation in which you originally started with a data set, for example, that has 4 columns, and now your original data set increased to 7 columns. **Pivot Tables** do not automatically update with any new rows or columns. **Pivot Tables** only read off of the original data set that you selected when the **Pivot Table** was created. If you need to update the range of the original data set, you'll need to change the **Data Source**.

To change the **Data Source** of a **Pivot Table**:

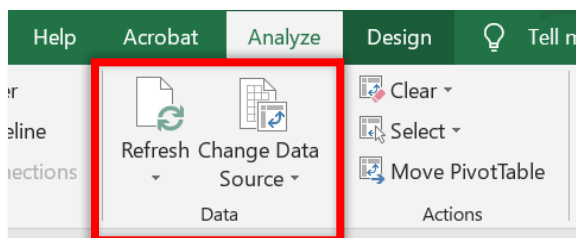
1. Click anywhere inside the **Pivot Table**.

	A	B	C
1			
2			
3	Row Labels	Sum of Account Size	
4	ABC Study Group	61510	
5	ADA LLC	16734	
6	Azel Furniture	27525	

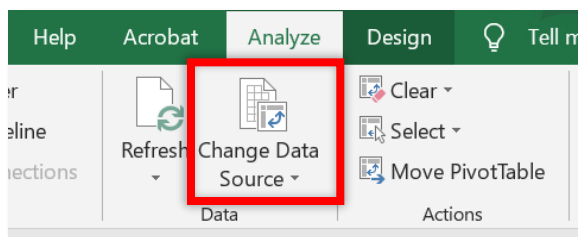
2. Navigate to the **Analyze** tab.



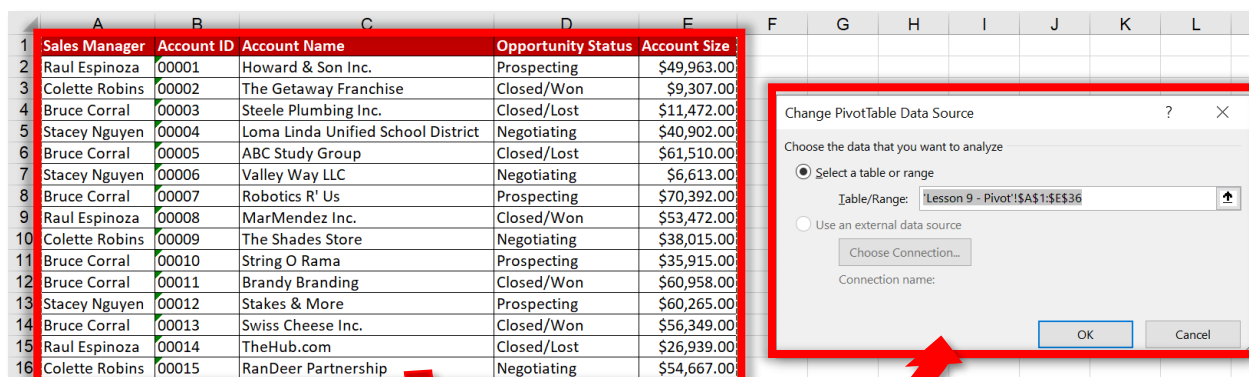
3. Locate the **Data** group.



4. Select the **Change Data Source** command.



5. Excel will then display a pop-up window, allowing you to change the range you originally selected. You will also see your original table displayed. You can select your new range by using your mouse and the *Table/Range* field will update accordingly. Once you select the appropriate range, click the **OK** button.



If you followed these steps correctly, your **Pivot Table** will now include any additional rows or columns and will make the appropriate updates.

How to Refresh the data in a Pivot Table

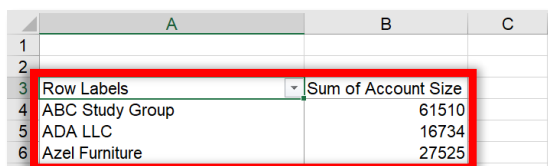
When making particular changes to your original data set, **Pivot Tables** don't automatically catch those changes. This means that if you changed the name of an entry in the original table, the **Pivot Table** *will not* update with that new entry name. In this case, you would have to use the **Refresh** command for **Pivot Tables**. Before explaining how to locate and use the **Refresh** command, let's first explore under what circumstances would you use the **Refresh** command.

1. **Made changes to the original data set** – If you changed the entry of any cell in the original data set, your **Pivot Table** will not automatically update. To make your **Pivot Table** update the new changes, you'll need to use the **Refresh** command.
2. **Added new columns or rows to a Table** – If you formatted your data set as a **Table**, then you really don't have to worry about changing the **Data Source** (which was discussed in the previous section). This is because Excel will automatically perceive any new columns or rows as being part of the **Table** that you named. In this case, if you add anything new to a **Table**, you'll just need to use the **Refresh** command.
3. **Added new entries to your range** – As described earlier, if you add a new entry (row) or a new column to your range, you'll need to also use the **Refresh** command.

Basically, you'll need to use the **Refresh** command anytime a change has been made to the original data set.

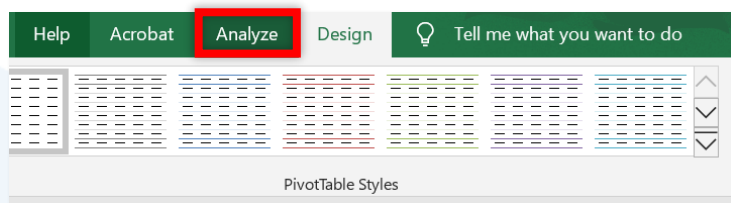
To use the **Refresh** command:

1. Click anywhere inside the **Pivot Table**.

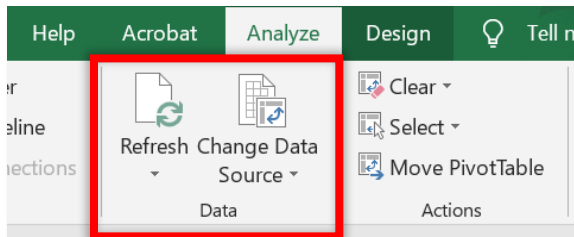


	A	B	C
1			
2			
3	Row Labels	Sum of Account Size	
4	ABC Study Group	61510	
5	ADA LLC	16734	
6	Azel Furniture	27525	

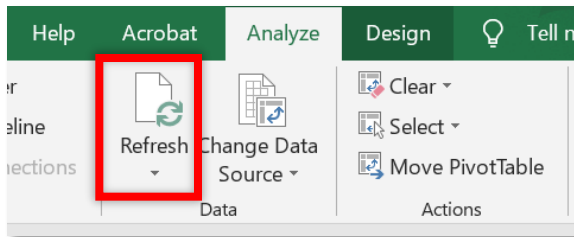
2. Navigate to the **Analyze** tab.



3. Locate the **Data** group.



4. Select the **Refresh** command.



The **Refresh** command technically has a drop-down menu that allows you to exclusively update the **Pivot Table** you're working on or **all Pivot Tables** at once.

How to hide the Field List of a Pivot Table

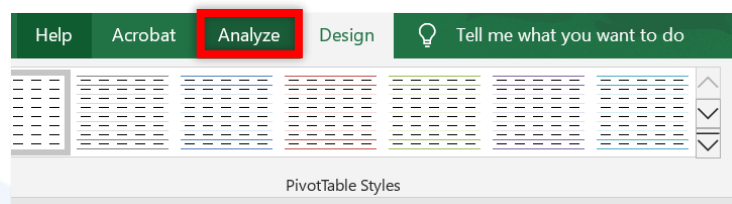
The **Field List** appears automatically after creating a **Pivot Table**. The **Field List** can be displayed or hidden by simply selecting or unselecting the **Field List** command, respectively.

To hide the **Field List**:

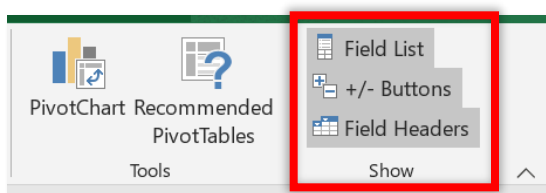
1. Click anywhere inside the **Pivot Table**.

	A	B	C
1			
2			
3	Row Labels	Sum of Account Size	
4	ABC Study Group	61510	
5	ADA LLC	16734	
6	Azel Furniture	27525	

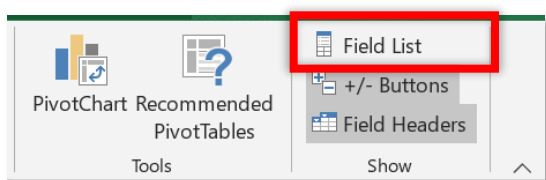
2. Navigate to the **Analyze** tab.



3. Locate the **Show** group.



4. Unselect the **Field List** command.



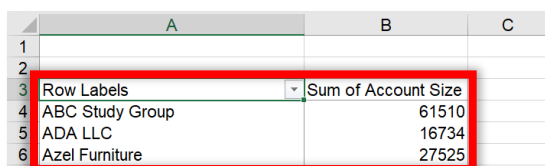
How to hide the buttons in Pivot Tables

Pivot Tables use buttons to group and expand selections that may be additional rows or subtotals. These buttons can be hidden in order to make your **Pivot Tables** more presentable. Additionally, hiding these buttons will also make your **Pivot Charts** look more presentable as well.

3	Row Labels	Sum of Account Size
4	ABC Study Group	61510
5	Closed/Lost	61510
6	ADA LLC	16734
7	Closed/Won	16734
8	Azel Furniture	27525

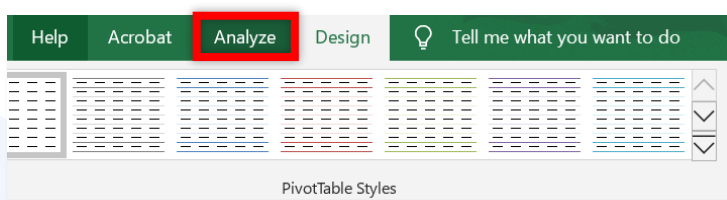
To hide the buttons in your **Pivot Table**:

1. Click anywhere inside the **Pivot Table**.

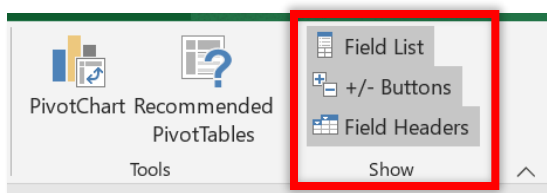


3	Row Labels	Sum of Account Size
4	ABC Study Group	61510
5	ADA LLC	16734
6	Azel Furniture	27525

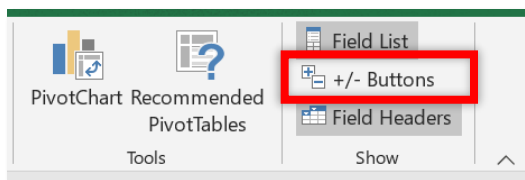
2. Navigate to the **Analyze** tab.



3. Locate the **Show** group.



4. Unselect the **Buttons** command.



If done correctly, the buttons on your **Pivot Table** will disappear.

3	Row Labels	Sum of Account Size
4	ABC Study Group	61510
5	Closed/Lost	61510
6	ADA LLC	16734
7	Closed/Won	16734
8	Azel Furniture	27525



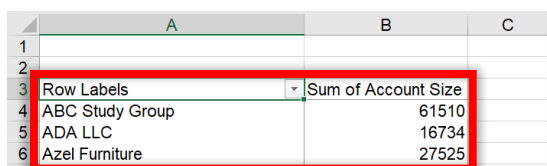
3	Row Labels	Sum of Account Size
4	ABC Study Group	61510
5	Closed/Lost	61510
6	ADA LLC	16734
7	Closed/Won	16734
8	Azel Furniture	27525

How to hide the Field Headers in Pivot Tables

By default, Excel names the headers of your tables. You can change most column labels by clicking directly and typing. You can also hide the **Field Headers** since they most likely appear as a *Row Label* or *Column Label*.

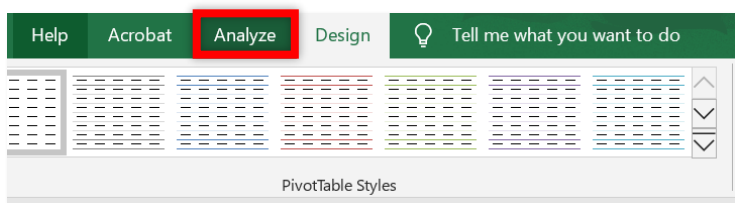
To hide the **Field Headers** in your **Pivot Table**:

1. Click anywhere inside the **Pivot Table**.

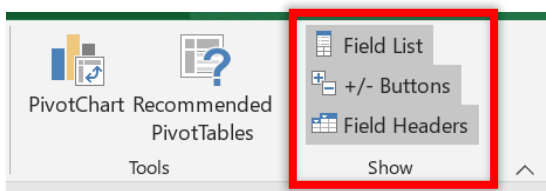


3	Row Labels	Sum of Account Size
4	ABC Study Group	61510
5	ADA LLC	16734
6	Azel Furniture	27525

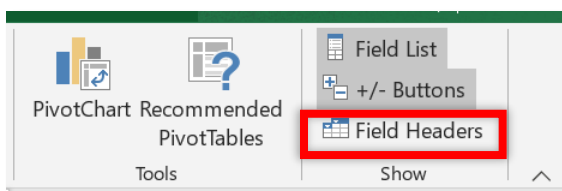
2. Navigate to the **Analyze** tab.



3. Locate the **Show** group.



4. Unselect the **Field Headers** command.



If done correctly, you'll notice that the **Field Headers** in your **Pivot Table** are no longer visible.

3	Row Labels	Sum of Account Size
4	ABC Study Group	61510
5	Closed/Lost	61510
6	ADA LLC	16734
7	Closed/Won	16734
8	Azel Furniture	27525



3		Sum of Account Size
4	ABC Study Group	61510
5	Closed/Lost	61510
6	ADA LLC	16734
7	Closed/Won	16734
8	Azel Furniture	27525

How to rename your columns in a Pivot Table

Excel will automatically name the columns in your **Pivot Table**. The steps to rename the columns are pretty easy.

To rename your columns in a **Pivot Table**:

1. Click on the cell you want to rename.

3	Row Labels	Sum of Account Size
4	ABC Study Group	61510
5	Closed/Lost	61510
6	ADA LLC	16734
7	Closed/Won	16734
8	Azel Furniture	27525

2. Start typing and rename your column. Hit the **Enter** key on your keyboard when you're done.

3	Row Labels	Account Total
4	ABC Study Group	61510
5	Closed/Lost	61510
6	ADA LLC	16734
7	Closed/Won	16734
8	Azel Furniture	27525

That's it! However, there is a catch. You cannot rename a column and use the name of an existing field in the original table. Therefore, if your original table has a column named "Accounts" and you try to rename a column in your **Pivot Table** as "Accounts", Excel will not allow it and will display an error message. The names of the columns in your **Pivot Tables** must be unique.

3	Row Labels	Sum of Account Size
4	ABC Study Group	61510
5	Closed/Lost	61510
6	ADA LLC	16734
7	Closed/Won	16734
8	Azel Furniture	27525



3	Row Labels	Account Total
4	ABC Study Group	61510
5	Closed/Lost	61510
6	ADA LLC	16734
7	Closed/Won	16734
8	Azel Furniture	27525

How to customize the style of your Pivot Table

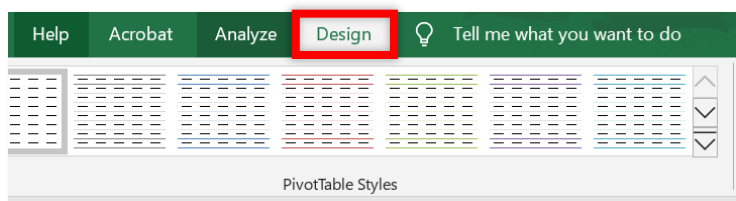
Pivot Tables allow you to use built-in designs to make them look professional and nice. If you are not happy with the style of your **Pivot Table**, you can always change the design.

To change the style of your **Pivot Table**:

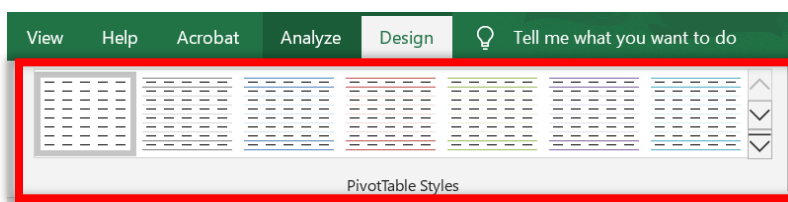
1. Click anywhere inside the **Pivot Table**.

	A	B	C
1			
2			
3	Row Labels	Sum of Account Size	
4	ABC Study Group	61510	
5	ADA LLC	16734	
6	Azel Furniture	27525	

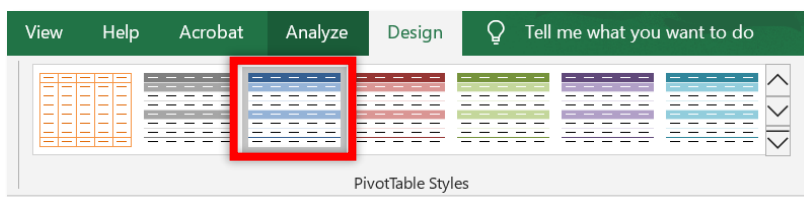
2. Navigate to the **Design** tab.



3. Locate the **PivotTable Styles** group.



4. Select the design of your **Pivot Table** from the gallery.



How to customize the Subtotals of your Pivot Table

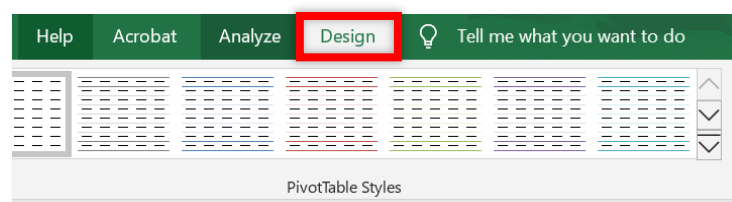
In many cases, when you create a **Pivot Table**, Excel automatically assumes that you want to display subtotals to your calculations. The subtotals can be controlled in **Pivot Tables**.

To customize the subtotals of **Pivot Tables**:

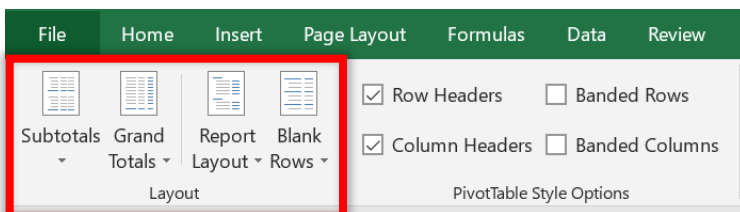
1. Click anywhere inside the **Pivot Table**.

	A	B	C
1			
2			
3	Row Labels	Sum of Account Size	
4	ABC Study Group	61510	
5	ADA LLC	16734	
6	Azel Furniture	27525	

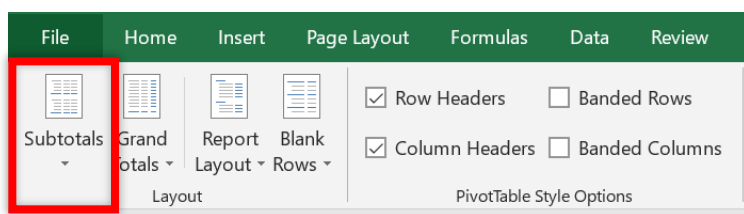
2. Navigate to the **Design** tab.



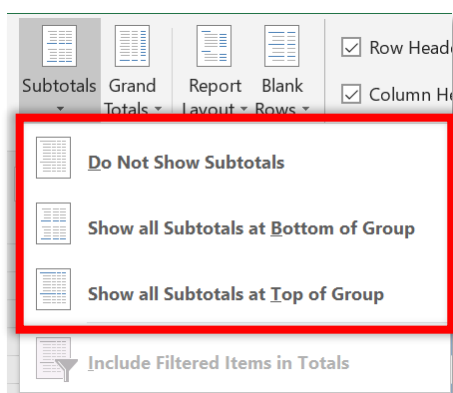
3. Locate the **Layout** group.



4. Select the **Subtotals** command.



5. In the drop-down menu, select the changes you want to make to your subtotals. If you want to completely remove any subtotals, choose the *Do Not Show Subtotals* option.



How to customize the Grand Totals of your Pivot Table

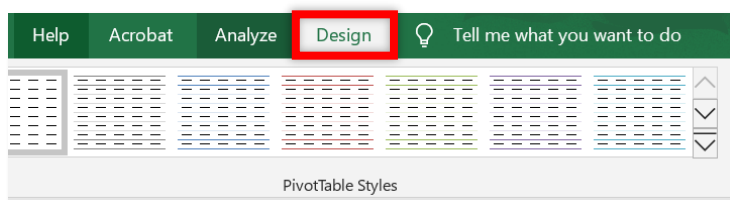
Like subtotals, Excel typically displays the grand total at the bottom of your **Pivot Table**. The grand total of your **Pivot Table** can be customized.

To customize the grand totals of **Pivot Tables**:

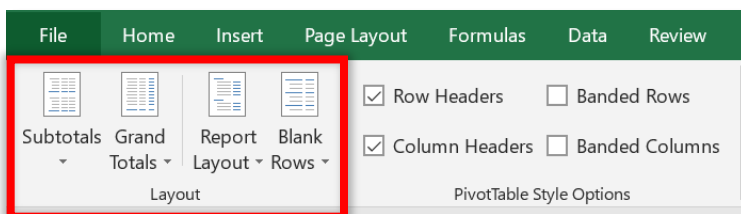
1. Click anywhere inside the **Pivot Table**.

	A	B	C
1			
2			
3	Row Labels	Sum of Account Size	
4	ABC Study Group	61510	
5	ADA LLC	16734	
6	Azel Furniture	27525	

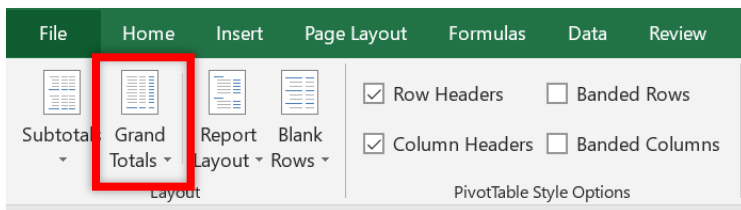
2. Navigate to the **Design** tab.



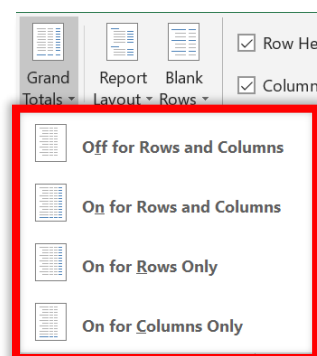
3. Locate the **Layout** group.



4. Select the **Grand Totals** command.



5. In the drop-down menu, select how you want your grand totals to appear. If you don't want any grand totals, select the *Off for Rows and Columns* option.



How to customize the Report Layout of your Pivot Table

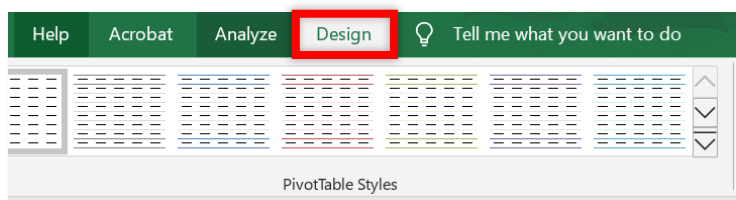
By default, a **Pivot Table** uses a layout called *Compact Form*. This layout is useful when doing a quick **Pivot Table**. However, when you begin to include additional rows to your **Pivot Table**, the *Compact Form* does not look professional. In this case, it is better to use other layouts. As a rule of thumb, if your **Pivot Table** has more than one row, the best layout is the *Tabular Form* layout.

To customize the **Report Layout** of your **Pivot Table**:

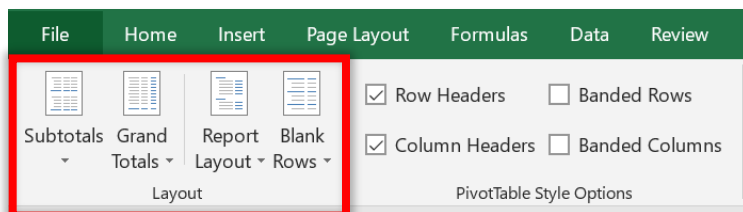
1. Click anywhere inside the **Pivot Table**.

	A	B	C
1			
2			
3	Row Labels	Sum of Account Size	
4	ABC Study Group	61510	
5	ADA LLC	16734	
6	Azel Furniture	27525	

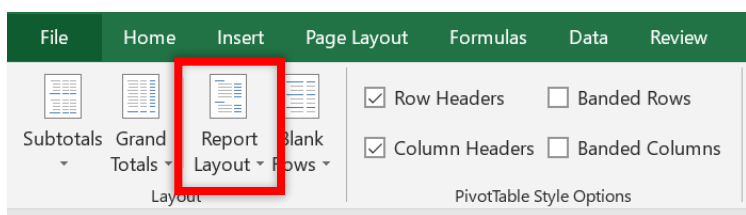
2. Navigate to the **Design** tab.



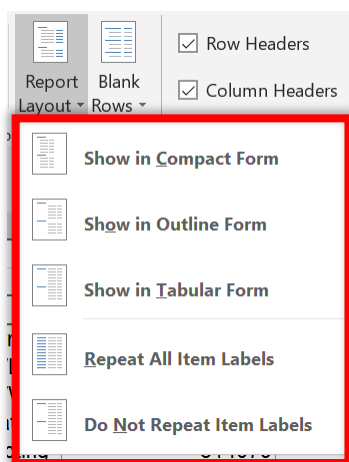
3. Locate the **Layout** group.



4. Select the **Report Layout** command.



5. In the drop-down menu, select **Report Layout** of your choice.



As mentioned previously, there is a huge difference between using the default *Compact Form* layout and another layout, such as the *Tabular Form* layout. The *Tabular Form* layout is helpful when using more than one row because it basically includes the other row fields as columns. Therefore, if you're looking to add what you would traditionally think as "columns", you may want to add rows instead and change the format to the *Tabular Form*.

Below is an example comparing a **Pivot Table** with two rows in *Compact Form* and the same **Pivot Table** in *Tabular Form*.

3	Row Labels	Sum of Account Size
4	Bruce Corral	666623
5	Closed/Lost	171841
6	Closed/Won	131901
7	Negotiating	48802
8	Prospecting	314079
9	Colette Robins	214235
10	Closed/Lost	29302
11	Closed/Won	9307
12	Negotiating	175626
13	Raul Espinoza	214005
14	Closed/Lost	59833
15	Closed/Won	104209
16	Prospecting	49963
17	Stacey Nguyen	281539
18	Closed/Won	166795
19	Negotiating	54479
20	Prospecting	60265
21	Grand Total	1376402



3	Sales Manager	Opportunity Status	Sum of Account Size
4	Bruce Corral	Closed/Lost	171841
5		Closed/Won	131901
6		Negotiating	48802
7		Prospecting	314079
8	Bruce Corral Total		666623
9	Colette Robins	Closed/Lost	29302
10		Closed/Won	9307
11		Negotiating	175626
12	Colette Robins Total		214235
13	Raul Espinoza	Closed/Lost	59833
14		Closed/Won	104209
15		Prospecting	49963
16	Raul Espinoza Total		214005
17	Stacey Nguyen	Closed/Won	166795
18		Negotiating	54479
19		Prospecting	60265
20	Stacey Nguyen Total		281539
21	Grand Total		1376402

How to include columns in your Pivot Table

The reason why most people who are new to **Pivot Tables** struggle to manipulate the **Pivot Tables** is simply because of a lack of understanding regarding the rows and columns quadrants. We traditionally think of rows as entries that we can read from left to right and columns go up and down. With **Pivot Tables**, things work a little differently.

When you use a row or a column quadrant in **Pivot Tables**, Excel uses the content of those fields to create the row and column labels. This means that if you want to add a column titled "Account Names" and you drag the *Account Names* field to the Columns quadrant, Excel will *not* create one column with the name "Account Names". Instead, Excel will add as many columns as there are entries. Therefore, if you have a table with 55 account names, then Excel will add 55 columns.

The best thing to do if you want to add columns to your **Pivot Tables** is to do the following:

1. Make sure that you *do* want the entries from a specific field to be the column labels. For example, let's say I have 5 employee names (with the names Julie, Joe, Beto, Saul, Bethany). If I add the *Employee Names* field to the column's quadrant, then Excel will add 5 columns, each with the names of the employees.
2. Most likely, the best thing you'll need to do to add (what we would consider) columns, is to add the field in the row quadrant and not the column quadrant. Then, you can easily change the **Report Layout** and it will display as a column.

Example of placing a field in the column's quadrant:

3	Sum of Account Size	Account ID						
4	Sales Manager	00001	00002	00003	00004	00005	00006	00007
5	Bruce Corral			11472		61510		70392
6	Colette Robins		9307					
7	Raul Espinoza	49963						
8	Stacey Nguyen				40902		6613	
9	Grand Total	49963	9307	11472	40902	61510	6613	70392

Example of placing a field in the rows quadrant and using the *Tabular Form* layout:

3	Sales Manager	Account ID	Sum of Account Size
4	Bruce Corral	00003	11472
5		00005	61510
6		00007	70392
7		00010	35915
8		00011	60958
9		00013	56349
10		00018	1352
11		00020	13242
12		00022	48162
13		00025	48802
14		00026	53541
15		00028	25029
16		00031	69992
17		00033	64589
18		00035	45318
19	Bruce Corral Total		666623
20	Colette Robins	00002	9307
21		00009	38015
22		00015	54667

How to Repeat entries in Pivot Tables

When using a different layout, such as the *Tabular Form* layout, Excel will place the fields entries as column labels. However, you may find that some of the rows that have repeating entries will stay blank. This is because **Pivot Tables** try to compact as much information as possible and will either group or just ignore duplicate entries.

The good news is that you can easily repeat the row labels so that your **Pivot Table** looks a lot more like a traditional table.

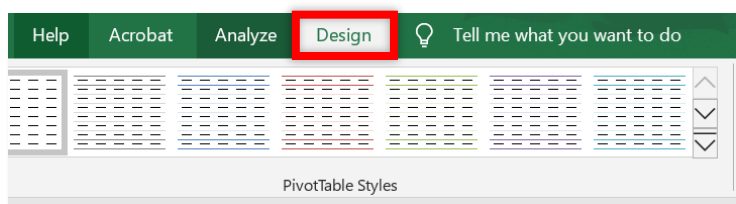
To repeat entries in your **Pivot Table**:

1. Click anywhere inside the **Pivot Table**.

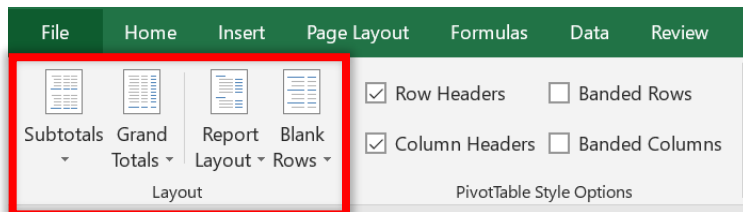
	A	B	C
1			
2			
3	Row Labels	Sum of Account Size	
4	ABC Study Group	61510	
5	ADA LLC	16734	
6	Azel Furniture	27525	

3	Sales Manager	Account ID	Sum of Account Size
4	Bruce Corral	00003	11472
5		00005	61510
6		00007	70392
7		00010	35915
8		00011	60958
9		00013	56349
10		00018	1352
11		00020	13242
12		00022	48162
13		00025	48802
14		00026	53541
15		00028	25029
16		00031	69992
17		00033	64589
18		00035	45318
19	Bruce Corral Total		666623
20	Colette Robins	00002	9307
21		00009	38015
22		00015	54667

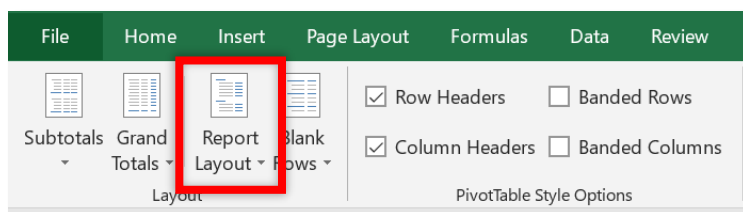
2. Navigate to the **Design** tab.



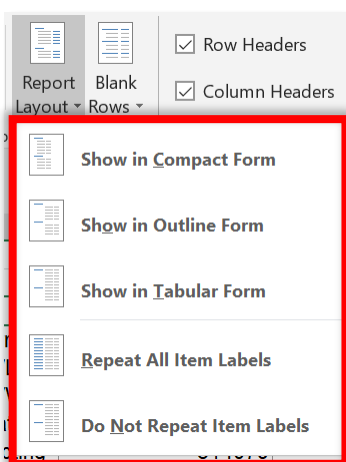
3. Locate the **Layout** group.



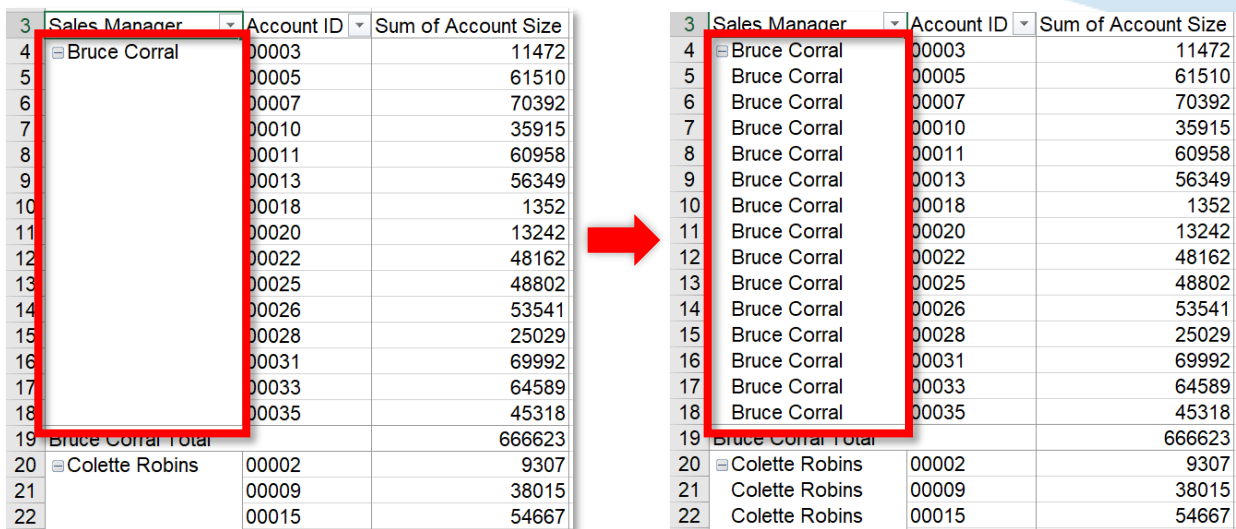
4. Select the **Report Layout** command.



5. In the drop-down menu, select the *Repeat All Item Labels* option.



If done correctly, you'll see that the row labels will repeat.



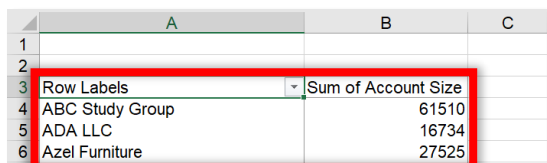
	Sales Manager	Account ID	Sum of Account Size
4	Bruce Corral	00003	11472
5		00005	61510
6		00007	70392
7		00010	35915
8		00011	60958
9		00013	56349
10		00018	1352
11		00020	13242
12		00022	48162
13		00025	48802
14		00026	53541
15		00028	25029
16		00031	69992
17		00033	64589
18		00035	45318
19	Bruce Corral Total		666623
20	Colette Robins	00002	9307
21		00009	38015
22		00015	54667

How to Insert Blank Rows in Pivot Tables

As previously mentioned, **Pivot Tables** are meant to be efficient and save time and space. This is why much of the data looks crammed in some cases. One way to make your **Pivot Tables** look nicer is by using a blank line to separate your data. This feature is helpful when you are analyzing data and you want to clearly dictate where an entry ends.

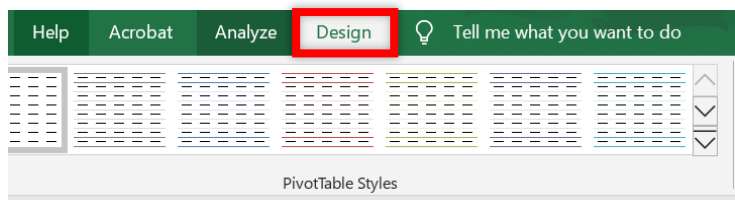
To insert a blank row in your **Pivot Table**:

1. Click anywhere inside the **Pivot Table**.

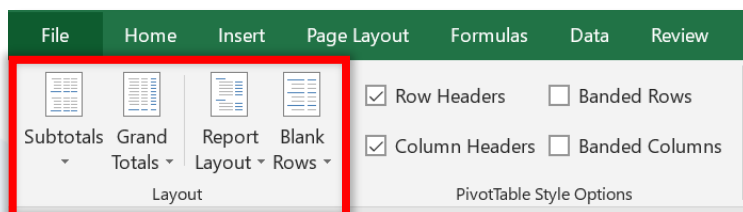


	Row Labels	Sum of Account Size
4	ABC Study Group	61510
5	ADA LLC	16734
6	Azel Furniture	27525

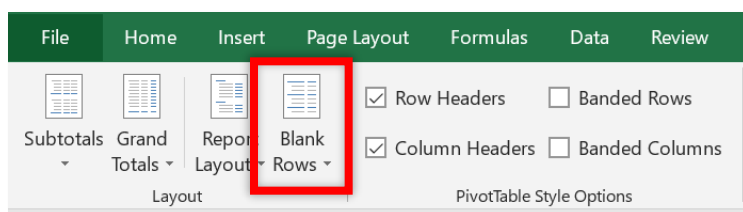
2. Navigate to the **Design** tab.



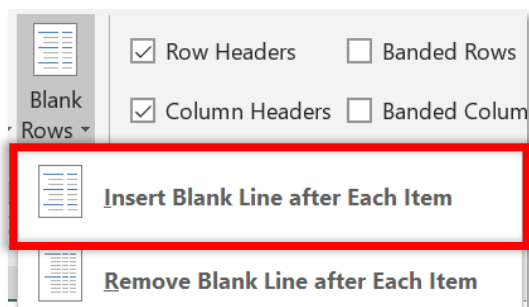
3. Locate the **Layout** group.



4. Select the **Blank Rows** command.



5. In the drop-down menu, select the **Insert Blank Line After Each Item** option.



How to Remove Blank Rows in Pivot Tables

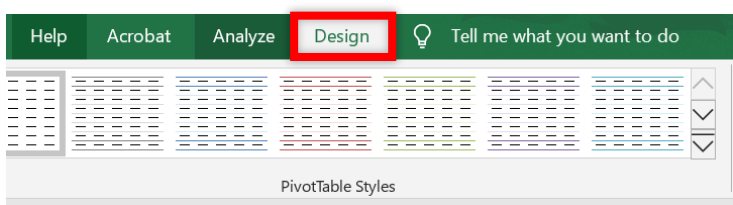
If you added a blank row to separate your items in a **Pivot Table**, you can easily remove it.

To remove blank rows in your **Pivot Table**:

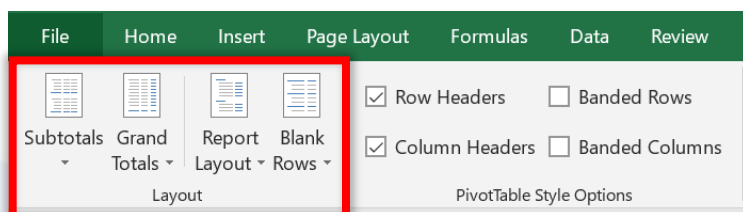
1. Click anywhere inside the **Pivot Table**.

	A	B	C
1			
2			
3	Row Labels	Sum of Account Size	
4	ABC Study Group	61510	
5	ADA LLC	16734	
6	Azel Furniture	27525	

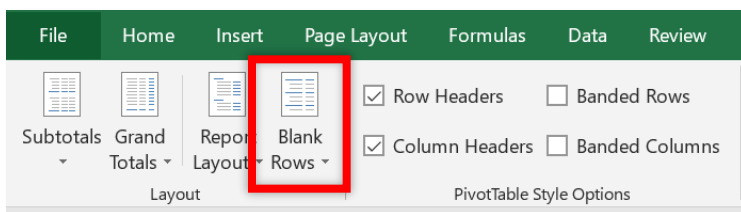
2. Navigate to the **Design** tab.



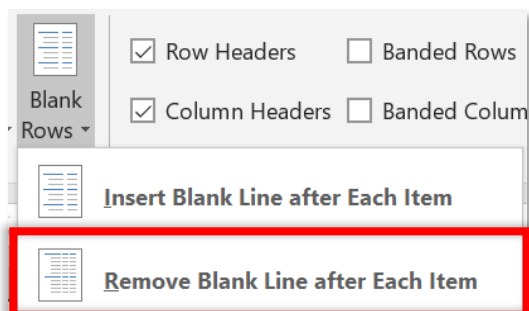
3. Locate the **Layout** group.



4. Select the **Blank Rows** command.



5. In the drop-down menu, select the **Remove Blank Line After Each Item** option.



Slicers

If you find that navigating through a **Pivot Table** is a bit daunting, then you may like using **Slicers**. Before you decide to use **Slicers**, remember, **Slicers** can only be used with specialized tables such as **Pivot Tables**. If you try to add a **Slicer** to a regular data set, it will not work.

What is a Slicer?

A **Slicer** is a filtering tool. It helps filter data in a visually-appealing way. Many people believe that using a **Slicer** is a more efficient way to filter data than using regular filters.

How to add Slicers

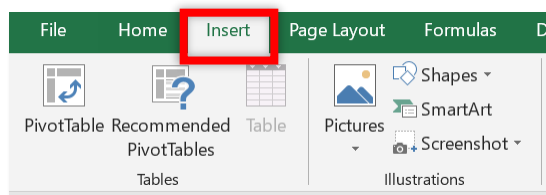
To add a **Slicer**, you'll need to first make sure that you are using a **Pivot Table** or that your data set is formatted as a table. If you're only using a data set then you will not be able to use a **Slicer**. **Slicers** also work with **Pivot Charts** and Cube Functions.

To add a **Slicer**:

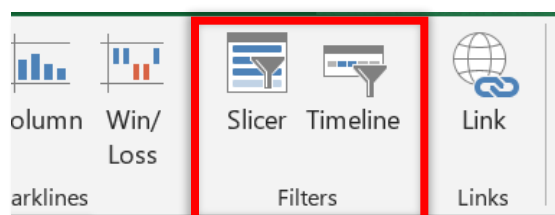
1. Click anywhere inside your table or **Pivot Table**.

	A	B	C	D
1	Customer Name	Address	City	State
2	DOMINGUEZ, BARBARA	764 W. Palm Ave.	Palm Springs	CA
3	Anthony, Rob	2220 E. 7th St.	San Francisco	CA
4	WILLIAMS, DEBON	8910 W. Larkson Ave.	San Mateo	CA
5	Hernandez, Harold	590 Union Parkway	Los Angeles	CA
6	OCHOA, JOSE	19019 Benson St.	Los Angeles	CA

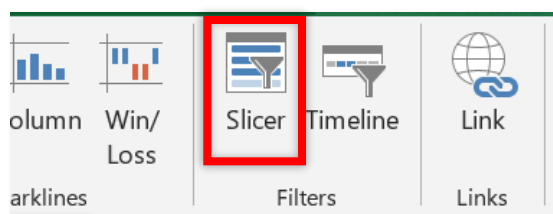
- Click on the **Insert Tab**.



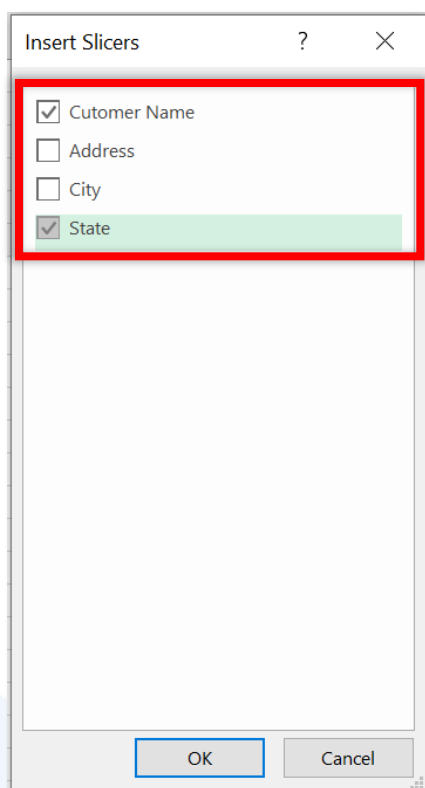
- Locate the **Filters** group.



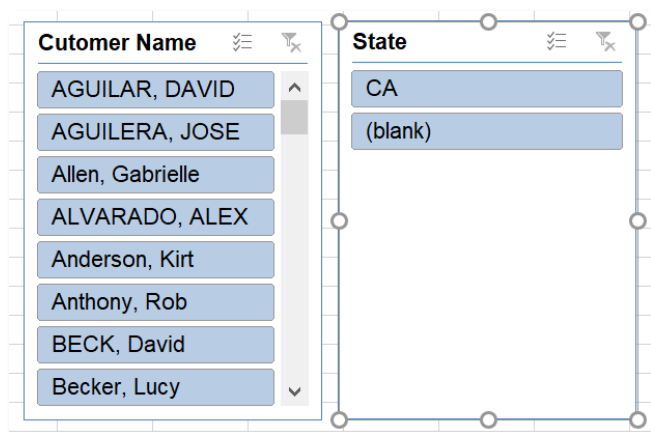
- Select the **Slicer** command.



- In the pop-up window, select the columns for which you want to add **Slicers**. Press the **OK** button.

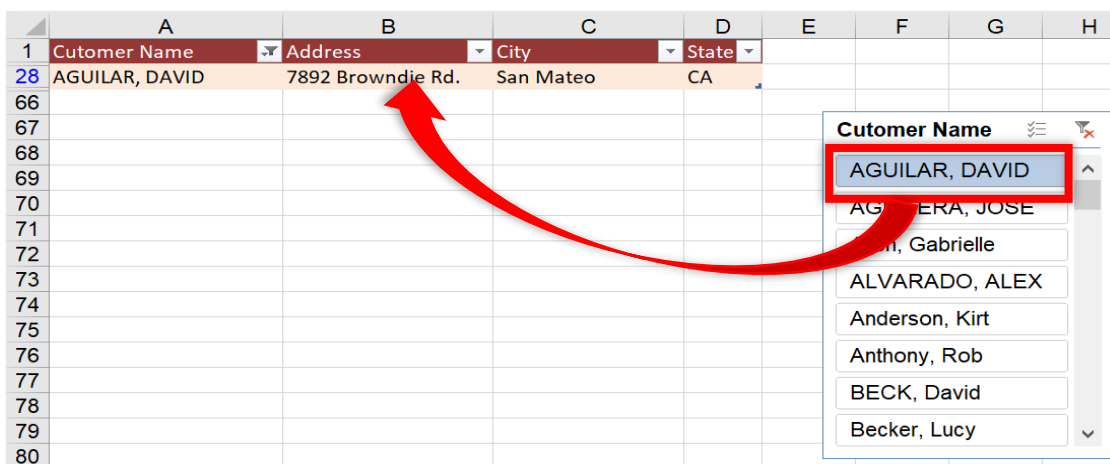


If done correctly, you'll see a list of the columns you selected. These lists are called **Slicers**.



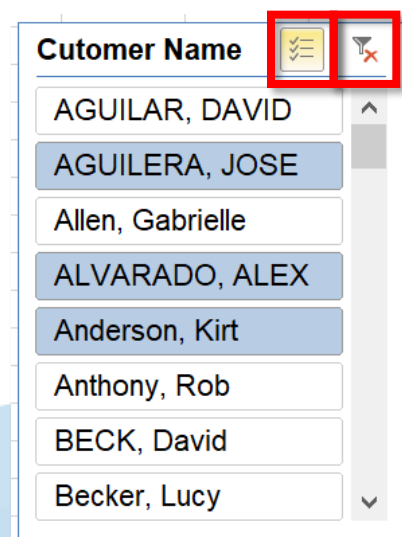
How to use Slicers

After you created a **Slicer**, it is relatively easy to use. Just select an entry to add a filter. As you select entries, you'll witness your table filtering according to what you do in the **Slicers**.



To select more than one entry, use the **Multi-Select** option. When you no longer need to use the **Multi-Select** option, unselect the **Multi-Select** button.

To remove the filters, use the **Clear Filter** command in the upper-right hand corner of the **Slicer**. Remember, making any changes to the filters will also affect your table.

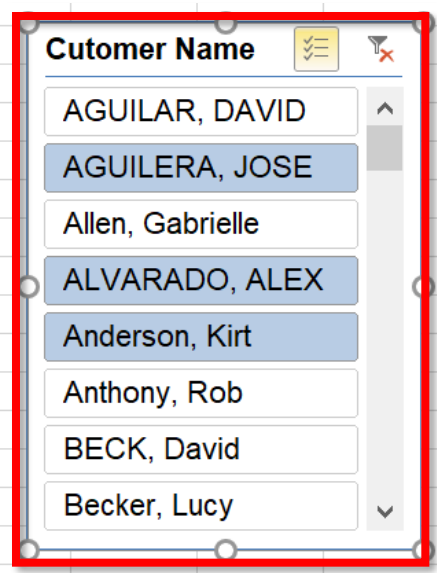


How to remove a Slicer

The easiest way to remove a **Slicer** is to delete it.

To remove a **Slicer**:

1. Select the **Slicer** you want to remove.



2. Press the **Delete** button on your keyboard.

Pivot Charts

If you're comfortable with **Pivot Tables**, then you should be comfortable doing **Pivot Charts**. **Pivot Charts** are visual graphs or tables (such as a Pie Chart or a bar graph) that visually represent the data in your **Pivot Table**. After you've created a **Pivot Table**, the process for creating a **Pivot Chart** is quick and easy.

The Connection between Pivot Charts & Pivot Tables

Pivot Tables provide the data to **Pivot Charts**. Whatever data you include in your **Pivot Table** will also be included in your **Pivot Chart**. However, be very careful when selecting too many fields in your **Pivot Tables**. If you have too many rows and fields displayed in **Pivot Tables**, Excel will try to also display all of those fields in **Pivot Charts** and your **Pivot Charts** will not look presentable or will be useless. Our recommendation is that you stick to two fields in a **Pivot Table** for optimize results in **Pivot Charts**. In some cases, you may include more than three fields.

How to Create a Column Bar-Graph

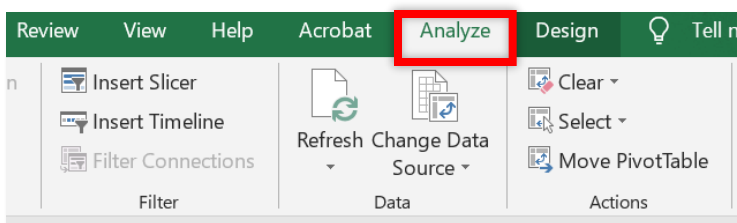
One popular **Pivot Chart** is the **Column Graph**. The **Column Graph** is a bar chart with horizontal columns. This is a great graph to use when comparing data over time or to make a comparison.

To create a **Column Bar Graph**:

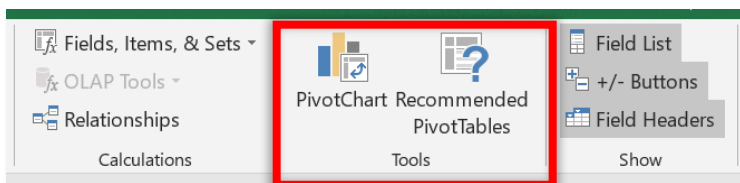
1. Select a cell inside your **Pivot Table**.

3	Row Labels	Count of Employee Name
4	Accounting	8
5	Accounts Payable	7
6	Customer Service	7
7	Operations	7
8	Sales	7
9	Warehouse	8
10	Grand Total	44

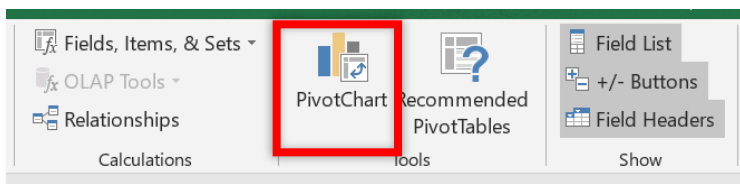
2. Locate the **Analyze** tab.



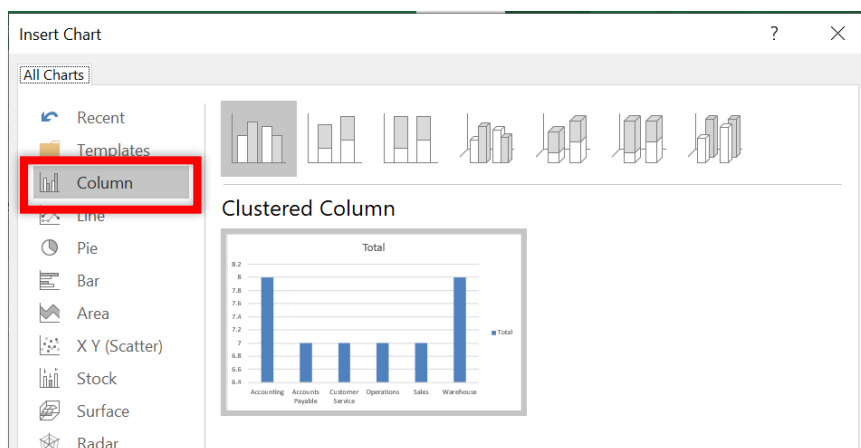
3. Find the **Tools** group.



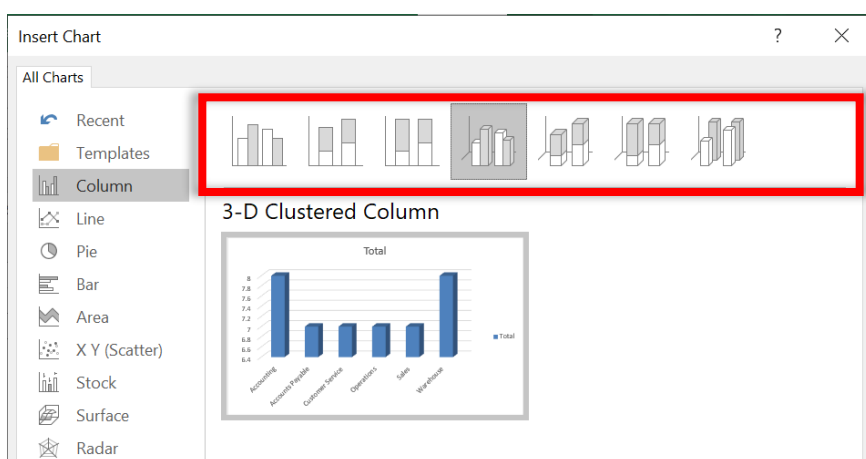
4. Select the **PivotChart** command.



5. In the pop-up window, select the *Column* option from the left side.

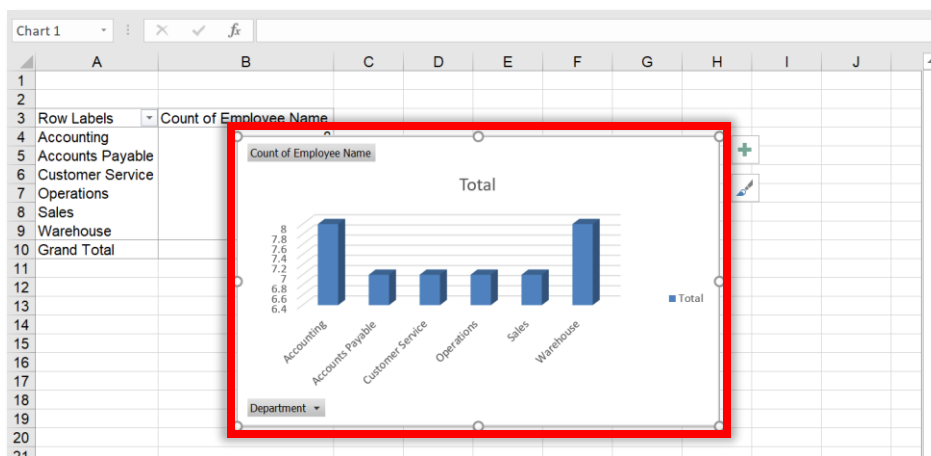


6. Select the type of Column graph you want from the top gallery.



7. Select the **OK** button.

If you followed the steps correctly, you'll find your **Pivot Chart** displayed in your spreadsheet next to the **Pivot Table**.



How to Create a Line Graph

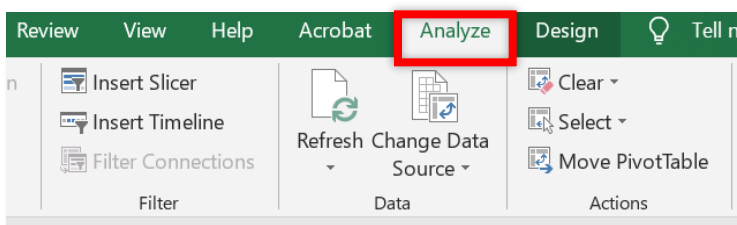
A **Line Graph** is also a very popular **Pivot Chart** because it's very easy to use and is one that most people have used in the past (most likely in school).

To create a **Line Graph**:

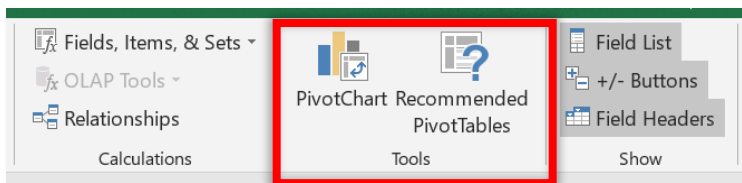
1. Select a cell inside your **Pivot Table**.

3	Row Labels	Count of Employee Name
4	Accounting	8
5	Accounts Payable	7
6	Customer Service	7
7	Operations	7
8	Sales	7
9	Warehouse	8
10	Grand Total	44

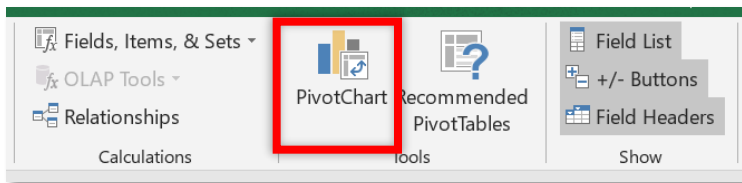
2. Locate the **Analyze** tab.



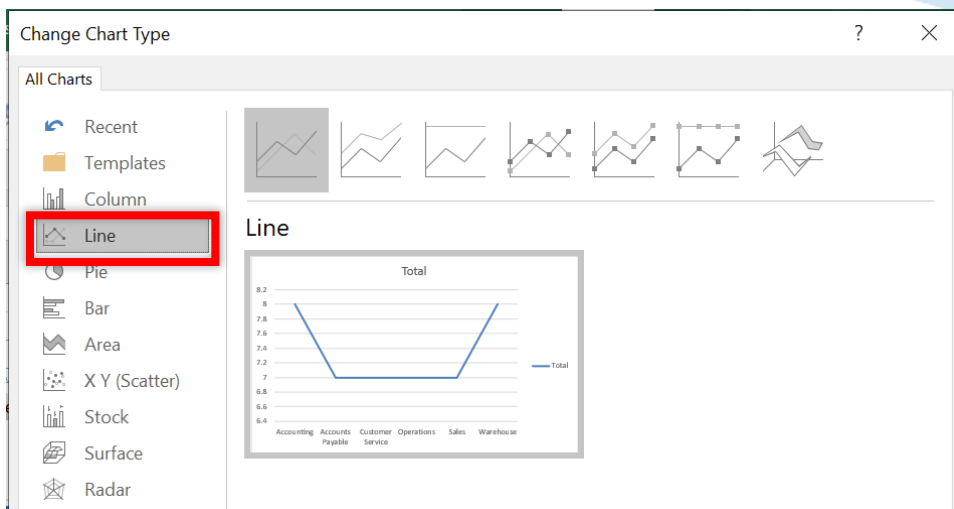
3. Find the **Tools** group.



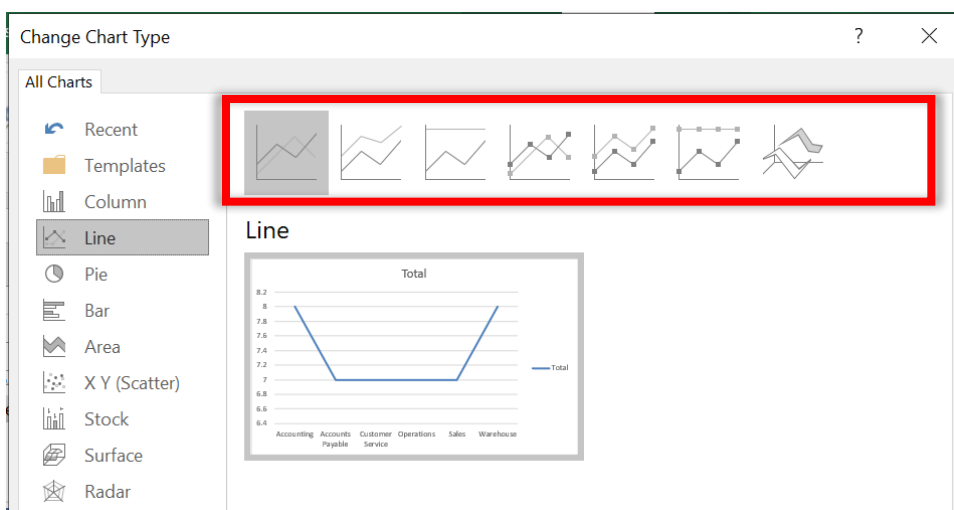
4. Select the **PivotChart** command.



5. In the pop-up window, select the *Line* option from the left side.

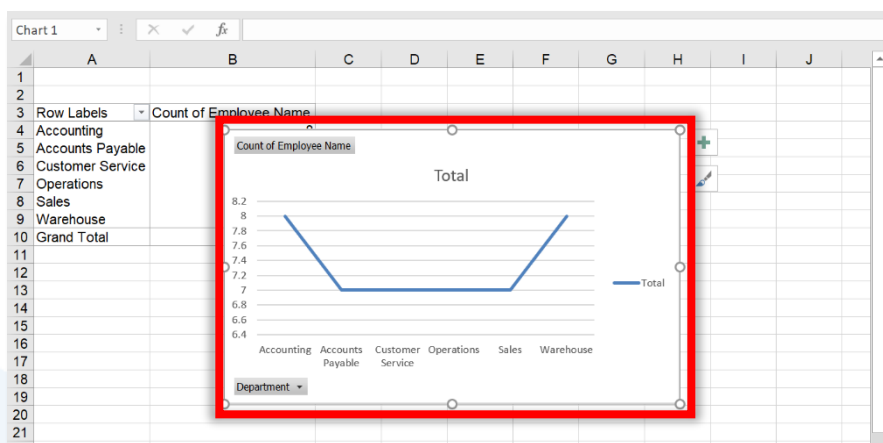


6. Select the type of Line graph you want from the top gallery.



7. Select the **OK** button.

If you followed the steps correctly, you'll find your **Pivot Chart** displayed in your spreadsheet next to the **Pivot Table**.



How to Create a Pie Chart

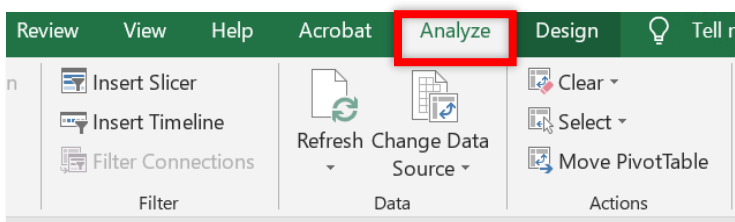
Line graphs and bar charts are great for representing timelines and comparisons. A **Pie Chart**, on the other hand is typically two-dimensional. This is one particular **Pivot Chart** in which you may only want to include two fields in your **Pivot Table**. More than two fields in your **Pivot Table** will not appropriately display in your **Pivot Chart**.

To create a **Pie Chart**:

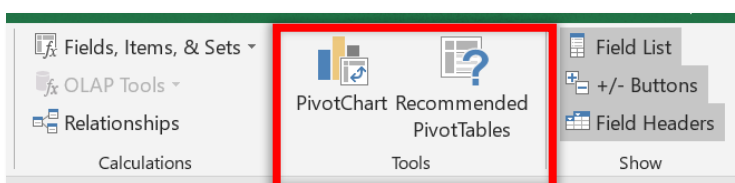
1. Select a cell inside your **Pivot Table**.

3	Row Labels	Count of Employee Name
4	Accounting	8
5	Accounts Payable	7
6	Customer Service	7
7	Operations	7
8	Sales	7
9	Warehouse	8
10	Grand Total	44

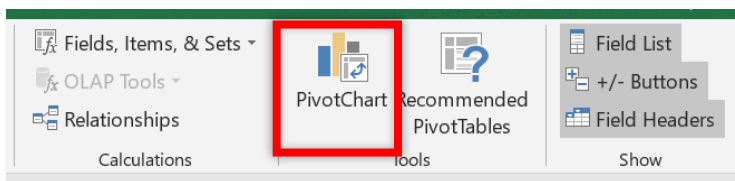
2. Locate the **Analyze** tab.



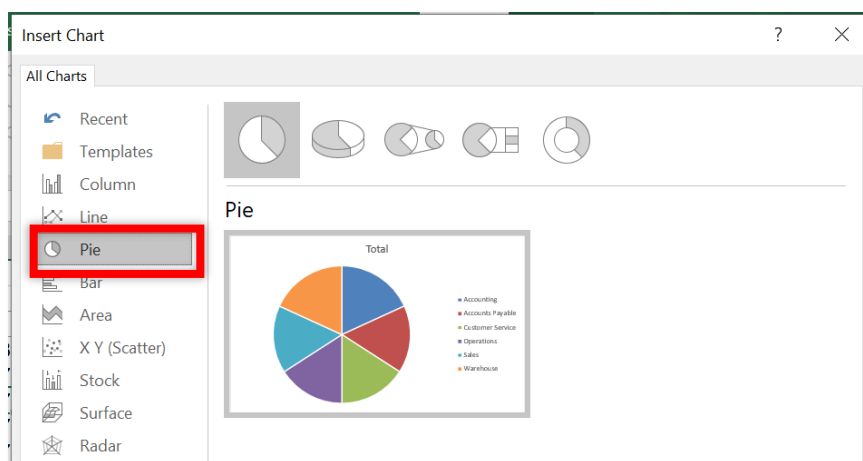
3. Find the **Tools** group.



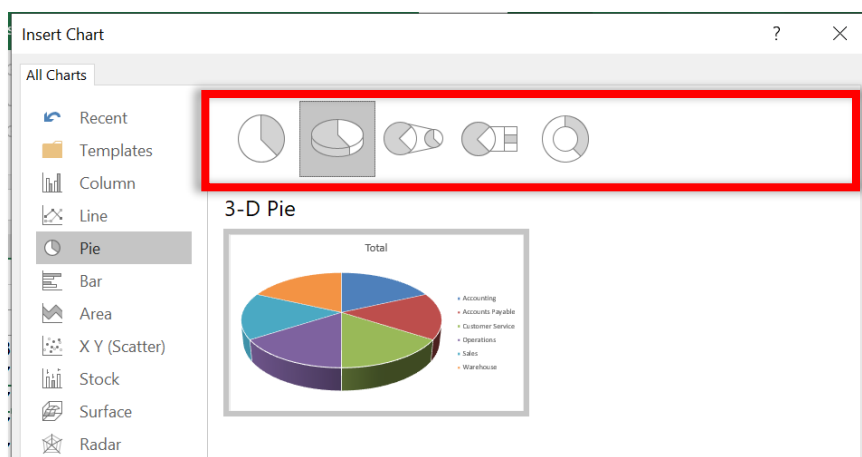
4. Select the **PivotChart** command.



5. In the pop-up window, select the *Pie* option from the left side.

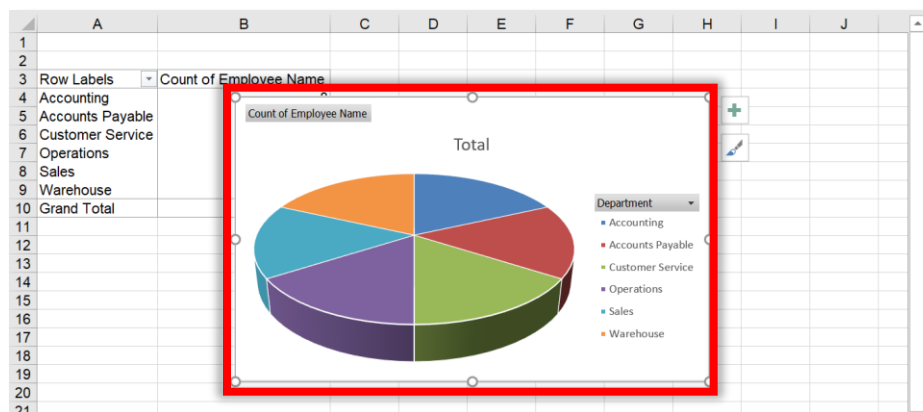


6. Select the type of Pie chart you want from the top gallery.



7. Select the **OK** button.

If you followed the steps correctly, you'll find your **Pivot Chart** displayed in your spreadsheet next to the **Pivot Table**.



How to Create a Bar Graph

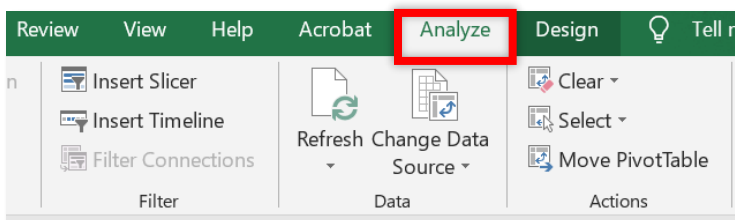
Bar Graphs display vertical bars to help you visually represent a comparison chart, growth or key differences

To create a **Bar Graph**:

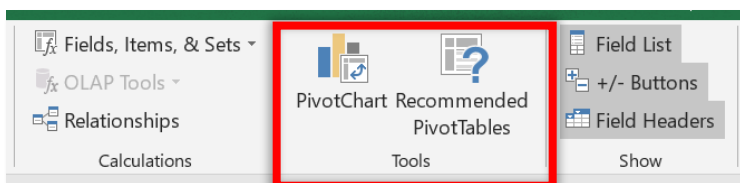
1. Select a cell inside your **Pivot Table**.

3	Row Labels	Count of Employee Name
4	Accounting	8
5	Accounts Payable	7
6	Customer Service	7
7	Operations	7
8	Sales	7
9	Warehouse	8
10	Grand Total	44

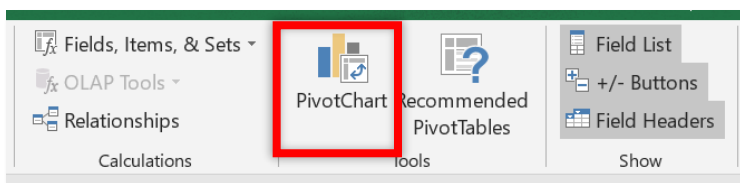
2. Locate the **Analyze** tab.



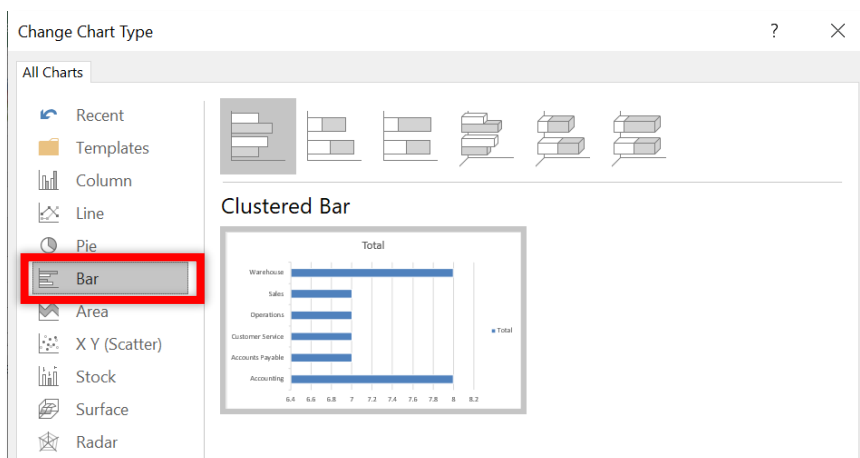
3. Find the **Tools** group.



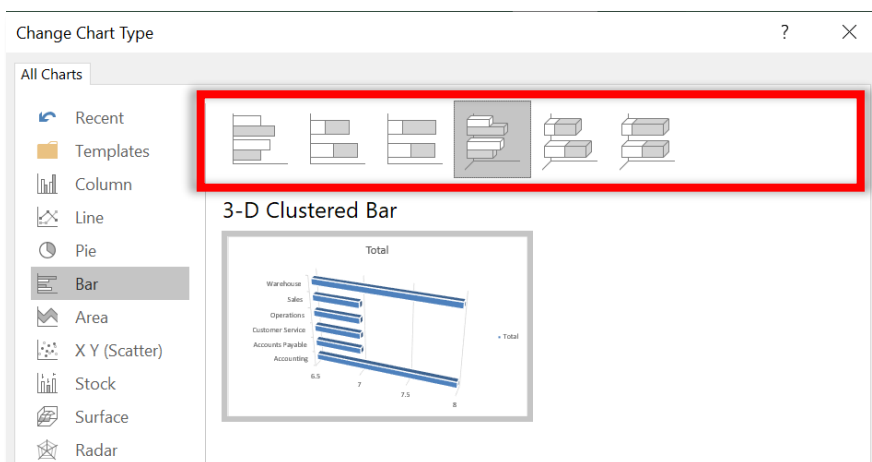
4. Select the **PivotChart** command.



5. In the pop-up window, select the *Bar* option from the left side.

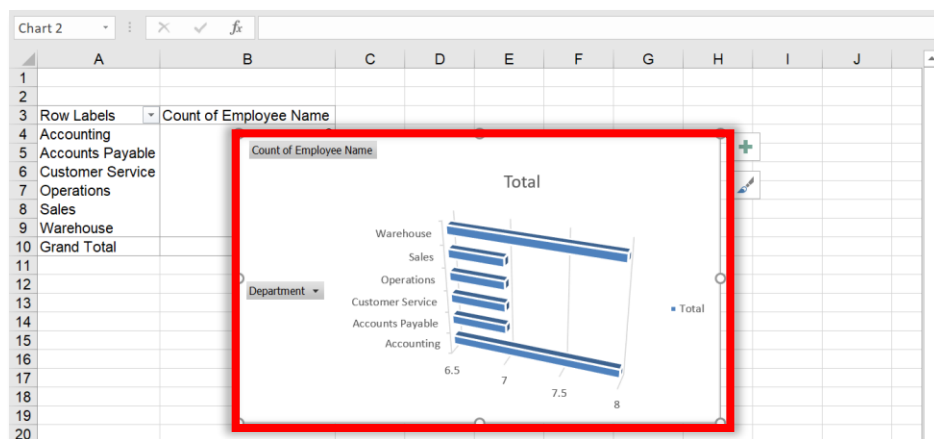


6. Select the type of Bar graph you want from the top gallery.



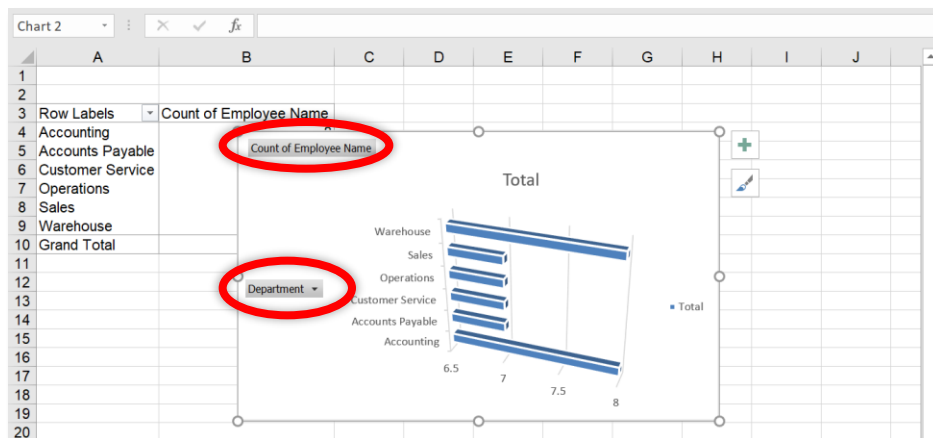
7. Select the **OK** button.

If you followed the steps correctly, you'll find your **Pivot Chart** displayed in your spreadsheet next to the **Pivot Table**.



How to remove the button labels from your Pivot Charts

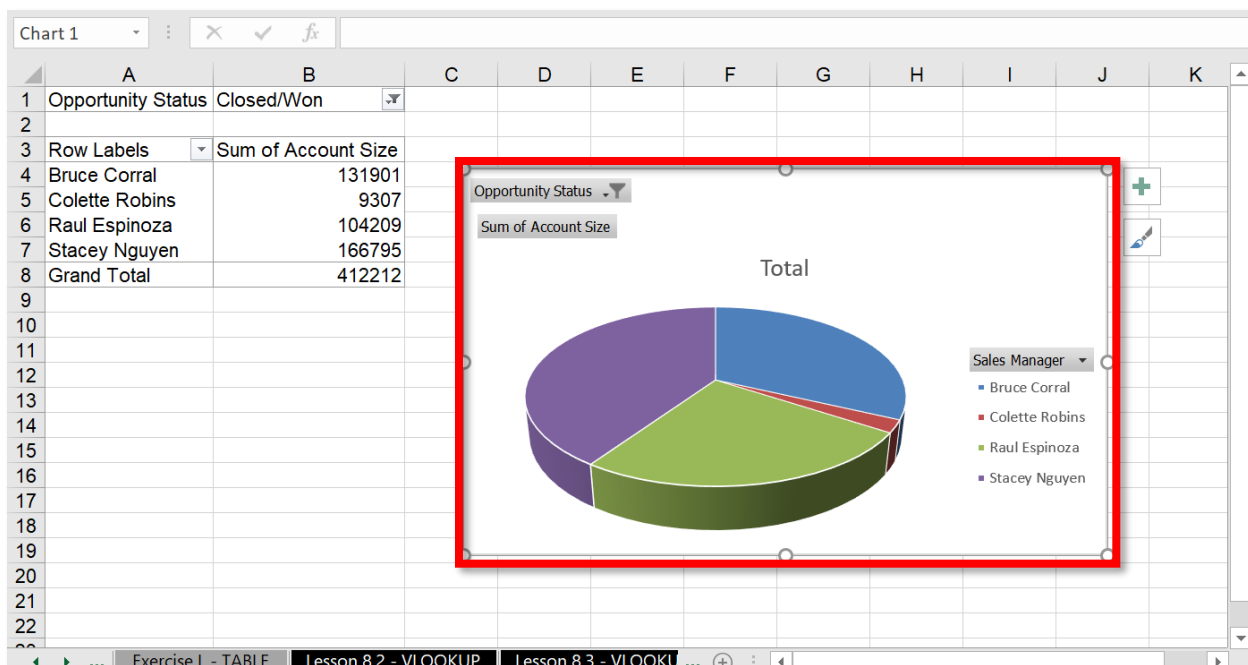
Since **Pivot Tables** feed the information for **Pivot Charts**, some of the **Pivot Table** features are also included in the **Pivot Charts**. For example, the buttons that you typically use in **Pivot Tables** also get transferred to **Pivot Charts** (see image below).



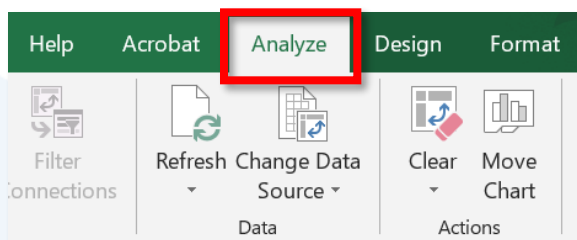
You can easily remove the buttons in **Pivot Charts** without negatively affecting your data.

To remove the button labels from your **Pivot Charts**:

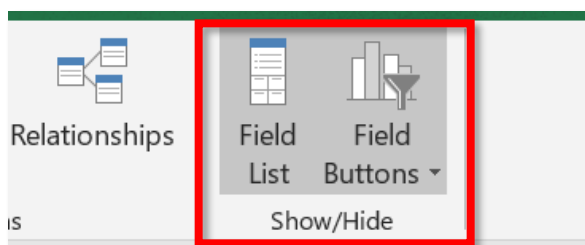
1. Select your **Pivot Chart**



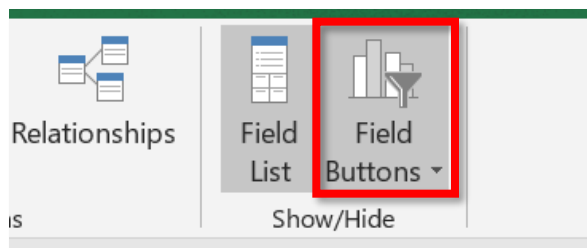
2. Navigate to the **Analyze** tab.



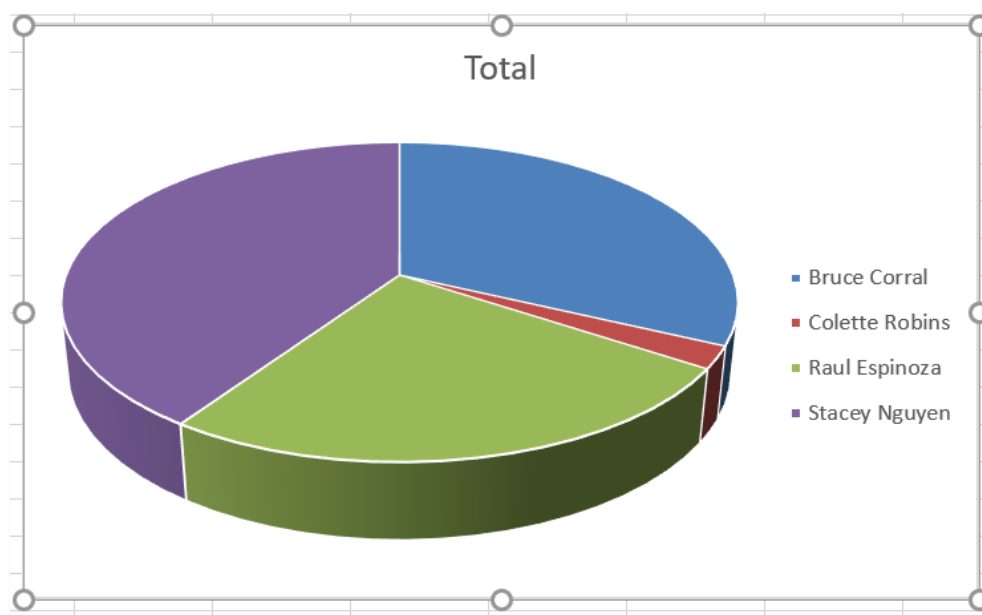
3. Locate the **Show/Hide** group.



4. Unselect the **Field Buttons** command.



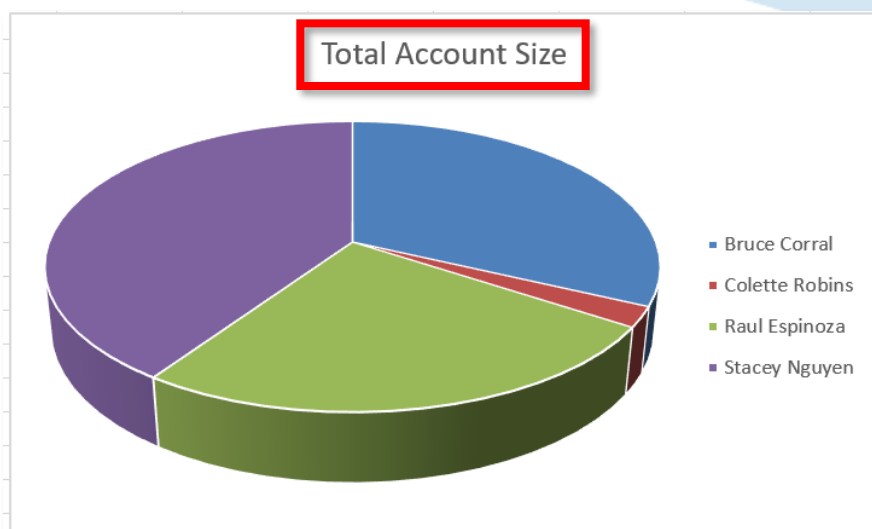
You'll know that you correctly followed these instructions because the **Pivot Chart** will no longer display the button labels. Your **Pivot Chart** may also look larger since it no longer needs to fit the button labels.



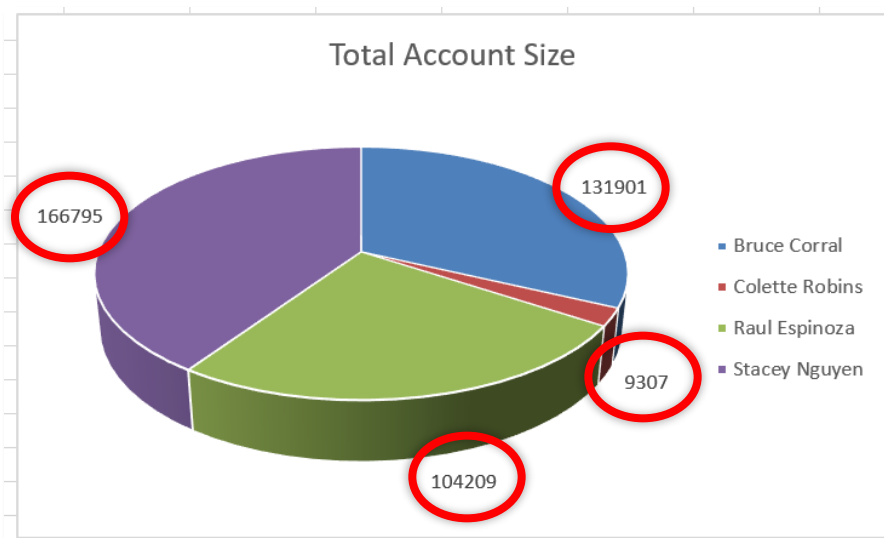
How to add an additional element to your Pivot Chart

The following are examples of elements you can add to your **Pivot Charts**:

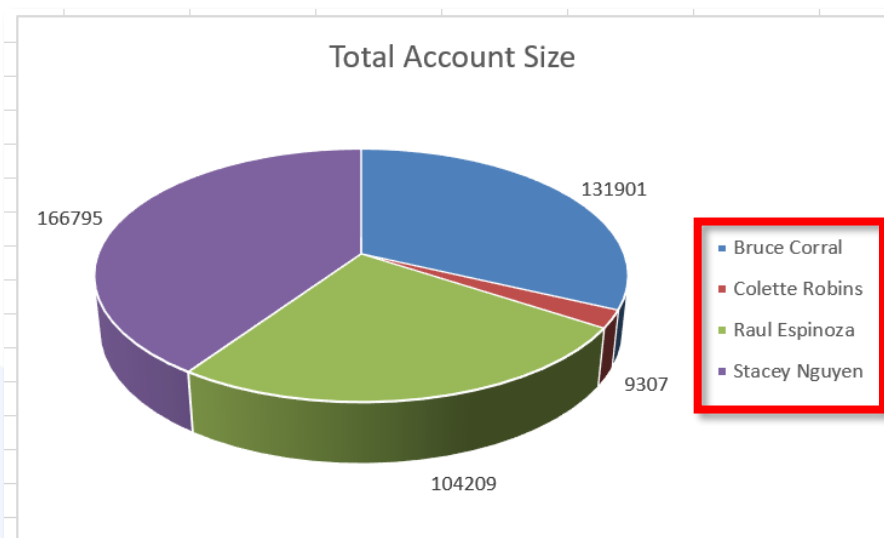
- **Chart Title** – A **Chart Title** allows you to add a title to your **Pivot Chart**.



- **Data Labels** - In order to determine the quantity or qualitative data of a **Pivot Chart**, you can use data labels.

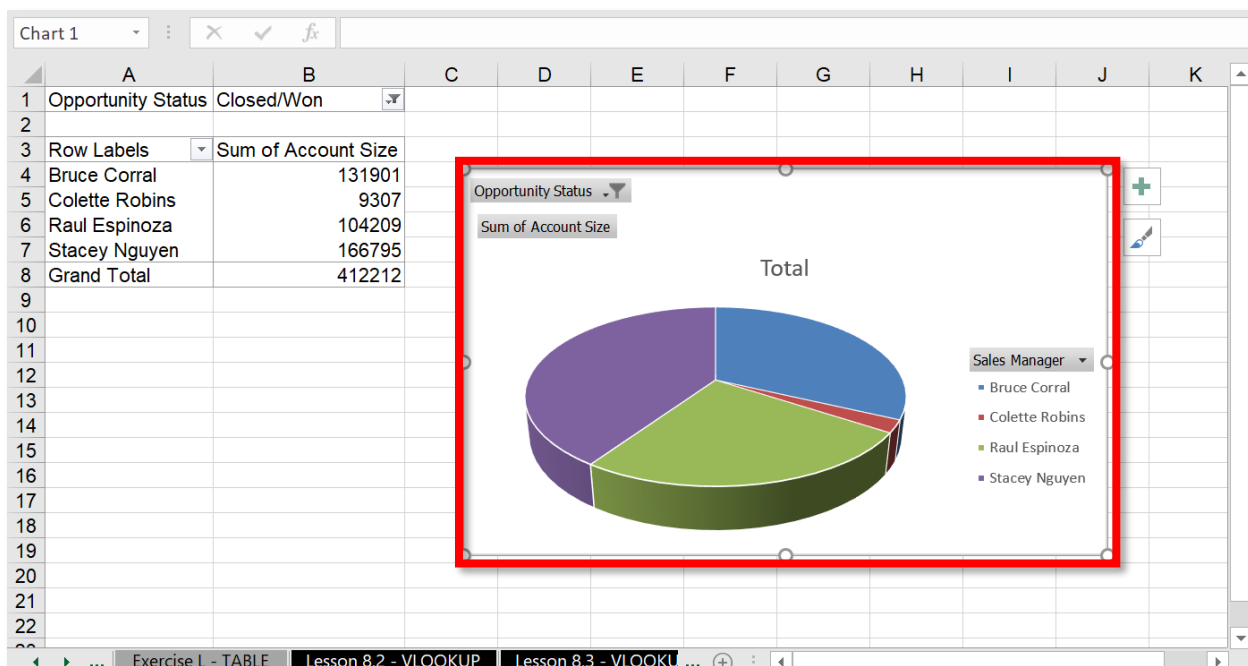


- **Legend** - The legend allows you determine what the colors or symbols represent in a **Pivot Chart**. In **Pivot Charts**, legends can be placed in different locations.

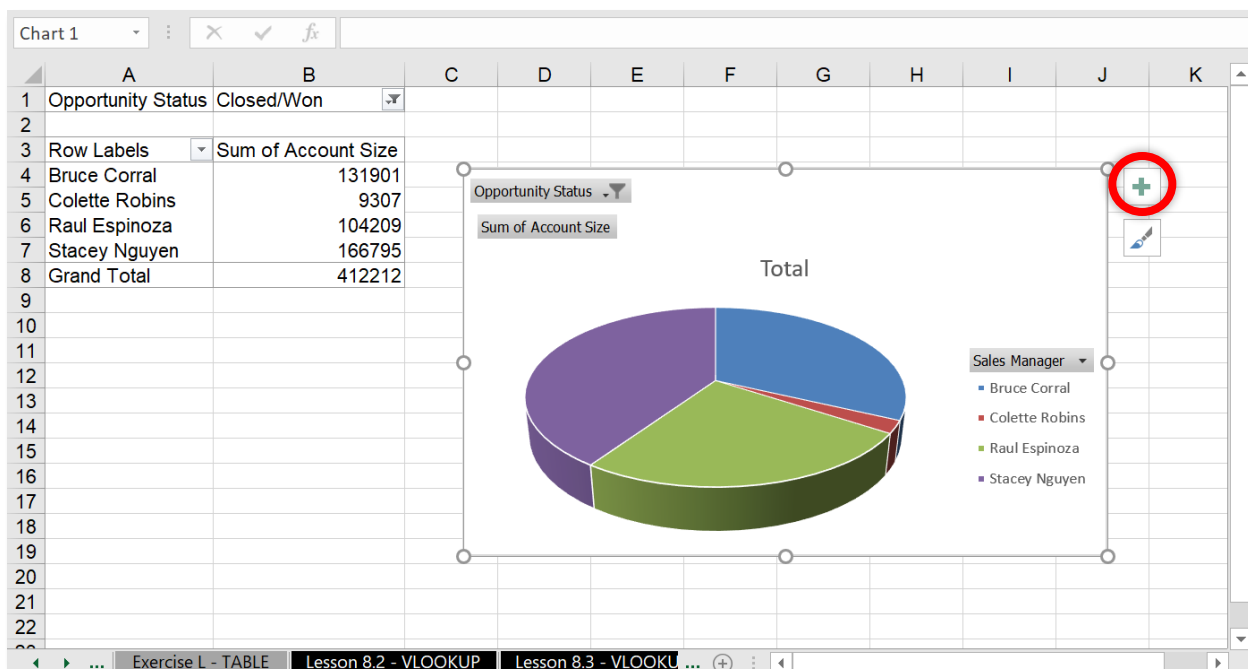


To add a chart element to your **Pivot Charts**:

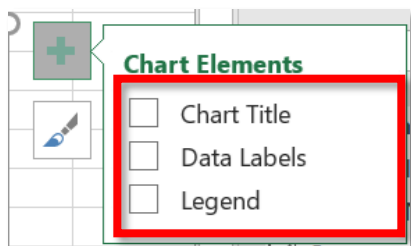
1. Select your **Pivot Chart**



2. In the upper-right hand corner of your **Pivot Chart**, look for a plus sign and click on it.



- Depending on the **Pivot Chart**, some elements may already be included in your chart by default. To add a new element, check the box of the element you want to add.

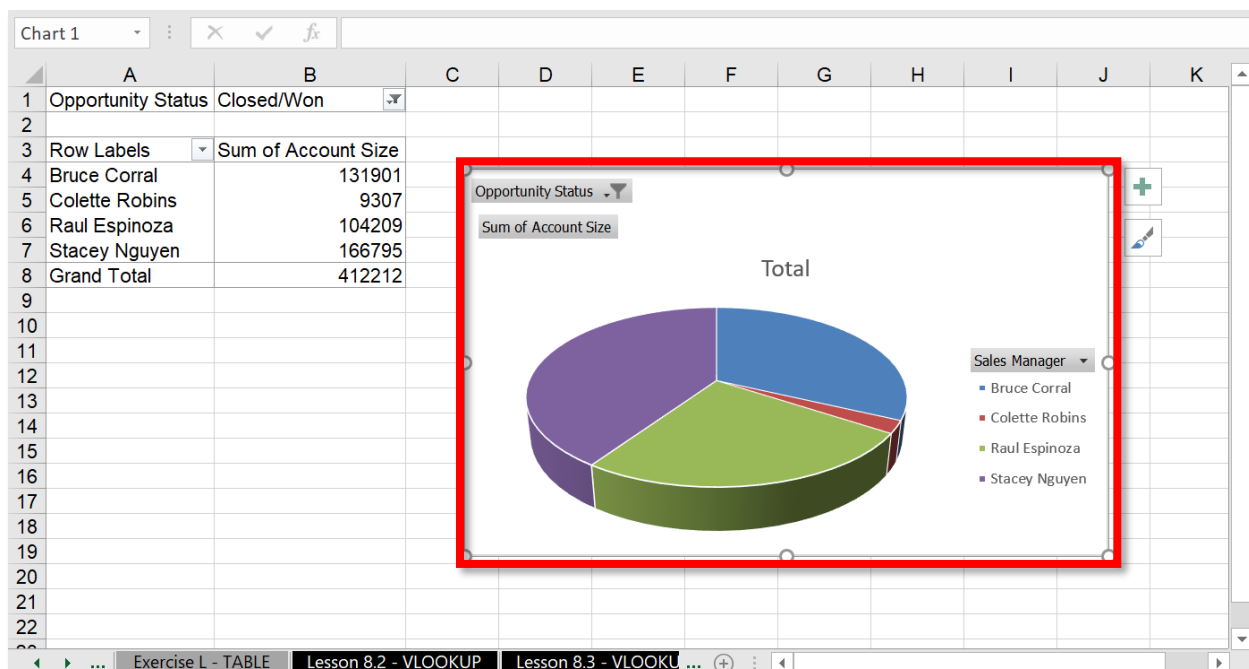


How to change the Layout of your Pivot Chart

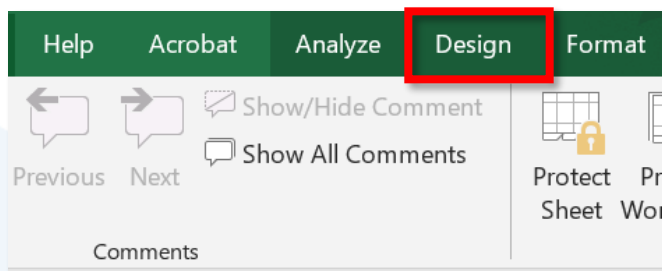
You can heavily customize **Pivot Charts**. However, if you don't have the time to make small edits to your **Pivot Charts**, or if you don't have the time to learn how to change everything, then we recommend that you use the default **Pivot Chart** layouts.

To change the layout of a **Pivot Chart**:

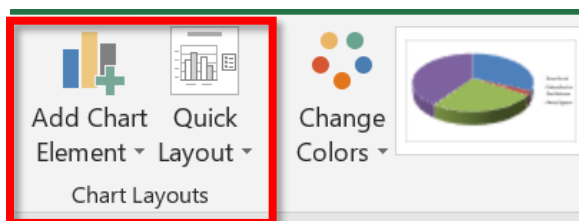
- Select your **Pivot Chart**



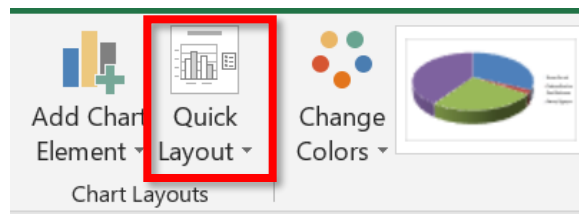
- Navigate to the **Design** tab.



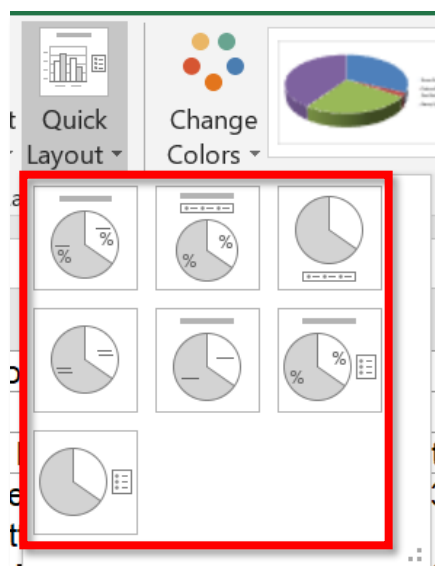
3. Locate the **Chart Layouts** group.



4. Select the **Quick Layout** drop-down menu.



5. From the **Quick Layout** gallery, select the layout of your choice.

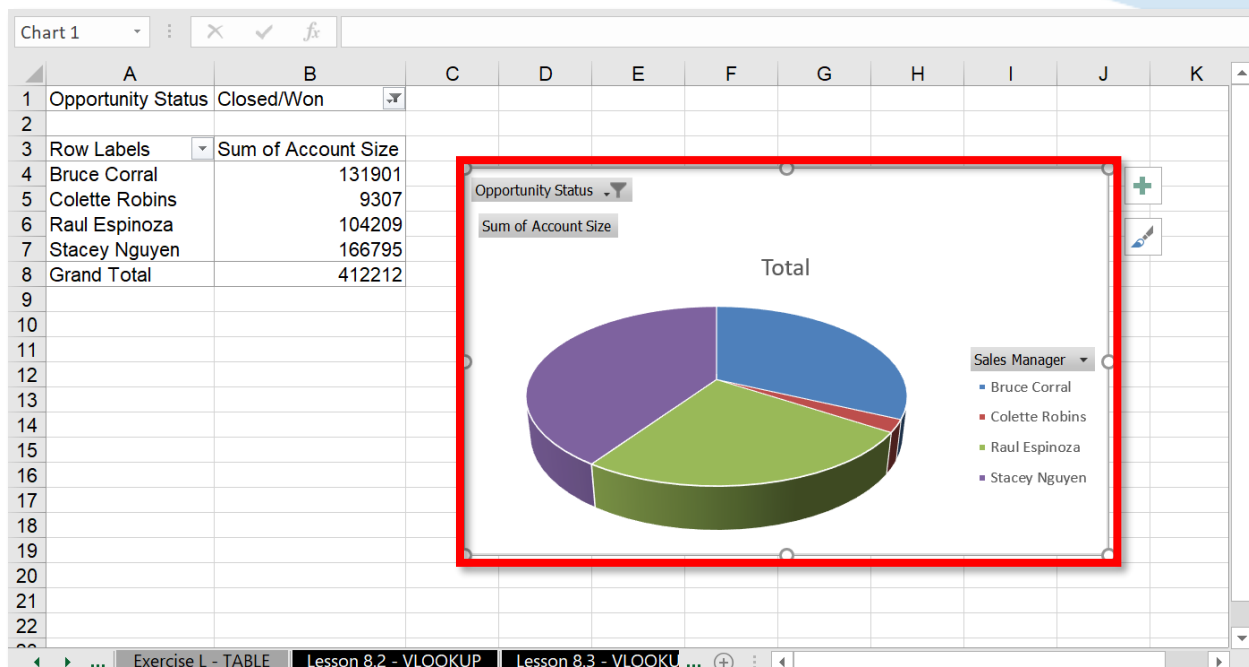


How to change the chart type of your Pivot Chart after you already created a Pivot Chart

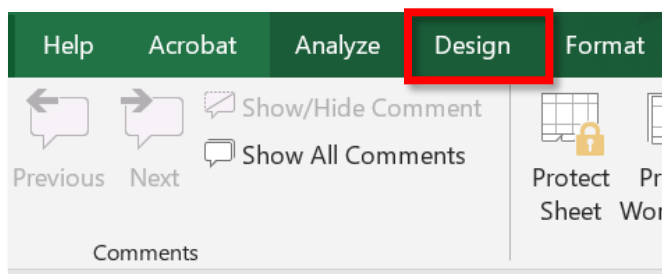
You may run into a situation in which you want to change your **Pivot Chart** completely. Perhaps, you used a pie chart but want to see if a bar graph looks a lot better. Excel makes it easy for you to switch between **Pivot Chart** types.

To change the chart type of your **Pivot Chart**:

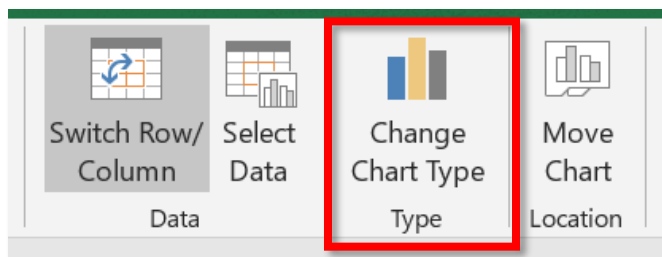
1. Select your **Pivot Chart**



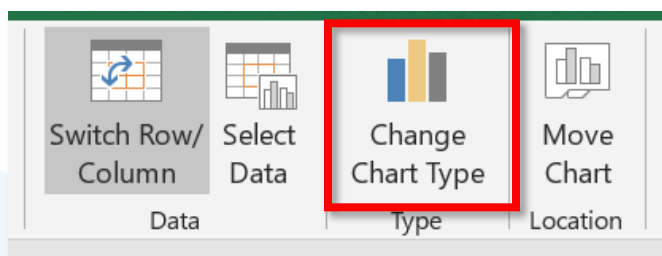
2. Navigate to the **Design** tab.



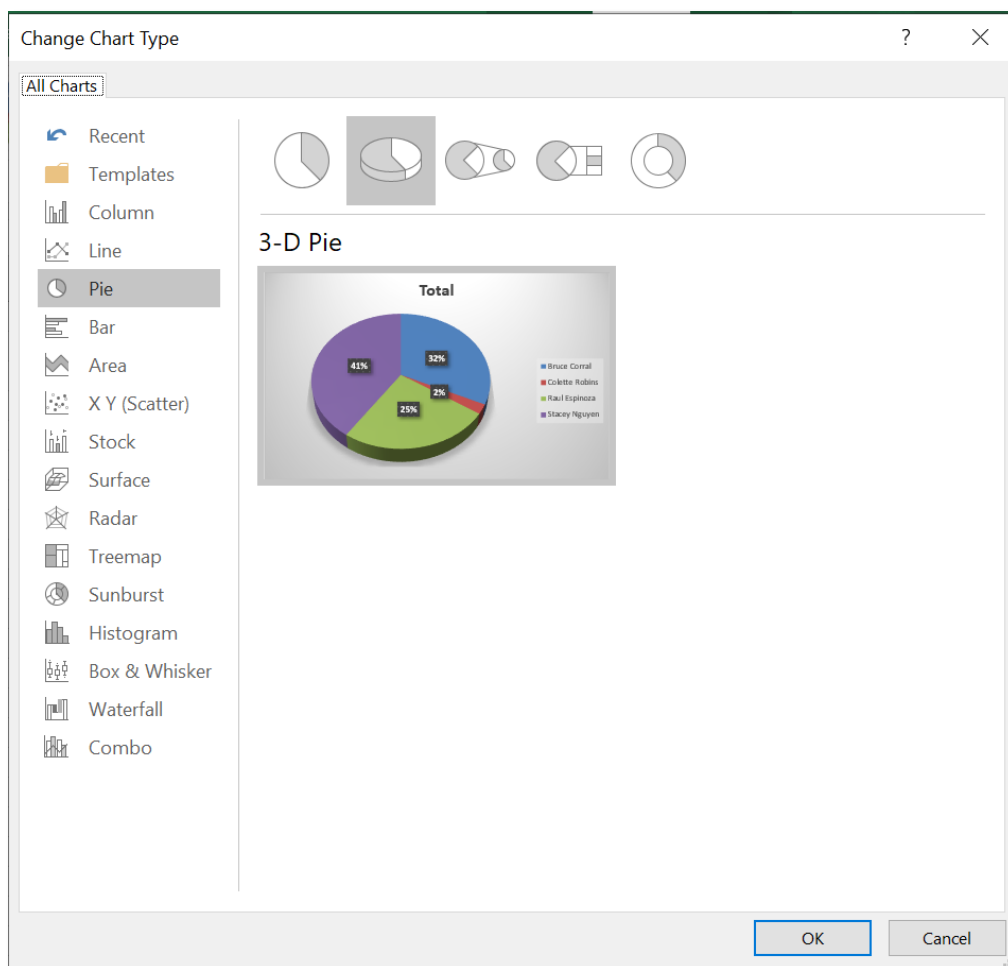
3. Locate the **Type** group.



4. Select the **Change Chart Type** command.



- Choose the **Pivot Chart** of your choice and select the **OK** button.

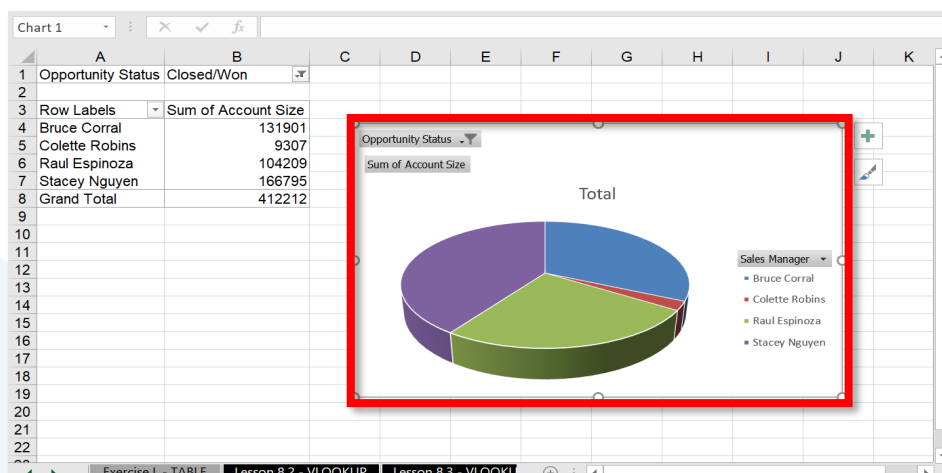


How to quickly change the color scheme of your Pivot Chart

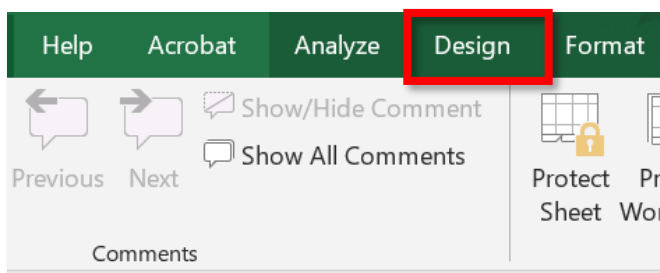
The default options available in Excel to design your **Pivot Charts** are really good. They take the stress out of deciding if your charts will look professional or not.

To quickly change the color scheme of your **Pivot Chart**:

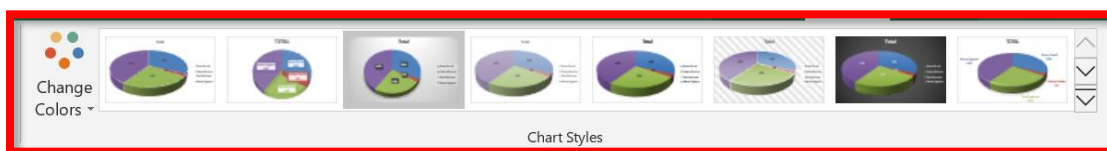
- Select your **Pivot Chart**



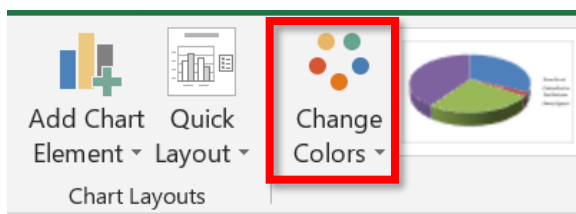
2. Navigate to the **Design** tab.



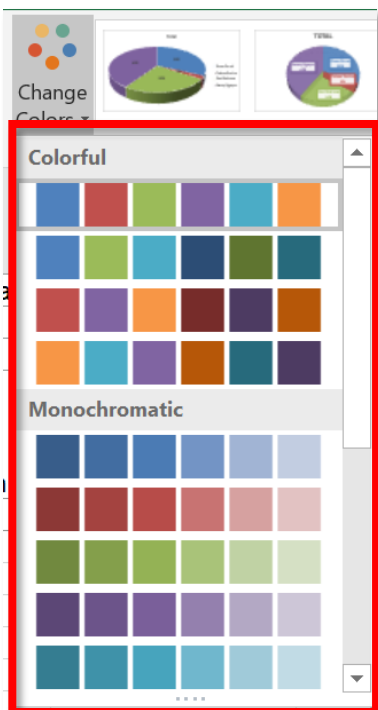
3. Locate the **Chart Styles** group.



4. Select the **Change Colors** drop-down menu.



5. Select the color scheme of your choice from the gallery.

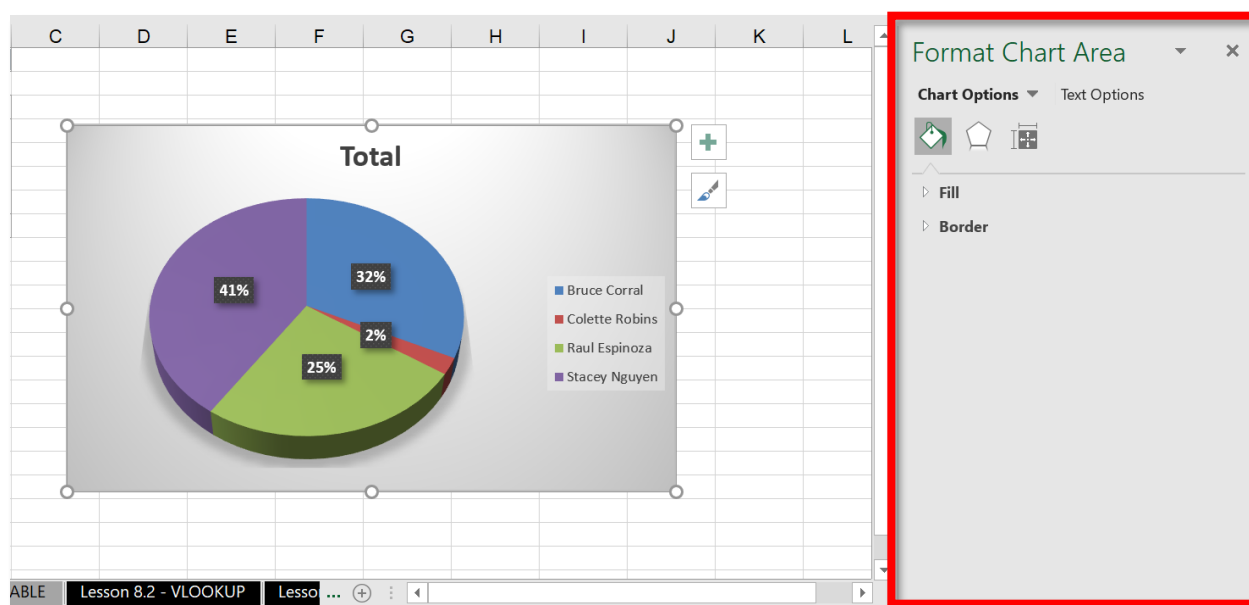


How to customize the Format of your Pivot Chart

There are so many things you can customize in **Pivot Charts**. Although we will not cover all the ways to customize your **Pivot Chart** in this booklet, we want to share with you how you can get to format your **Pivot Chart** in any way that you want. There are basically two things you can do:

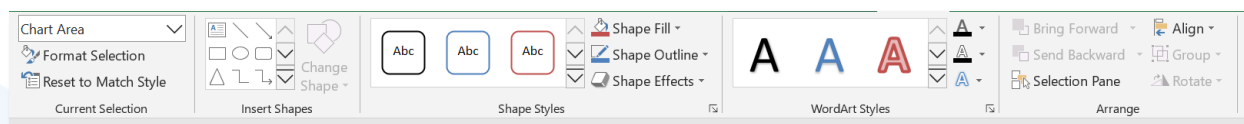
1. Double-click on a section or part of your **Pivot Chart**.
2. Double-click on your **Pivot Chart**.

By double-clicking on an element, section, part or your entire, **Pivot Chart**, Excel will display an area that will allow you to customize many features of your **Pivot Chart**, such as the color of the pie slices, the color of individual bar graphs, add a shadow to your title, etc.



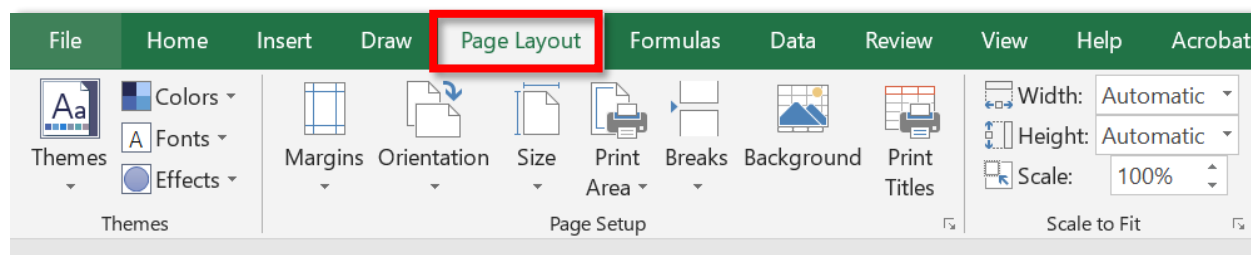
Use the **Format Chart Area** to customize your shapes, colors, border, sizes and text. Depending on where you click in your **Pivot Chart**, this area will update its options to correlate with the area you clicked on.

In earlier versions of Excel, the **Format Chart Area** does not exist. However, you can always make the same format changes in any version of Excel by clicking on the **Pivot Chart** and using the ribbon in the **Format** tab.



Printing Spreadsheets

To change the layout of your sheet, you'll have to navigate to the **Page Layout** tab to make edits. The **Page Layout** tab will help you make changes to your spreadsheet so that you can print the sheet based on your needs.



Page Setup

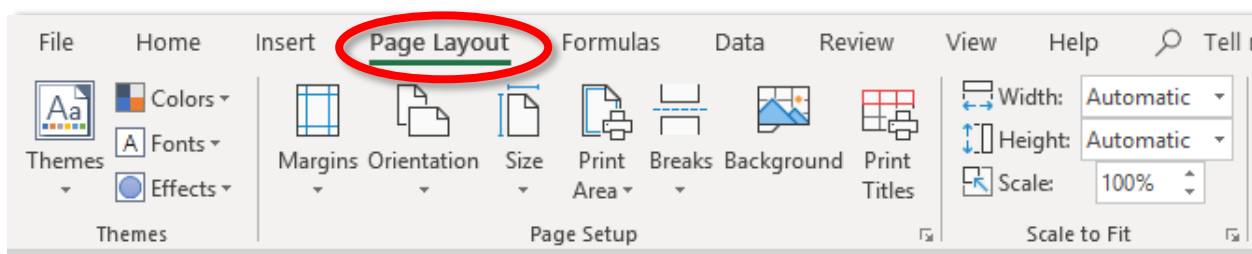
The **Page Setup** section of the **Page Layout** tab helps you change your print settings and the default settings of your spreadsheet. Changes made in this section only pertain to the sheet you're working on and won't affect the entire workbook. Let's explore some functionalities available in this section.

How to Change the Page Margins

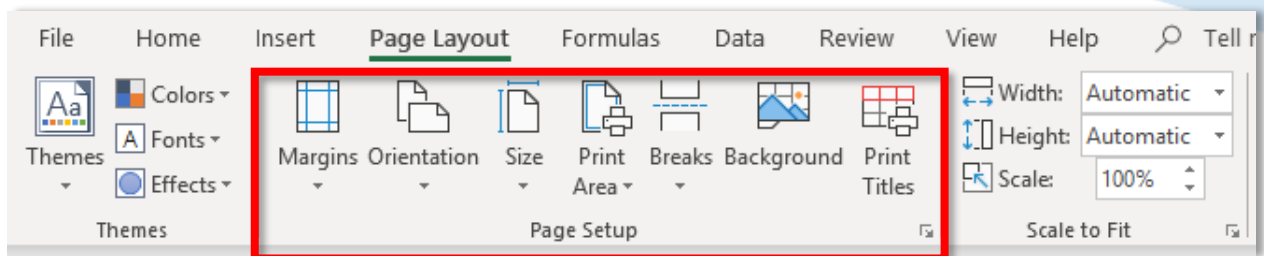
The margins in your spreadsheet default to *Normal* which allow you to print your sheet with a set space at the top, bottom, left and right of the page. You can also make the margins wide or narrow. By making the margins narrower, it will allow you to fit more of your spreadsheet into one page.

To change the **Page Margins**:

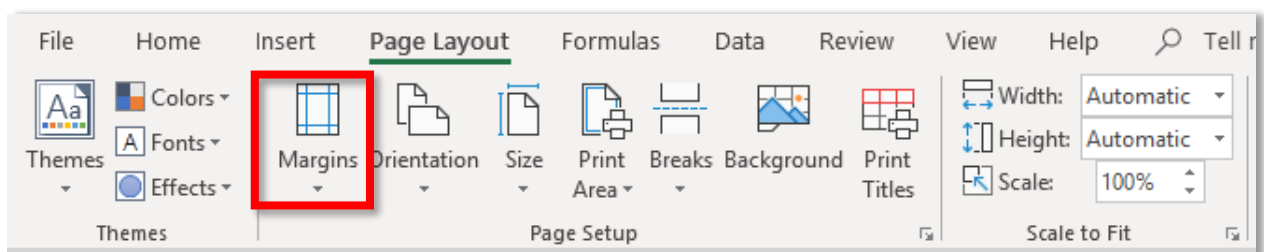
1. Navigate to the **Page Layout** tab.



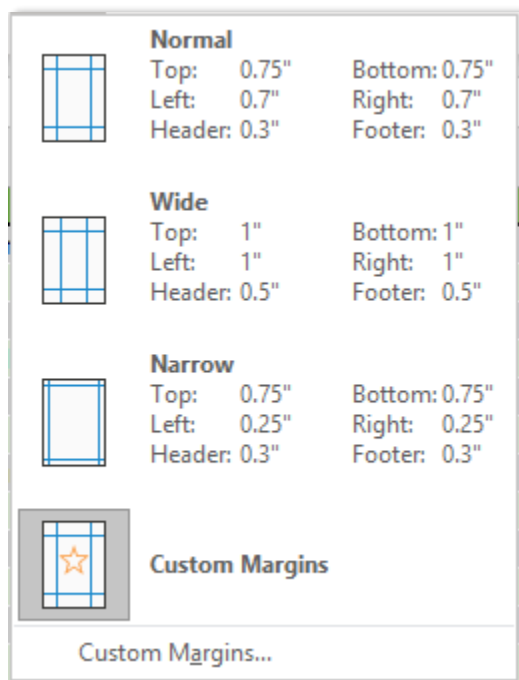
2. Locate the **Page Setup** group.



3. Select the **Margins** command.



4. Selecting the **Margins** command will display a menu of choices. Select the type of margins you would like for your page.

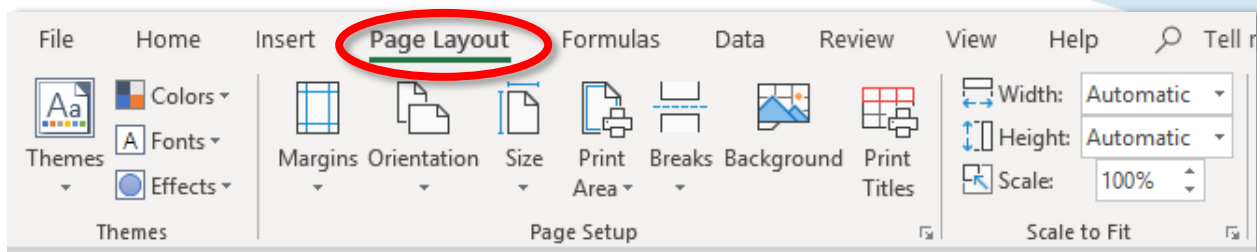


How to Change the Page Orientation

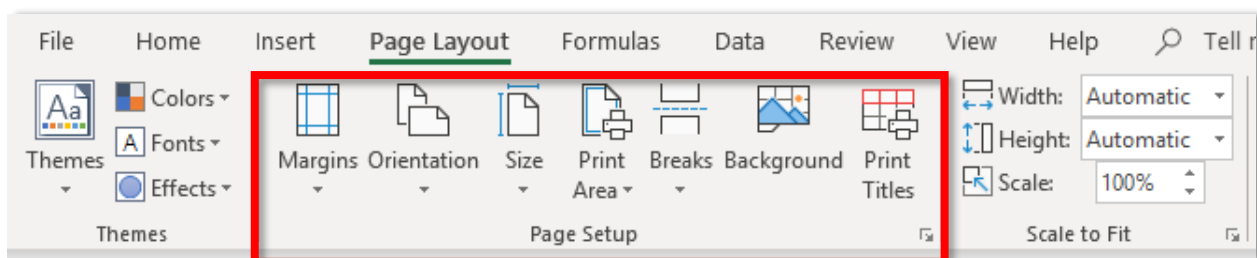
By default, your spreadsheet will print in a *Portrait* style. You can change this setting.

To change the **Page Orientation** of your sheet:

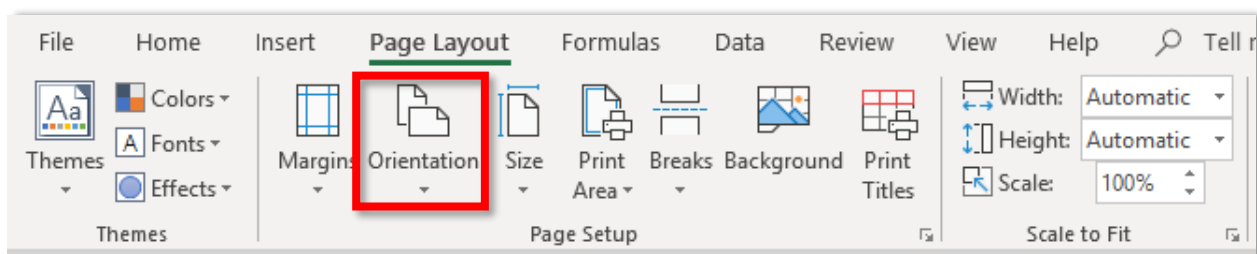
1. Navigate to the **Page Layout** tab.



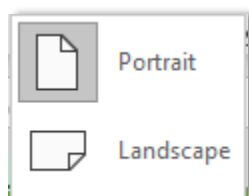
2. Locate the **Page Setup** group.



3. Select the **Orientation** command.



4. The **Orientation** command will display a drop-down menu that will allow you to change the page orientation from *Portrait* to *Landscape*.



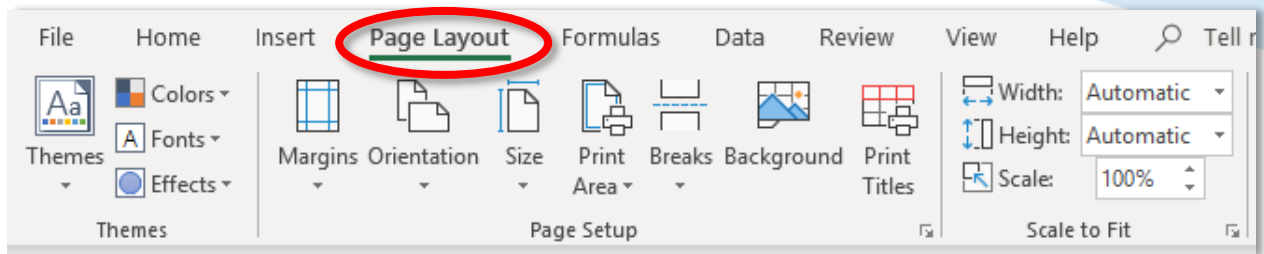
- 8.

How to Change the Size of the Paper

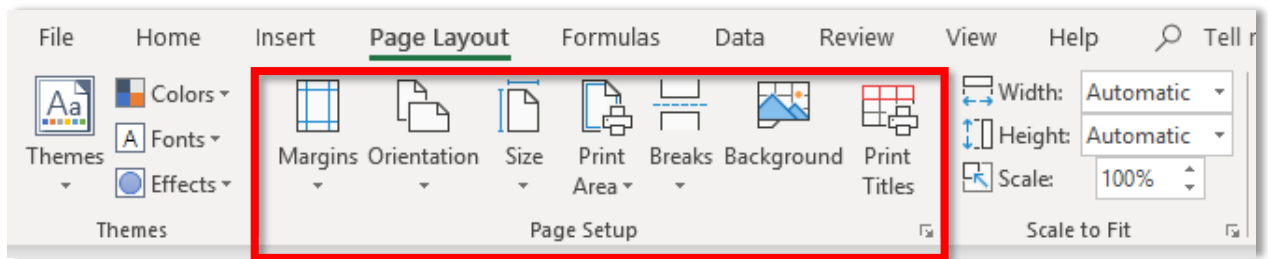
At times, you might need to print your data on ledger paper or other type of paper that suits your needs. Excel defaults to *Letter* size paper, but you can change this option and select a different paper size.

To change the size of the paper:

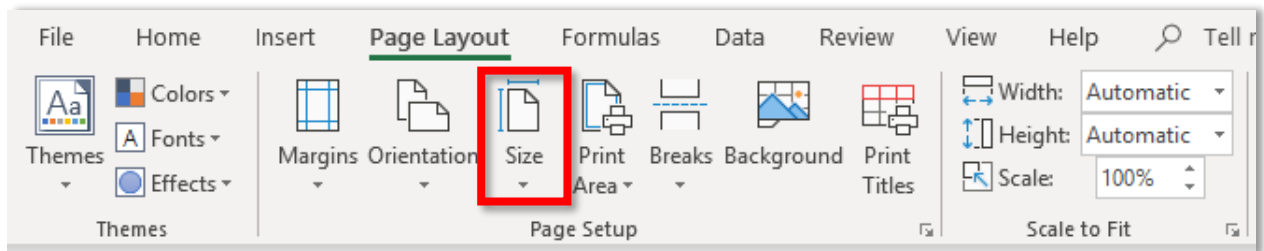
1. Navigate to the **Page Layout** tab.



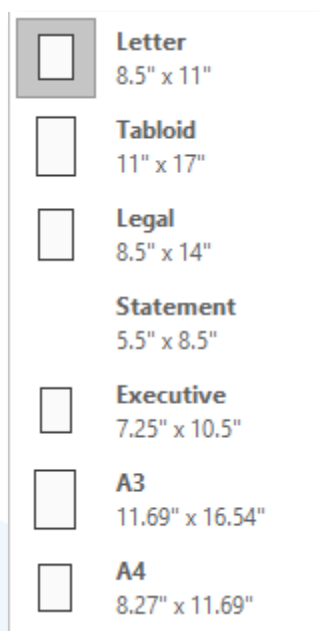
2. Locate the **Page Setup** group.



3. Select the **Size** command.



4. The **Size** command will display a drop-down menu that will allow you to change the size of your sheet.



How to Set a Print Area

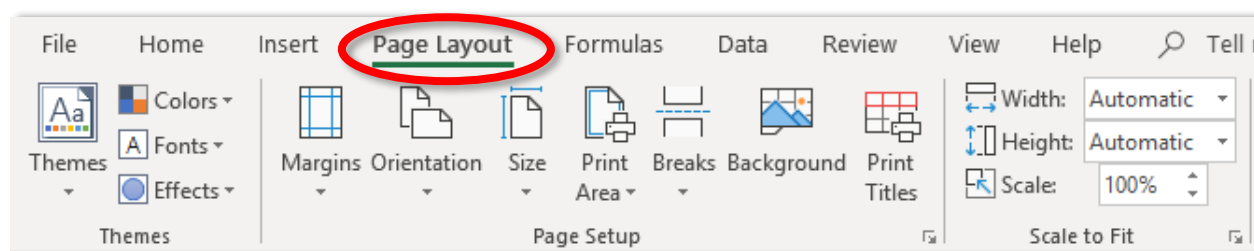
Excel also allows you to print a chosen selection from your spreadsheet, instead of printing the entire sheet. This feature is called *Setting the Print Area*.

To set a **Print Area**:

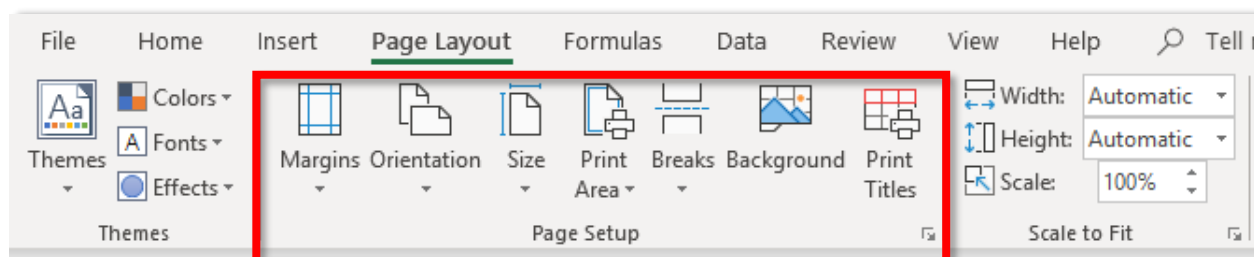
1. Select the area in your spreadsheet that you want to exclusively print.

	A	B	C	D
1	Customer Name	Area	Account Active	Membership Amount/Year
2	Dominguez, Barbara	Los Angeles	YES	\$ 239.88
3	Anthony, Rob	Los Angeles	NO	\$ 179.88
4	Williams, Debon	Los Angeles	YES	\$ 119.88
5	Hernandez, Harold	Fresno	NO	\$ 119.88
6	Ochoa, Jose	Fresno	NO	\$ 119.88
7	Houston, Steven	Fresno	NO	\$ 119.88
8	Stevenson, Raymond	Los Angeles	NO	\$ 119.88
9	Guill, Sarah	Fresno	NO	\$ 119.88
10	Quintero, Jesus	Los Angeles	NO	\$ 119.88

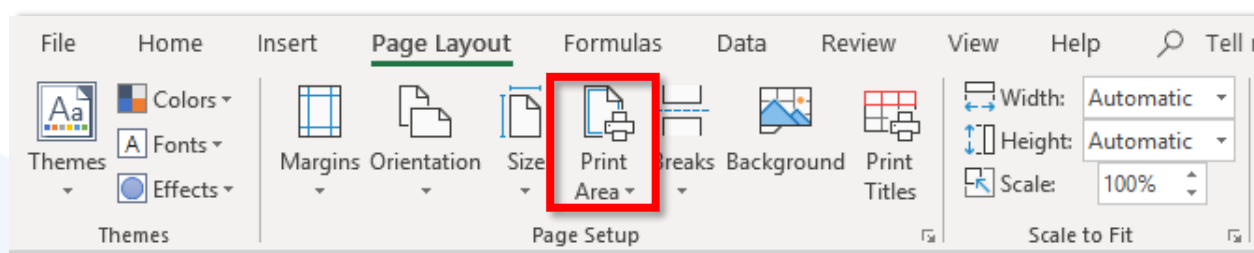
2. Navigate to the **Page Layout** tab.



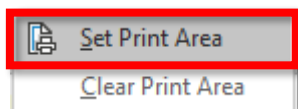
3. Locate the **Page Setup** group.



4. Select the **Print Area** command.



5. The **Print Area** command will display a drop-down menu. Select the **Set Print Area** option.

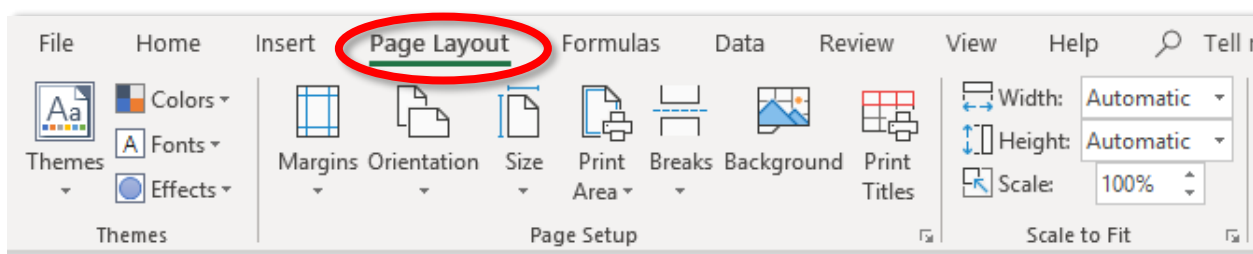


How to Clear a Print Area

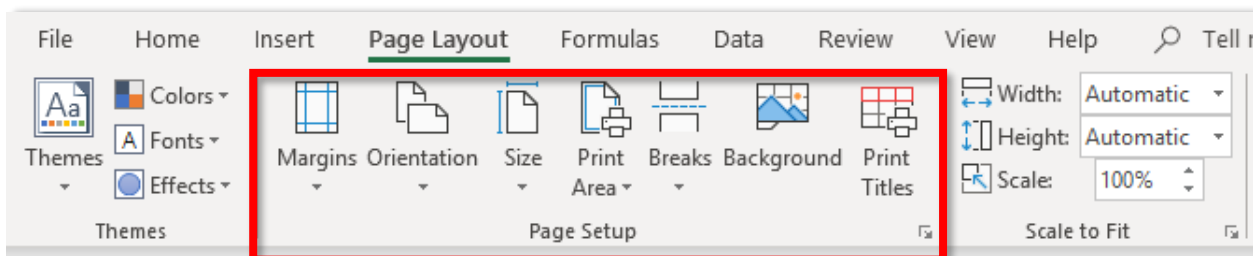
If you set a **Print Area** but now need to print the entire page, you'll have to clear the **Print Area**.

To clear the **Print Area**:

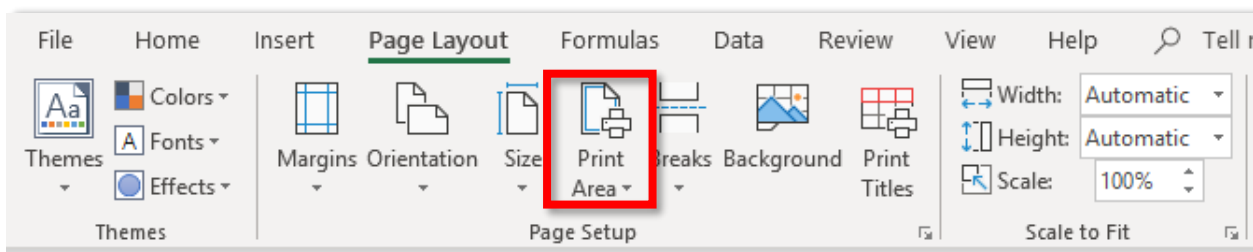
1. Navigate to the **Page Layout** tab.



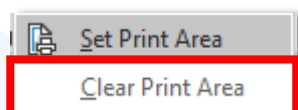
2. Locate the **Page Setup** group.



3. Select the **Print Area** command.



4. The **Print Area** command will display a drop-down menu. Select the **Clear Print Area** option.

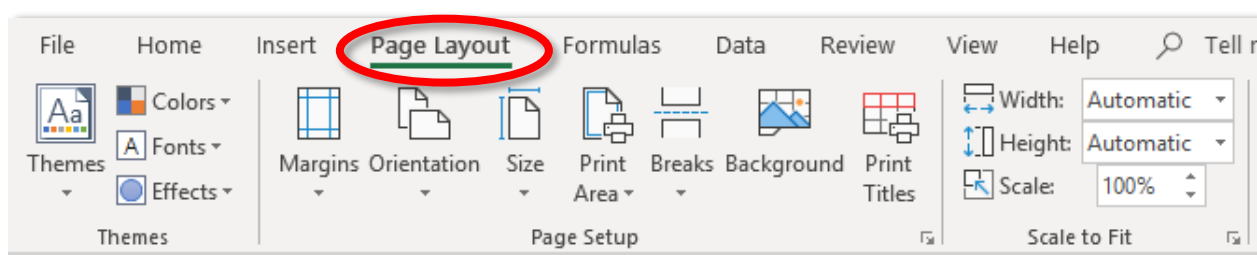


How to Repeat the Table Headers When Printing

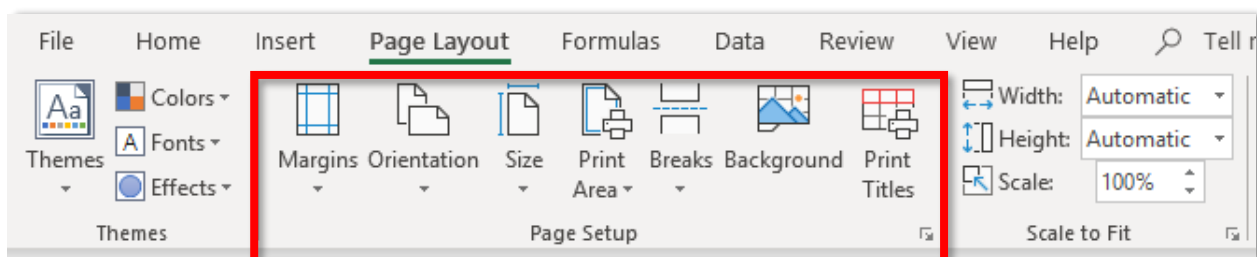
Most of us work with lots of data which means that if we decide to print a spreadsheet, the spreadsheet will print in more than one page. When this happens, only page one will have the headers that you created, but the rest of the pages will only have the data without the headers. However, the headers can be repeated throughout each page.

To print the headers on every page, you'll have to select the titles to print.

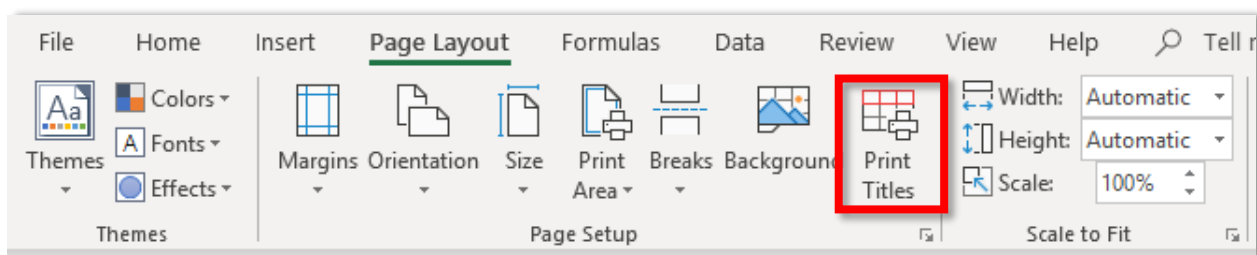
1. Navigate to the **Page Layout** tab.



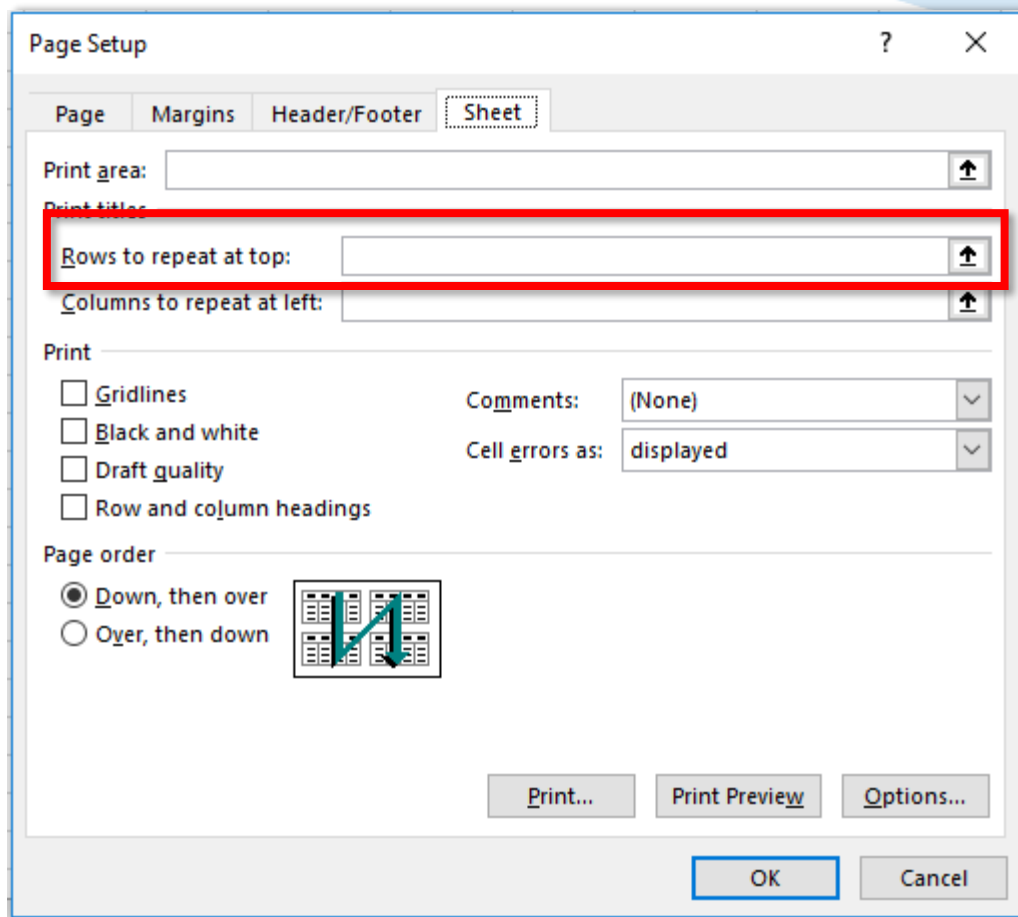
2. Locate the **Page Setup** group.



3. Select the **Print Titles** command.



4. The **Print Titles** command will display a pop-up window. Click on the *Rows to repeat at the top* box and select a row from your spreadsheet that includes your table headers. By selecting that entire row, Excel will repeat the row on every printed page. Press the **OK** button when finished.



Additionally, you can select to print the **Gridlines**, print in black and white, print comments and print in a different order. You can also click on the **Print Preview** button to get a preview of the sheet you're about to print.

Scaling to Fit

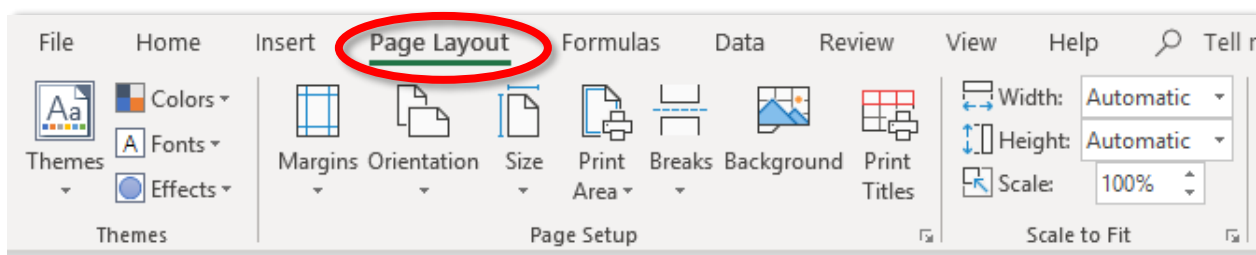
In the **Page Layout** tab, there is a **Scale to Fit** section where you can customize your sheet to make it fit in one page. Sometimes, when you try to print a spreadsheet, some columns may not fit into the first page and will print on the second page instead.

How to Change the Width and Height of Your Sheet to Print

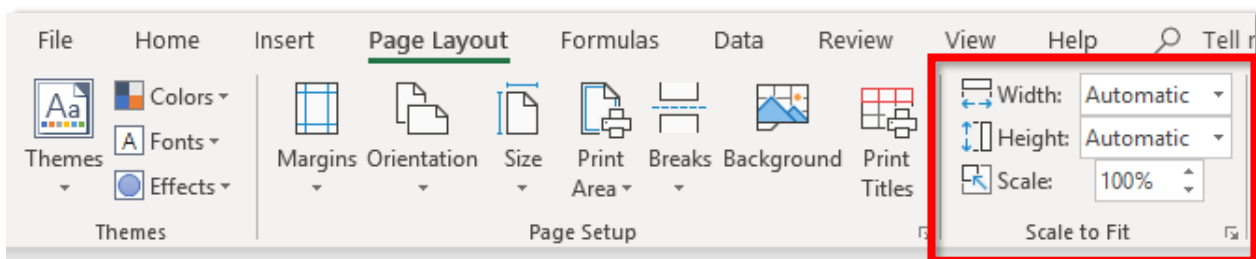
The width and height of a sheet can be customized so that you can try to fit your sheet into one or multiple pages. Most likely, when using these features, the size of the font or your table will decrease, making it harder to read. By default, Excel makes the width and height automatic.

To change the width and height of your sheet:

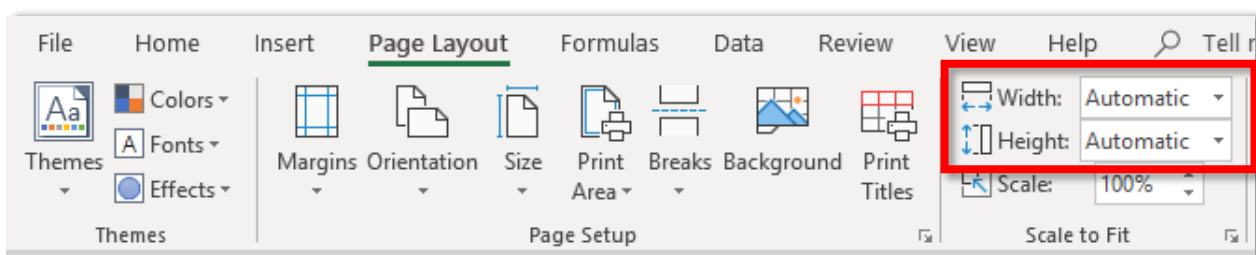
1. Navigate to the **Page Layout** tab.



2. Locate the **Scale to Fit** group.



3. Change the *Width* and *Height* by clicking on the drop-down box.

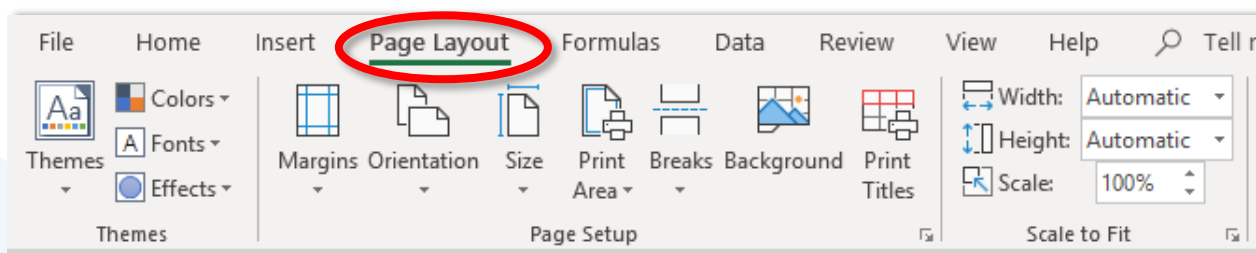


Changing the Scale

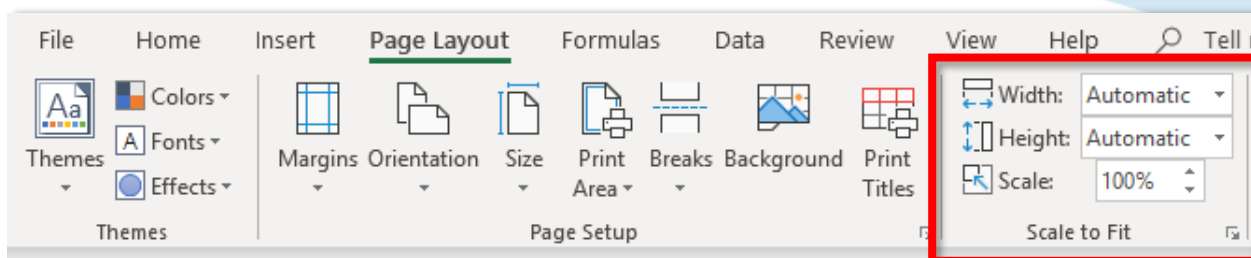
The best option to make your sheet fit in one page (or in several desired pages) is by changing the scale percentage. Be careful when you also use this option because your table will shrink as you decrease the percentage. Anything lower than 70% may start to look too small and the table will be aligned to the left of the sheet.

To change the scale of your sheet:

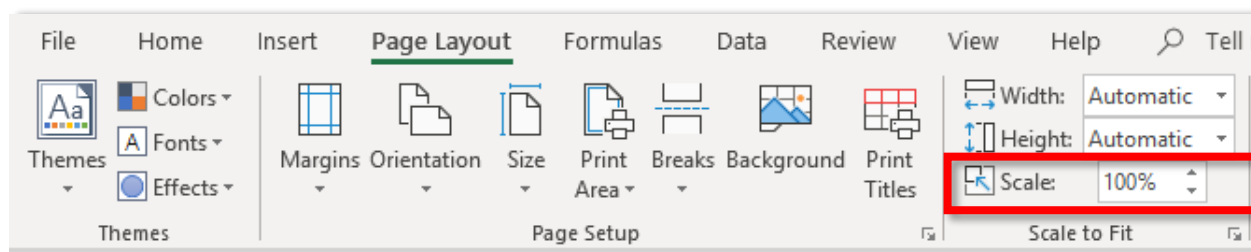
1. Navigate to the **Page Layout** tab.



2. Locate the **Scale to Fit** group.



3. Change the *Scale* by clicking on the drop-down box.



Other Sheet Options

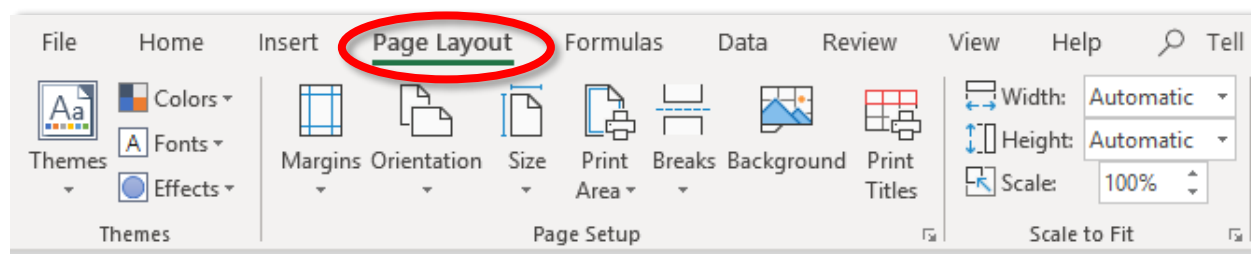
As described before, the ribbons can only fit a limited number of buttons. However, you can continue to customize the print options by checking a few options on the **Sheet Options** group.

How to Remove the Gridlines

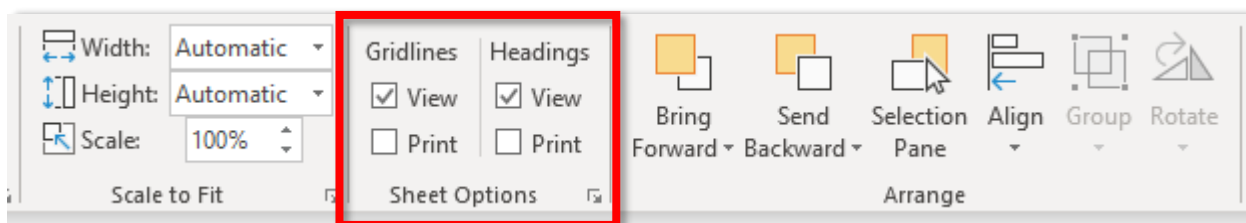
By default, Excel spreadsheets will show the gridlines, but they won't print unless you specify that you want the gridlines to print.

To remove the gridlines from your spreadsheet:

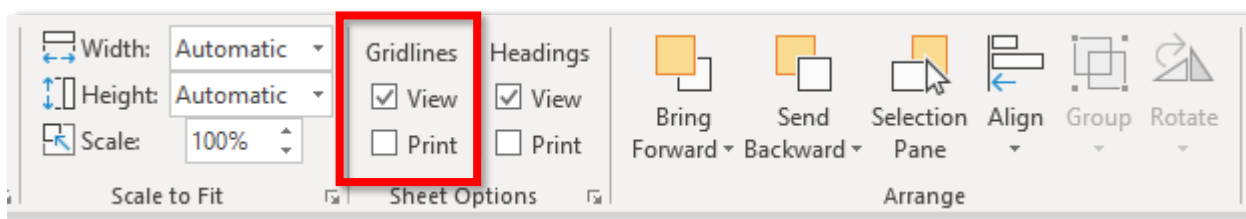
1. Navigate to the **Page Layout** tab.



2. Locate the **Sheet Options** group.



3. Uncheck the *View* checkbox in the **Gridlines** section.

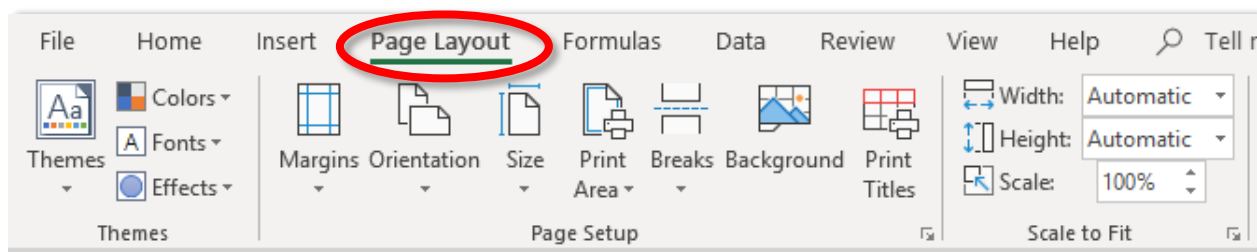


How to Remove the Headings

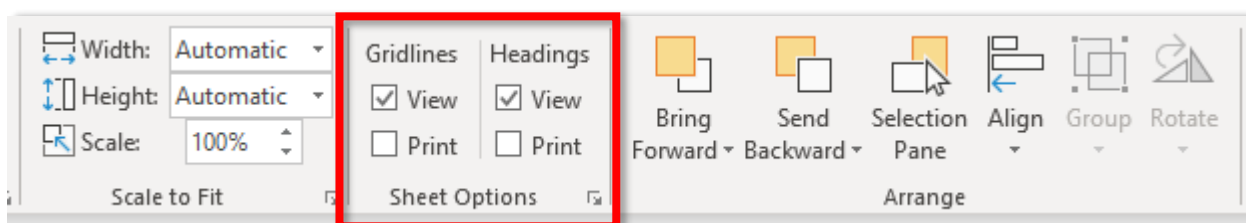
By defaults, Excel will show you the column letters and the row numbers. These are called **Headings** and they can also be removed from your view.

To remove the headings from your spreadsheet:

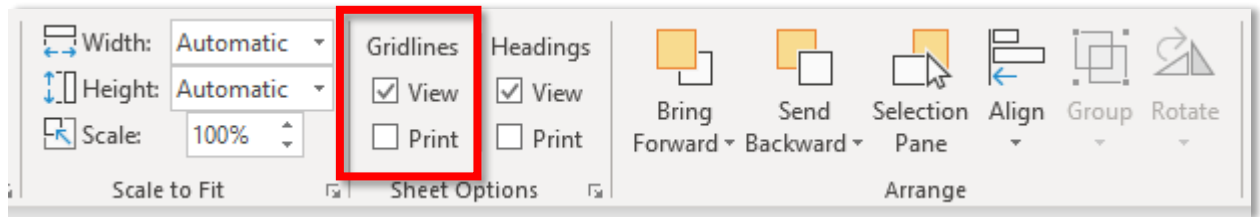
1. Navigate to the **Page Layout** tab.



2. Locate the **Sheet Options** group.



3. Uncheck the *View* checkbox in the **Headings** section.



Basic Excel Shortcuts

Excel has plenty of shortcuts that can save you some time. Many of these shortcuts are basic keyboard shortcuts that are universally recognized. Please note that the shortcuts listed below are only compatible with Windows.

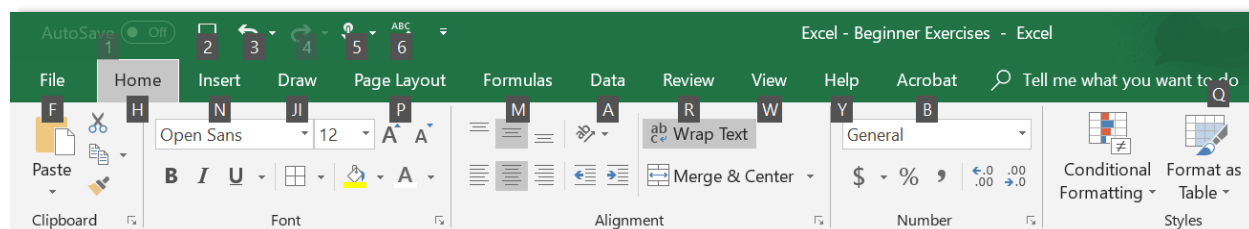
Commonly Used Shortcuts

The table below lists the most commonly used shortcuts. Please note that the command 'CTRL' stands for the 'Control' button located on your keyboard. Additionally, the plus sign signifies the following button to press on your keyboard. For example, 'CTRL + C', means that you'll need to press the 'Control' button and the letter 'C' button on your keyboard.

Shortcut Type	Buttons on your keyboard
<i>Copy</i>	CTRL + C
<i>Paste</i>	CTRL + V
<i>Cut</i>	CTRL + X
<i>Highlight All</i>	CTRL + A
<i>Bold</i>	CTRL + B
<i>Underline</i>	CTRL + U
<i>Italicize</i>	CTRL + I
<i>Find text</i>	CTRL + F
<i>Undo</i>	CTRL + Z
<i>Save a Workbook</i>	CTRL + S
<i>Close a Workbook</i>	CTRL + W
<i>Open a Workbook</i>	CTRL + O
<i>Center align cell contents</i>	ALT + H + A + C
<i>Delete column</i>	ALT + H + D + C
<i>Add borders</i>	ALT + H + B
<i>Hide selected rows</i>	CTRL + 9
<i>Hide selected columns</i>	CTRL + 0

Keyboard Shortcuts for Ribbons

When using any Microsoft Office programs, you can navigate through the different ribbons without using a mouse. The keyboard can be used to navigate through all the ribbons and buttons. The ALT button will display letters that show you which keys will take you to which ribbon or button. For example, after pressing the ALT key on the keyboard, Excel gives me the following options (in the screenshot below). If the 'P' button is pressed, then Excel will display the Page Layout ribbon.



Below are a few shortcuts that will help you navigate through the ribbons and buttons in Excel by using your keyboard.

To do the following...	Buttons on your keyboard
<i>Go to the Home Tab</i>	ALT + H
<i>Go to the Insert Tab</i>	ALT + N
<i>Go to the Draw Tab</i>	ALT + J + I
<i>Go to the Page Layout Tab</i>	ALT + P
<i>Go to the Formulas Tab</i>	ALT + M
<i>Go to the Data Tab</i>	ALT + A
<i>Go to the Review Tab</i>	ALT + R
<i>Go to the View Tab</i>	ALT + W
<i>Go to the Help Tab</i>	ALT + Y

Keyboard Shortcuts for Navigating Through a Spreadsheet

Below are additional shortcuts that you can use to navigate through cells. Unlike most of the previously mentioned shortcuts, most of the following shortcuts are Excel specific.

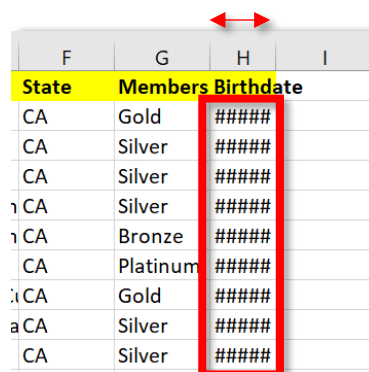
To do the following...	Buttons on your keyboard
<i>Move one cell right in a spreadsheet</i>	Right arrow key
<i>Move one cell left in a spreadsheet</i>	Left arrow key
<i>Move one cell up in a spreadsheet</i>	Up arrow key
<i>Move one cell down in a spreadsheet</i>	Down arrow key
<i>Move one cell right on a spreadsheet (or the next unlocked cell)</i>	Tab key
<i>Move to the last entry of a region</i>	CTRL + Arrow key
<i>Move to the last cell on a spreadsheet</i>	CTRL + End key
<i>Move to the last used cell on a spreadsheet</i>	CTRL + Shift + End key
<i>Move to the top of a spreadsheet</i>	CTRL + Home key
<i>Move one screen down in a spreadsheet</i>	Page Down key
<i>Move one screen to the right in a spreadsheet</i>	ALT + Page Down key
<i>Move one screen up in a spreadsheet</i>	Page Up key
<i>Move one screen to the left in a spreadsheet</i>	ALT + Page Up key
<i>Move to the next spreadsheet in a workbook</i>	CTRL + Page Down key
<i>Move to the previous spreadsheet in a workbook</i>	CTRL + Page Up key

Common Formula Errors in Excel

As you continue to work through formulas and learn how to use more advanced formulas in your Excel journey, you'll at some point encounter error messages. Error messages in Excel usually occur when there is an incorrect digit, or entry in a formula. Excel will then return a message that begins with a pound sign (#). Below is a quick reference guide to common Excel errors you will encounter as a beginning Excel user.

#####

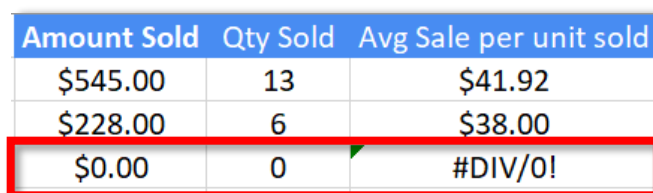
You probably have already seen a cell with a bunch of pound signs inside the cell. You are 100% sure that you never typed those pound signs inside those cells, and you're right. You will encounter a cell filled with pound signs any time that the content of a cell does not fit inside a cell. In other words, you need to make the width of the cell larger because the number inside your cell is too long.



State	Members	Birthdate
CA	Gold	#####
CA	Silver	#####
CA	Silver	#####
CA	Silver	#####
CA	Bronze	#####
CA	Platinum	#####
CA	Gold	#####
CA	Silver	#####
CA	Silver	#####

#DIV/0

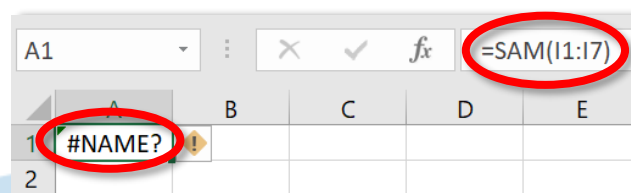
If you recall back to your High School days, you'll remember that in math class you were taught that you cannot divide by 0. Excel knows this too and whenever you try to divide by 0, it will give you the error message #DIV/0. This error message typically occurs when you use a formula to divide but you may have a cell with the entry '0', or a cell that is completely blank. In this instance, Excel will return the error message. If you no longer want to see the error message, you'll have to use a formula like the IFERROR formula so that Excel displays a digit or value you provide. In the screenshot provide, Excel returns a #DIV/0 error because you can't divide 0 by 0.



Amount Sold	Qty Sold	Avg Sale per unit sold
\$545.00	13	\$41.92
\$228.00	6	\$38.00
\$0.00	0	#DIV/0!

#NAME?

At times, you will encounter the #NAME? error message. This error message typically appears because of a misspelling.

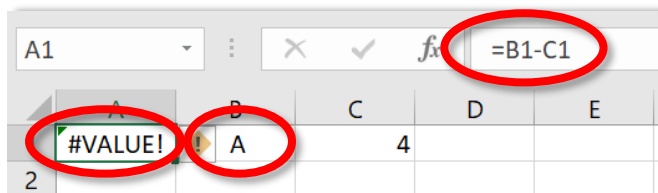


A	B	C	D	E
#NAME?				

When you see the #NAME? message, Excel is telling you that either (1) the name of the formula is wrong (i.e., you accidentally wrote =SAM(I4:I15) instead of =SUM(I4:I15) or (2) there is something wrong with the entries you entered in your formula (which typically happens with more advanced formulas). To correct the #NAME? error message, check your spelling and that every part in your formula was properly written.

#VALUE!

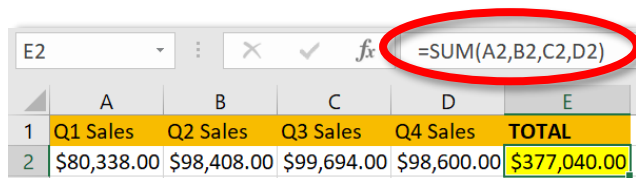
The #VALUE! message typically shows when there is something wrong with the cells that Excel is referencing. The #NAME? occurs when you have an error with your formula, but the #VALUE! error message shows when you have an error somewhere in the cell that you're referencing. For example, let's say that you're trying to add cells together but one of the cells has a space (which is very hard to notice) in front of the number. In this case, Excel will bring up the #VALUE! error message. This error message may also pop up when Excel is referencing a cell where it expects a digit, but there is something else other than a digit in that cell. To correct the #VALUE! formula, make sure to check the cells that are referenced for any misspellings or spaces.



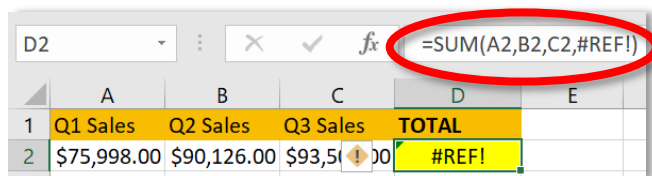
	A	B	C	D	E
1	#VALUE!	A	4		
2					

#REF!

The #REF! error occurs when you have removed a cell that Excel was referencing in one of your formulas. For example, if you use a formula that reads from Cell A4, and later you delete Column A in its entirety, then Excel will show you the #REF! error message because it can no longer reference Cell A4. This error is also common when using formulas that read from other Excel files. As soon as that file that Excel is referencing goes away, you may get a #REF! error message. To fix this error message, you can get rid of your formula by copying/pasting special values or add the sheet from another file to your current Excel file so that they are in the same workbook.



	A	B	C	D	E
1	Q1 Sales	Q2 Sales	Q3 Sales	Q4 Sales	TOTAL
2	\$80,338.00	\$98,408.00	\$99,694.00	\$98,600.00	\$377,040.00



	A	B	C	D	E
1	Q1 Sales	Q2 Sales	Q3 Sales	TOTAL	
2	\$75,998.00	\$90,126.00	\$93,510.00	#REF!	