

I WILL TEACH YOU

Excel



Master Excel, surpass
your co-workers and
impress your boss!

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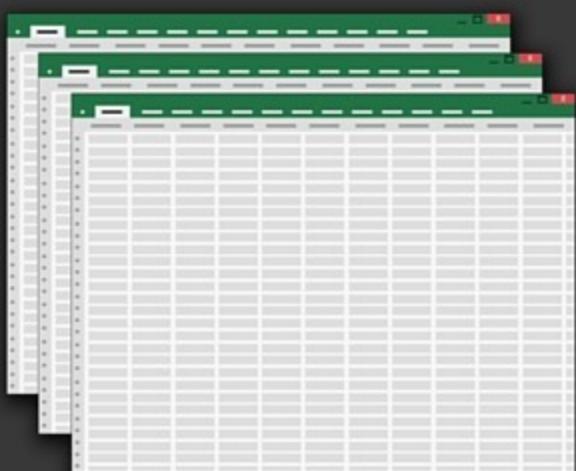
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Thank You Readers



As a Thank you for downloading my book
you get:

- ✓ All the Excel Files used in this book
- ✓ A FREE copy of my latest book about Google Sheets

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Introduction

Why I wrote this book
and what to expect

Introduction

Excel has made things a heck of a lot easier for me in my professional career.

When I was fresh out of college I was barely a week into my first accounting job when my manager asked me to complete a project that involved some heavy excel usage. In fact, my manager specifically asked me to cross-reference two lists using a VLOOKUP. I enthusiastically obliged to the request, walked back to my desk, and proceeded to panic. I tricked myself into thinking that I was an excel expert only because I knew a few formulas, but the truth was that my limited knowledge only scratched the surface of what it meant to be a real pro.



I turned to my closest college friend, the one who was there for me when I needed just the right information; Google. I watched videos and read tons of blog posts with titles like: “*108 Excel functions you MUST know Today*”, or “Everything you need to know about VLOOKUPS”. There were (still are) a lot for great excel resources out there, but most of them were too broad in scope. Most of the material I read through didn’t apply to me.

I eventually managed to learn what I needed (after a lot of time); but I realized that the content out there is mostly poor quality which forces people to sift through countless web pages and videos just to find something useful.

That's why I decided to write this book. My goal here is to give you the necessary information you need in a concise manner and take you from excel novice to guru in the shortest time possible. I know that you're a busy person so I broke everything down into easy to read chapters so that you can skip right to the parts you need the most help in and master those first. I've also included all the workbooks that go along with the lessons, for free, on my website <http://www.iwillteachyouexcel.com/book-bonuses>.

Getting Started

The one thing I ask of you is to put in the time practicing the examples. The most effective way of mastering excel is to get in and get your hands dirty. Pick a few functions and practice them as many times as you can throughout your day while you're using excel. Once you feel comfortable using those functions learn a few more. Before you know it, co-workers will be coming to you for excel help and your boss will be impressed with your newfound skills.

To my readers, followers, and subscribers thank you for all your support. I hope that the hard work I put into building this guide for you helps you become better at excel and, as a result, better at your jobs. Cheers to your success!

Keyboard Shortcuts

Master this, and you'll
already be ahead of
the crowd

Chapter One

Keyboard Shortcuts

Master this, and you'll already be ahead

Whether you're an excel rookie or a black belt, keyboard shortcuts are one of the fundamental things you should learn. If you can master just a few of the shortcuts in this section, you will immediately notice a difference in the way you use excel.

Don't expect yourself to learn every single keyboard shortcut in this section though; always strive for quality and not quantity. I'd rather you master 4 or 5 shortcuts you feel are most useful to you than to be familiar with 12 or 13 of them. You'll never master them that way and you won't get much out of this book.

My suggestion is to start by choosing 3 shortcuts that you find most useful; ones that would add the most efficiency to your day-to-day. Use those shortcuts every single day at every opportunity; learn through repetition and master through consistent habit. Eventually you'll notice yourself naturally using those shortcuts without much thought. Once this happens, learn a few more and repeat the process.

Before you realize it, people will be watching you in awe and disbelief while you operate excel from just your keyboard. The list below includes some of the shortcuts I find that are most useful to me and to anyone I've helped learn excel.

Description	Keyboard Shortcut
Delete Row/Column	Highlight Row/Column then Ctrl + ‘_’
New Workbook	Ctrl + N
Close Active Workbook	Ctrl + W
Undo	Ctrl + Z (My Life Saver)

Description	Keyboard Shortcut
Insert Row/Column	Highlight Row/Column then Ctrl + ‘+’
Find	Ctrl + F
Save as	F12
Find and Replace	Ctrl + H
Insert Hyperlink	Ctrl + K
Repeat last action	Ctrl + Y
Paste Values	After pasting data (Ctrl + V), press Ctrl then ‘V’ sequentially
Move to edge of data region	Ctrl + Arrow Key
Move to first cell in worksheet	Ctrl + Home
Switch between tabs	Ctrl + PgUp/PgDn
Highlight Multiple Cells	Shift + Arrow Key
Extend selection to edge of data region	Shift + Ctrl + Arrow Key
Select non-adjacent cells	Ctrl + Click
Select Visible Cells in a data set	Highlight then Alt + ;
Highlight Entire Row	Shift + Space
Highlight Entire Column	Ctrl + Space

Description	Keyboard Shortcut
Autocomplete the function name.	Press Tab on your keyboard when you begin typing a function and excel displays the suggested functions dialogue box.
<i>For example, when you start typing a function (ie. '=VLOO') excel will suggest a function to use. Hit Tab and excel will complete the function and enter an open parenthesis (ie. '=VLOOKUP(')</i>	
Toggle Absolute vs. Relative Reference	F4 while entering formula and you have cursor on the cell reference
Open the paste special dialogue box	Ctrl + Shift + V
This is the dialogue box that appears when you perform a paste special.	
Open Formatting Dialogue Box	Ctrl + 1
Toggle between displaying cell values and formulas.	Ctrl + `
Use Bold, Italics, Underline	Ctrl + B (Bold) Ctrl + I (Italics) Ctrl + U (Underline)
Number Formatting	Ctrl + Shift + ~ (General) Ctrl + Shift + \$ (Currency) Ctrl + Shift + % (Percentage) Ctrl + Shift + ^ (Scientific) Ctrl + Shift + # (Date) Ctrl + Shift + @ (Time) Ctrl + Shift + ! (Number)

Absolute vs Relative Reference

Simple
yet easy to forget...

Chapter Two

Absolute vs Relative References

This is simple, but easy to forget...

From my experience teaching excel, one of the most common mistakes are related to misusing absolute and relative cell references. The funny thing is lots of people are familiar with the concept and how to properly reference cells, but fail to implement the proper protocols when writing formulas! This drives me CRAZY!!

If you ever used a function that worked properly at first and then broke when you dragged it down or across, then this is the section for you! If you have no idea what I've been talking about, then this is DEFINITELY the section for you!!

...ok, enough ranting...

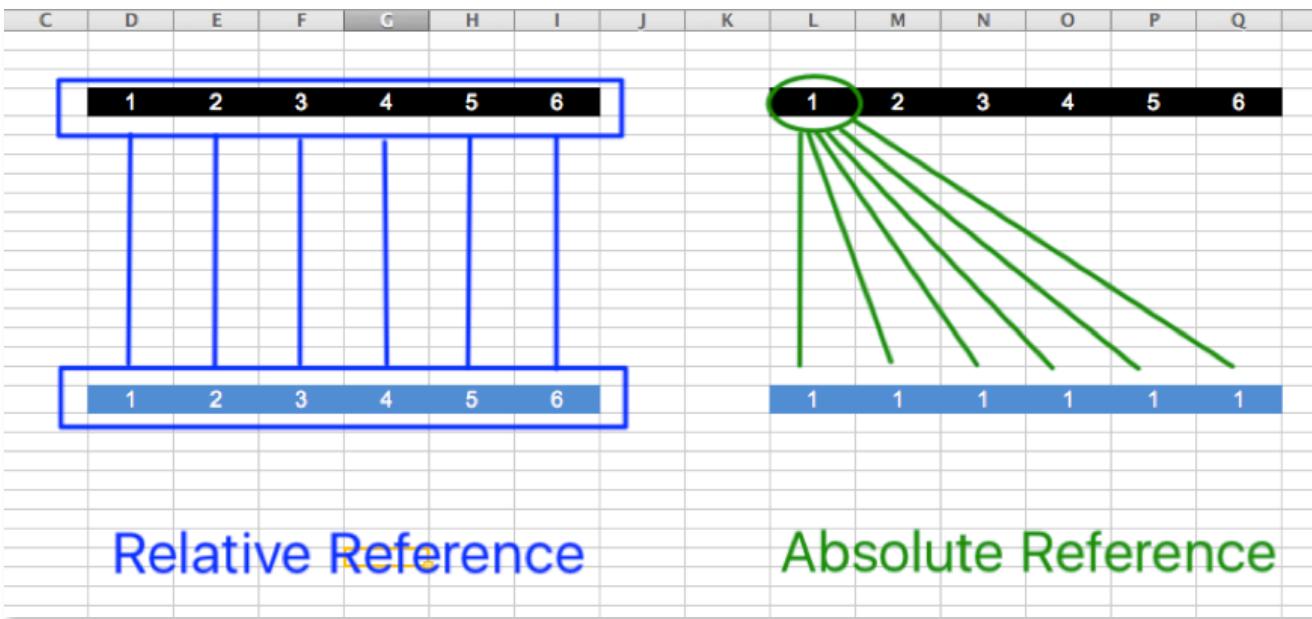
How it works

The types of cell references you use in excel are important because they offer an added level of flexibility when you want to automate reports (more on that later).

Relative Cell Reference	Absolute Cell Reference
=D4	=\$D\$4

When you use a relative reference, the cell reference shifts along with location of your formula. In others words, if you drag your formula to another cell, the cell reference will shift relative to the formula you're dragging.

The opposite happens when you use an absolute reference; no matter where you drag or copy your formula to, your cell reference will remain in place.



All of this may seem simple, and it is. Just because its simple though doesn't mean you should treat it as an afterthought. Many people, myself included, start writing formulas only to realize later that their formulas are pointed to the wrong cells because they dragged (or copied) it over to a new location and used the wrong cell reference.

There is a third reference type; mixed reference:

Absolute Reference:
Columns and row
position don't
change when copied

=**D\$4**

Mixed Reference:
The row position
doesn't change but
the column
position does

=**D\$4**

Mixed Reference:
The column
position changes
but the row
position doesn't

=**\$D4**

To switch from absolute to relative reference, you can press F4 on your keyboard as you're entering your formula or function. If you've already written your formula no worries; just click on the cell reference you want to change (in the formula bar) and press F4.

Lets get Practical

In the example below, we are analyzing the sales tax applied to breakfast items in different counties. Here, we entered the correct formula in cell E3, but we forgot to change the cell reference types to absolute. Here is what happens when we drag the formula down:

A	B	C	D	E	F	G	H
1			Price		Tax		
2	Product	Price	Qty 5	6%	7%	8%	Total (7% Tax)
3	Milk	\$ 3.99	\$ 19.95	=D3*E2			
4	Eggs	\$ 3.50	\$ 17.50				
5	Orange Juice	\$ 2.99	\$ 14.95				
6	Bread	\$ 2.50	\$ 12.50				
7	Fruit Salad	\$ 4.90	\$ 24.50				
8	Bacon	\$ 5.99	\$ 29.95				
9	Ham	\$ 5.99	\$ 29.95				
10	Cheese	\$ 2.50	\$ 12.50				
11	French Toast	\$ 4.99	\$ 24.95				
12	Maple Syrup	\$ 3.49	\$ 17.45				
13							
14							

A	B	C	D	E	F	G	H
1			Price		Tax		
2	Product	Price	Qty 5	6%	7%	8%	Total (7% Tax)
3	Milk	\$ 3.99	\$ 19.95	\$ 1.20			
4	Eggs	\$ 3.50	\$ 17.50	\$ 20.95			
5	Orange Juice	\$ 2.99	\$ 14.95	\$ 313.17			
6	Bread	\$ 2.50	\$ 12.50	\$ 3,914.56			
7	Fruit Salad	\$ 4.90	\$ 24.50	\$ 95,906.82			
8	Bacon	\$ 5.99	\$ 29.95	\$ 2,872,409.24			
9	Ham	\$ 5.99	\$ 29.95	\$ 86,028,656.89			
10	Cheese	\$ 2.50	\$ 12.50	\$ 1,075,358,211.08			
11	French Toast	\$ 4.99	\$ 24.95	=D11*E10			
12	Maple Syrup	\$ 3.49	\$ 17.45	\$ 468,186,769,545.46			
13							
14							

Not fun (unless you are planning on selling ham for over \$86 million, in which case you have nothing to worry about).

Lets see what happens when we turn reference to cell E2 into an absolute reference.

Something is definitely wrong! Not only are we still using 6% tax (instead of 7%) but we're also multiplying it by the wrong amount (\$1.50, E11).

This happened because we needed a mixed reference instead of an absolute one. For the tax part of the calculation, we need the reference to shift horizontally along the row but not vertically along the column. We accomplish this by writing the dollar symbol before the row reference (ie. A\$1)

For the price we need the opposite, the formula should shift along the column vertically but not horizontally. We need to enter the dollar symbol next to the column reference so we can lock it in place (ie. \$A1). Here's a summary:

Reference	Description
A\$1	Locks the row but not the column.
\$A2	You can drag the formula horizontally and the reference will shift as well, but not vertically.

Lets apply this to our report and see what happens.

A	B	C	D	E	F	G	H
1	Product	Price	Price Qty 5		Tax		Total (7% Tax)
2				6%	7%	8%	
3	Milk	\$ 3.99	\$ 19.95	\$	1.20	\$ 1.40	
4	Eggs	\$ 3.50	\$ 17.50	\$	1.05	\$ 1.23	
5	Orange Juice	\$ 2.99	\$ 14.95	\$	0.90	\$ 1.05	
6	Bread	\$ 2.50	\$ 12.50	\$	0.75	\$ 0.88	
7	Fruit Salad	\$ 4.90	\$ 24.50	\$	1.47	\$ 1.72	
8	Bacon	\$ 5.99	\$ 29.95	\$	1.80	\$ 2.10	
9	Ham	\$ 5.99	\$ 29.95	\$	1.80	\$ 2.10	
10	Cheese	\$ 2.50	\$ 12.50	\$	0.75	\$ 0.88	
11	French Toast	\$ 4.99	\$ 24.95	\$	1.50	= \$D11 * F\$2	
12	Maple Syrup	\$ 3.49	\$ 17.45	\$	1.05	\$ 1.22	
13							
14							

It works! Now we can drag the formula across to the next column.

A	B	C	D	Price			E	Tax			H
				Product	Price	Qty 5		6%	7%	8%	
1	Milk	\$ 3.99	\$ 19.95	\$				1.20	\$ 1.40	\$ 1.60	
2	Eggs	\$ 3.50	\$ 17.50	\$				1.05	\$ 1.23	\$ 1.40	
3	Orange Juice	\$ 2.99	\$ 14.95	\$				0.90	\$ 1.05	\$ 1.20	
4	Bread	\$ 2.50	\$ 12.50	\$				0.75	\$ 0.88	\$ 1.00	
5	Fruit Salad	\$ 4.90	\$ 24.50	\$				1.47	\$ 1.72	\$ 1.96	
6	Bacon	\$ 5.99	\$ 29.95	\$				1.80	\$ 2.10	\$ 2.40	
7	Ham	\$ 5.99	\$ 29.95	\$				1.80	\$ 2.10	\$ 2.40	
8	Cheese	\$ 2.50	\$ 12.50	\$				0.75	\$ 0.88	\$ 1.00	
9	French Toast	\$ 4.99	\$ 24.95	\$				1.50	\$ 1.75	=\\$D11*G\$2	
10	Maple Syrup	\$ 3.49	\$ 17.45	\$				1.05	\$ 1.22	\$ 1.40	
11											
12											
13											
14											
15											

Using the right cell reference is key when building out reports of any kind. It took me a while to get used to the different reference types. When I finally felt like I knew it like the back of my hand it made me more efficient and quick at building reports and dashboards. Staring at this book won't help though; go out and start practicing in excel!

SUM

Add Numbers Quickly!

Chapter Three

The SUM Function

Add numbers quickly!

Of all the functions in excel, SUM is probably one of the most widely used. As the name suggests, it is used to sum, or total, numbers together. If you are familiar with this function feel free and skip this section. If not, you're going to want to pay attention.

Believe it or not, I've seen some excel users who add up a range of values by directly reference each of those values, one by one, in a long string. I'll be humble enough to admit that I've committed this sin when I was first learning how to use excel. Excel pros don't do this!

If you are used to working this way, you're probably asking, "Why *can't* I just continue doing this?"

Because its inefficient, prone to errors, and doesn't scale with your data! Imagine if you had 2,000 lines in your spreadsheet; will you sit there for hours manually inserting each reference? I don't think so.

...Enter SUM

A	B	C	D
1	Product Number	Amount	
2	Product # 1	87	
3	Product # 2	55	
4	Product # 3	51	
5	Product # 4	39	
6	Product # 5	17	
7	Product # 6	47	
8	Product # 7	63	
9	Product # 8	83	
10	Product # 9	17	
11	Product # 10	59	
12	Product # 11	67	
13	Product # 12	89	
14	Product # 13	58	
15	Product # 14	85	
16	Product # 15	28	
17	Product # 16	20	
18	Product # 17	27	
19	Product # 18	14	
20	Product # 19	48	
21	Product # 20	78	
22	Product # 21	84	
23	Product # 22	57	
24	Product # 23	19	
25			
26	Total	=SUM(B2:B24)	
27		SUM(number1, [number2], ...)	
28			
29			

All you have to do is enter the range of cells you want to add inside the SUM function, and you're all set! It's one of the easiest functions to learn and use, and will probably save you lots of time.

Pro tip: you can sum up different ranges by holding control on your keyboard and selecting them with your cursor separately.

AVERAGE

One-hit Averages

Chapter Four

The AVERAGE Function

One-hit Averages!

Just like anything else in excel there are more than one way to accomplish something, and averaging values is no different. The AVERAGE function helps you accomplish this efficiently and it works the same way as SUM. Again, if you're familiar with the AVERAGE function then you can skip this section.

Lets get Practical

You are analyzing summarized sales data for your company's product lines by month and you need to finish the analysis by finding the average monthly sale for each product.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1	Product Name	Jan 2015	Feb 2015	Mar 2015	Apr 2015	May 2015	Jun 2015	Jul 2015	Aug 2015	Sep 2015	Oct 2015	Nov 2015	Dec 2015	Total Sales	Average Monthly Sale
2	Product # 1	\$ 7,344	\$ 14,393	\$ 5,938	\$ 3,393	\$ 6,939	\$ 9,251	\$ 14,090	\$ 14,662	\$ 5,796	\$ 8,407	\$ 11,361	\$ 2,652	\$ 104,226	
3	Product # 2	\$ 13,857	\$ 13,156	\$ 11,791	\$ 7,921	\$ 13,308	\$ 6,607	\$ 7,028	\$ 10,128	\$ 7,628	\$ 3,694	\$ 9,031	\$ 12,233	\$ 116,382	
4	Product # 3	\$ 4,082	\$ 11,623	\$ 8,700	\$ 8,647	\$ 14,840	\$ 14,270	\$ 1,069	\$ 6,414	\$ 12,123	\$ 4,148	\$ 2,517	\$ 3,398	\$ 91,829	
5	Product # 4	\$ 1,227	\$ 12,519	\$ 8,126	\$ 13,832	\$ 4,828	\$ 5,475	\$ 12,176	\$ 7,146	\$ 5,964	\$ 7,859	\$ 14,474	\$ 5,291	\$ 98,917	
6	Product # 5	\$ 5,077	\$ 9,175	\$ 5,609	\$ 1,314	\$ 7,190	\$ 6,503	\$ 13,634	\$ 8,013	\$ 3,510	\$ 6,026	\$ 3,998	\$ 10,143	\$ 80,192	
7	Product # 6	\$ 9,668	\$ 14,679	\$ 1,475	\$ 5,781	\$ 6,210	\$ 7,631	\$ 14,238	\$ 9,634	\$ 11,750	\$ 7,158	\$ 14,599	\$ 14,609	\$ 117,432	
8	Product # 7	\$ 8,591	\$ 6,177	\$ 7,459	\$ 3,018	\$ 11,904	\$ 8,222	\$ 6,496	\$ 1,791	\$ 9,544	\$ 2,510	\$ 8,573	\$ 8,183	\$ 82,468	
9	Product # 8	\$ 14,628	\$ 2,444	\$ 11,426	\$ 13,653	\$ 9,453	\$ 12,721	\$ 14,156	\$ 4,971	\$ 2,048	\$ 1,595	\$ 8,186	\$ 13,578	\$ 108,853	
10	Product # 9	\$ 11,666	\$ 2,037	\$ 11,037	\$ 1,182	\$ 4,783	\$ 7,843	\$ 6,153	\$ 8,887	\$ 10,039	\$ 5,359	\$ 11,683	\$ 6,583	\$ 87,252	
11	Product # 10	\$ 2,354	\$ 14,129	\$ 12,984	\$ 1,092	\$ 1,133	\$ 2,340	\$ 6,787	\$ 10,711	\$ 11,541	\$ 5,791	\$ 14,874	\$ 4,092	\$ 87,828	
12	Product # 11	\$ 2,284	\$ 12,021	\$ 8,362	\$ 2,508	\$ 13,153	\$ 14,825	\$ 5,327	\$ 1,735	\$ 5,463	\$ 7,572	\$ 4,671	\$ 1,342	\$ 79,263	
13	Product # 12	\$ 5,418	\$ 9,767	\$ 13,265	\$ 5,137	\$ 7,951	\$ 7,199	\$ 11,962	\$ 5,583	\$ 11,116	\$ 14,780	\$ 3,060	\$ 11,793	\$ 107,031	
14	Product # 13	\$ 2,305	\$ 4,605	\$ 2,349	\$ 6,318	\$ 1,251	\$ 11,292	\$ 5,133	\$ 5,416	\$ 13,847	\$ 5,861	\$ 13,454	\$ 12,511	\$ 84,342	
15	Product # 14	\$ 13,622	\$ 9,874	\$ 3,376	\$ 2,981	\$ 9,423	\$ 11,129	\$ 11,987	\$ 14,941	\$ 14,805	\$ 12,100	\$ 6,434	\$ 8,567	\$ 119,239	
16	Product # 15	\$ 5,831	\$ 2,550	\$ 3,619	\$ 9,833	\$ 3,426	\$ 4,064	\$ 6,052	\$ 4,796	\$ 12,293	\$ 14,416	\$ 6,208	\$ 12,416	\$ 85,504	
17	Product # 16	\$ 6,683	\$ 13,153	\$ 6,202	\$ 10,160	\$ 6,337	\$ 11,490	\$ 1,982	\$ 5,650	\$ 11,852	\$ 1,037	\$ 5,091	\$ 12,121	\$ 91,758	
18	Product # 17	\$ 13,619	\$ 14,039	\$ 13,278	\$ 11,264	\$ 3,841	\$ 6,809	\$ 9,753	\$ 8,362	\$ 12,333	\$ 1,364	\$ 5,247	\$ 12,813	\$ 112,722	
19															

The common way to accomplish this would be to simply take the totals and divide by 12 (or use a SUM function and divide the result by 12 in the same formula). The AVERAGE function would accomplish this for you and is more efficient since you're not using other functions as a bridge to get to your result. Another benefit is that your data will scale better by using the AVERAGE function. Believe it or not, when you are dealing with thousands of lines of data the efficiency of using AVERAGE begins to add up!

K	L	M	N	O	P
Oct 2015	Nov 2015	Dec 2015	Total Sales	Average Monthly Sale	
8,407	\$ 11,361	\$ 2,652	\$ 104,226	=average(B2:M2)	
3,694	\$ 9,031	\$ 12,233	\$ 116,382	AVERAGE(number1, [number2], ...)	
4,148	\$ 2,517	\$ 2,208	\$ 91,833		

Just type AVERAGE and enter the data range you want to average into the function. It's that simple.

SUBTOTAL

Totals for
Filtered Lists

Chapter Five

SUBTOTAL

Total Filtered Lists

I find SUBTOTAL to be a wild card function, so to speak. You can use SUBTOTAL in many different ways (Adding, counting, averaging, etc.), but the most usefulness I get out of this function is to use it in a long list that has filters applied because the SUBTOTAL function ignores hidden values.

Lets get Practical

Lets look at the following table

	A	B	C	D	E
1		Price	Qty	Total	
2	Product #1	\$ 1.00	2	\$ 2.00	
3	Product #2	\$ 4.00	3	\$ 12.00	
4	Product #3	\$ 5.00	6	\$ 30.00	
5	Product #4	\$ 3.00	5	\$ 15.00	
6	Product #5	\$ 3.00	7	\$ 21.00	
7	Product #6	\$ 5.00	10	\$ 50.00	
8	Product #7	\$ 5.00	3	\$ 15.00	
9	Product #8	\$ 3.00	5	\$ 15.00	
10	Product #9	\$ 5.00	6	\$ 30.00	
11	Product #10	\$ 2.00	5	\$ 10.00	
12					
13	Total (SUM)	\$ 36.00	52	\$ 200.00	
14					
15	Total (SUBTOTAL)	\$ 36.00	52	\$ 200.00	
16					
17					

In the table above, both SUM and SUBTOTAL gives us the same result. Now, lets filter out any products containing an odd number!

A	B	C	D	E
1	Price	Qty	Total	
3 Product #2	\$ 4.00	3	\$ 12.00	
5 Product #4	\$ 3.00	5	\$ 15.00	
7 Product #6	\$ 5.00	10	\$ 50.00	
9 Product #8	\$ 3.00	5	\$ 15.00	
11 Product #10	\$ 2.00	5	\$ 10.00	
12				
13 Total (SUM)	\$ 36.00	52	\$ 200.00	
14				
15 Total (SUBTOTAL)	\$ 17.00	28	\$ 102.00	
16				
17				
18				

See what happened? The SUM function calculates the total for the entire list, but SUBTOTAL ignores what we've filtered (aka hidden values) and gives us totals for *only what is visible*.

The Syntax

Great thing about SUBTOTAL is you can use it for lots of different calculations other than totaling numbers. Lets look at the function's components:

=SUBTOTAL(function number, value reference)

Function number – Here you enter a number indicating which math operation you want to use for the SUBTOTAL. You can find averages, count blank or non-blank cells, add, or any number of other things. The table below tells you what each of the most common number functions do:

Function Number	Function
1	AVERAGE
2	COUNT
3	COUNTA (Count non-blank cells)
4	MAX (Finds largest number)
5	MIN (Finds smallest number)
6	PRODUCT
7	STDEV
8	STDEVP
9	SUM
10	VAR
11	VARP

Value reference – This is the range of data you want SUBTOTAL to analyze.

Lets see how SUBTOTAL was used in our example:

A	B	C	D	E
1	Price	Qty	Total	
3 Product #2	\$ 4.00	3	\$ 12.00	
5 Product #4	\$ 3.00	5	\$ 15.00	
7 Product #6	\$ 5.00	10	\$ 50.00	
9 Product #8	\$ 3.00	5	\$ 15.00	
11 Product #10	\$ 2.00	5	\$ 10.00	
12				
13 Total (SUM)	\$ 36.00	52	\$ 200.00	
14				
15 Total (SUBTOTAL)	=SUBTOTAL(9,B2:B11)		\$ 102.00	
16				SUBTOTAL(function_num, ref1, [ref2], ...)
17				
18				

You'll notice that I used function number 9, SUM in order to get the totals for my list. This function is really useful for me when I'm analyzing large quantities of data because I can get live totals as I'm filtering.

COUNT

You can even count
Sheep with this

Chapter Six

COUNT

You can even count sheep with this

I'm not talking about this guy...



Sometimes we just need to count things. Excel provides huge efficiencies with its counting functions; COUNT, COUNTA, COUNTBLANK. There are plenty of functions that I tend to combine with others in order to create super-formulas, and the COUNT functions are no different.

Each of these functions works the same way; type the function and enter the data range you want to evaluate. What matters here is which function you use.

How it Works

COUNT – Counts the cells containing numbers and returns a value

COUNTBLANK – Counts the number of blank cells in a data range

COUNTA – Counts the number of non-blank cells in a data range

Lets Get Practical

In our example, we have a small list of toy car sales made throughout the year. The list indicates the color of the car sold, the sales date and price, and the region the sale was made.

A	B	C	D	E	F
1					
6	Unit Color	Sale Date	Sale Amount	Sale Region	
7	Blue	1/2/2016	\$ 31	New York	
8	Yellow	1/4/2016	\$ 22	Miami	
9	Blue	1/4/2016	\$ 30	Miami	
10	Red	1/12/2016		Miami	
11	Blue	1/14/2016	\$ 25	Miami	
12	Blue	1/20/2016	\$ 22	Miami	
13	Yellow	1/23/2016	\$ 28	Los Angeles	
14	Yellow	2/5/2016	\$ 32	Los Angeles	
15	Orange	2/6/2016	\$ 35	Los Angeles	
16	Green	2/7/2016	\$ 29	Los Angeles	
17	Red	2/10/2016	\$ 35	Los Angeles	
18	Blue	2/15/2016	\$ 35	New York	
19	Blue	2/18/2016		Los Angeles	
20	Green	2/18/2016	\$ 28	Miami	
21	Yellow	2/18/2016	\$ 35	Los Angeles	
22	Red	3/2/2016	\$ 21	Miami	
23	Red	3/3/2016	\$ 28	Miami	
24	Blue	3/3/2016	\$ 21	New York	
25	Green	3/7/2016		Los Angeles	
26	Blue	3/7/2016	\$ 30	Miami	
27	Yellow	3/28/2016	\$ 27	Chicago	
28	Red	4/4/2016	\$ 24	Los Angeles	
29	Green	4/5/2016	\$ 33	Los Angeles	
30		4/6/2016	\$ 26	Chicago	
31	Yellow	4/7/2016	\$ 22	Chicago	
32	Orange	4/13/2016	\$ 25	New York	
33		5/2/2016	\$ 33		
34		5/15/2016		Los Angeles	
35	Red	5/17/2016	\$ 34	New York	
36	Red	5/18/2016	\$ 25	Los Angeles	
37	Blue	5/27/2016	\$ 22	New York	
38	Yellow	6/5/2016	\$ 24	Miami	
39	Green	6/13/2016	\$ 32	Miami	
40	Orange	6/14/2016	\$ 28	New York	

If you look closely you'll notice that there is missing data; your day just keeps getting better! Just use COUNTBLANK to count the number of times a blank cell exists in a list. This can help you zero in on the problem and fill the gaps.

	A	B	C	D	E
1					
2	COUNTBLANK: # of Blank Cells	7	2	8	5
3	Unit Color	Sale Date	Sale Amount	Sale Region	
6	Blue	1/2/2016	\$ 31	New York	
7	Yellow	1/4/2016	\$ 22	Miami	
8	Blue	1/4/2016	\$ 30	Miami	
9	Red	1/12/2016		Miami	
10	Blue	1/14/2016	\$ 25	Miami	
11	Blue	1/20/2016	\$ 22	Miami	
12	Yellow	1/23/2016	\$ 28	Los Angeles	
13	Yellow	2/5/2016	\$ 32	Los Angeles	
14	Orange	2/6/2016	\$ 35	Los Angeles	
15	Green	2/7/2016	\$ 29	Los Angeles	
16					

How many non-blank cells are there?

	A	B	C	D	E
1					
2	COUNTBLANK: # of Blank Cells	7	2	8	5
3	COUNTA: # of Non-Blank Cells	61	66	60	63
6	Unit Color	Sale Date	Sale Amount	Sale Region	
7	Blue	1/2/2016	\$ 31	New York	
8	Yellow	1/4/2016	\$ 22	Miami	
9	Blue	1/4/2016	\$ 30	Miami	
10	Red	1/12/2016		Miami	
11	Blue	1/14/2016	\$ 25	Miami	
12	Blue	1/20/2016	\$ 22	Miami	

How many cells containing numbers do we have?

	A	B	C	D	E
1					
2	COUNTBLANK: # of Blank Cells	7	2	8	5
3	COUNTA: # of Non-Blank Cells	61	66	60	63
4	COUNT: # of Cells containing Numbers	0	66	60	0
5					
6		Unit Color	Sale Date	Sale Amount	Sale Region
7		Blue	1/2/2016	\$ 31	New York
8		Yellow	1/4/2016	\$ 22	Miami
9		Blue	1/4/2016	\$ 30	Miami
10		Red	1/12/2016		Miami
11		Blue	1/14/2016	\$ 25	Miami
12		Blue	1/20/2016	\$ 22	Miami
13		Yellow	1/23/2016	\$ 28	Los Angeles

You can look at your data any number of ways using these COUNT functions. The important thing to remember is that although these functions are useful by themselves, they can be leveraged for much more powerful analysis when you combine them with other functions, especially some of the more advanced ones we discuss in later chapters.

ROUNDING

No More Rounding
Differences (Sort of)

Chapter Seven

ROUNDING FUNCTIONS

No More Rounding Differences (Sort of)

If you use excel enough you'll notice that after you make a decently complicated calculation, excel gives you the result in its entirety. The thing is, you don't usually notice it until you're dealing with a large amount of data and the totals don't quite add up to the total you were expecting. Rounding differences are something that most of us deal with, but excel provides a few useful rounding functions to help you in various situations.

In case you're not sure what I mean by rounding differences, here is an example:

Lets do some basic arithmetic. 933 divided by 7 equals 133.29; right? If you are applying standard formatting (like accounting or number) to the cell, excel might just display the number rounded by two decimal places:

\$	933.00
÷	7
\$	133.29

Don't judge a book by its cover though; the actual value that excel stores in this cell is much more precise.

\$	933.00
÷	7
\$	133.28571428571

Don't worry, excel has been lying to us all this whole time. If you're adding thousands of these numbers; those tiny decimal values begin to add up! One thing you could do that might help you get around this is you can instruct excel to round the numbers after a certain point using ROUND:

The Syntax

ROUND – Rounds digits either up or down using the standard rules (ie. equals to or greater than 5 round up, less than 4 round down).

ROUNDUP – Rounds digits up to the nearest place

ROUNDDOWN – Rounds digits down to the nearest place

MROUND – Rounds digits either up or down to the nearest multiple, depending on which multiple you select.

Lets take a closer look at the function syntax:

ROUND/ROUNDDOWN/ROUNDUP (Number, Number of digits)

Number – Any real number you want to be rounded

Number of Digits – The number of digits after or before the decimal place to which you want to round the number

Lets Get Practical

Function	Description	Result
=ROUND(133.285714, 2)	Rounds 133.285714 to 2 decimal places	133.29
=ROUND(21.5, -1)	Rounds 21.5 to one decimal place to the left of the decimal point	20
=ROUNDDOWN(3.9, 0)	Rounds 3.9 down to zero decimal places.	3
=ROUNDUP(3.12, 1)	Rounds 3.12 up to one decimal place.	3.2

MROUND(number, multiple)

Number - Any real number you want to be rounded

Multiple - The multiple to which you want to round number.

Function	Description	Result
=MROUND(23, 5)	Rounds 23 to the nearest multiple of 5	25
=MROUND(11, 3)	Rounds 11 to the nearest multiple of 3	12
=MROUND(345, 100)	Rounds 345 to the nearest multiple of 100	300

This can come in handy when you're analyzing large quantities of data, doing statistical analysis, or you're just trying to format data a certain way. Keep these functions in mind because they'll be useful when you least expect them to be.

SUMIFS - AVERAGEIFS - COUNTIFS

Make Intelligent Calculations

Chapter Eight

SUMIFS, AVERAGEIFS, COUNTIFS

Make Intelligent Calculations

These three functions can be some of the most robust and powerful functions in excel and a strong addition to your arsenal. We'll discuss all three but this chapter's examples will focus on discussing SUMIFS since it is the most widely used out of the three and once you master one, you master them all.

The purpose for using SUMIFS is simple; you have a list of numbers and you need to total using different categories. For example, you have a long list of sales broken down by day; what were the total sales made on Mondays and Wednesdays?

First, i'll show you the syntax for this function, then we'll dive deeper and discuss how to use them with some examples.

The Syntax

```
=Sumifs(Sum Range, Criteria Range, Criteria)
```

```
=Averageifs(Average Range, Criteria Range, Criteria)
```

```
=Countifs(Criteria Range, Criteria)
```

Sum Range/Average Range – In order to begin writing your function you will select the range of numbers you want to add or average. The data set you will use for this is usually located in a singular column.

Criteria Range – *Criteria Range* may sound confusing, but it's really no big deal. This is the range that contains the categories you want to use for your function. Do you have a column that contains employee names, names of cities or states, billing statuses, age, etc.? All you have to do is select this range; excel will need it to determine which adjacent cells to add, count, or average (based on your next instruction).

Criteria – You’re almost done! Remember the category range you used in the last part? This time, you will tell excel exactly which of these criteria (aka categories) you want it to use when executing the formula.

How SUMIFS works

The great thing about SUMIFS (and why I never use its inferior sibling, SUMIF) is that you can total using multiple categories in your function, providing greater flexibility when you are building reports and dashboards. Need sales numbers for individual employees broken down by region *and* by month? Need a dashboard that tells you which collectors are making the most calls per week? Or, Maybe you are building a Profit & Loss statement for your cousin’s wedding stationary business? SUMIFS has you covered for that and more!

How COUNTIFS works

COUNTIFS is useful whenever you need to count something, obviously! From my experience, I tend to use it more when I’m nesting it with another function to create mega-useful formulas. For example; I want to get a count of total employees by department. Without COUNTIFS I would need to count, manually, how many employees in my list are tagged to each department. COUNTIFS allows me to save time because that’s essentially what it’s doing.

What happens if you add a new employee later? You can setup COUNTIFS to automatically count that employee and any future ones that are added. It will do the work for you without you ever breaking a sweat!

How AVERAGEIFS works

Just like SUMIFS, AVERAGEIFS uses multiple categories to average a set of numbers. Remember that sales report you needed, broken down by region and month? Well, now you can also add averages and provide even more insight on the sales staff.

Lets get Practical with SUMIFS

You are working for a company that develops mobile apps for the iPhone and you have generated a list of daily download numbers for three of the company’s apps: Fire Red, Water Blue, and Earth Brown.

	A	B	C	D
1	App Name	Day	Downloads	Total YTD
2	Fire Red App	1/1/16	812	812
3	Water Blue App	1/1/16	205	1,017
4	Earth Brown App	1/1/16	220	1,237
5	Fire Red App	1/2/16	541	1,778
6	Water Blue App	1/2/16	254	2,032
7	Earth Brown App	1/2/16	80	2,112
8	Fire Red App	1/3/16	869	2,981
9	Water Blue App	1/3/16	264	3,245
10	Earth Brown App	1/3/16	99	3,344
11	Fire Red App	1/4/16	534	3,878
12	Water Blue App	1/4/16	378	4,256
13	Earth Brown App	1/4/16	102	4,358
14	Fire Red App	1/5/16	848	5,206
15	Water Blue App	1/5/16	264	5,470
16	Earth Brown App	1/5/16	64	5,534
17	Fire Red App	1/6/16	639	6,173
18	Water Blue App	1/6/16	404	6,577
19	Earth Brown App	1/6/16	67	6,644
20	Fire Red App	1/7/16	594	7,238
21	Water Blue App	1/7/16	471	7,709

You need to get total downloads for Fire Red between 06/01/16 and 06/15/16, broken down by day.

	A	B	C	D	E	F	G	H	I	J	K
1	App Name	Day	Downloads	Total YTD					Fire Red App		
2	Fire Red App	1/1/16	812	812				6/1/16	=sumifs(\$C:\$C,\$A:\$A,\$I\$1,\$B:\$B,\$H2)		
3	Fire Red App	1/2/16	541	1,353				6/2/16			
4	Fire Red App	1/3/16	869	2,222				6/3/16			
5	Fire Red App	1/4/16	534	2,756				6/4/16			
6	Fire Red App	1/5/16	848	3,604				6/5/16			
7	Fire Red App	1/6/16	639	4,243				6/6/16			
8	Fire Red App	1/7/16	594	4,837				6/7/16			
9	Fire Red App	1/8/16	524	5,361				6/8/16			
10	Fire Red App	1/9/16	774	6,135				6/9/16			
11	Fire Red App	1/10/16	879	7,014				6/10/16			
12	Fire Red App	1/11/16	508	7,522				6/11/16			
13	Fire Red App	1/12/16	777	8,299				6/12/16			
14	Fire Red App	1/13/16	615	8,914				6/13/16			
15	Fire Red App	1/14/16	990	9,904				6/14/16			
16	Fire Red App	1/15/16	564	10,468				6/15/16			
17	Fire Red App	1/16/16	787	11,255							
18	Fire Red App	1/17/16	567	11,822							

Lets look at what I entered a bit more closely

=SUMIFS(\$C:\$C,\$A:\$A,\$I\$1,\$B:\$B,\$H2)

=Sumifs (Sum Range, Criteria Range, Criteria)

=Sumifs (Column C, Column A, I2, Column B, H2)

Column C = Sum Range

We're going to total up the daily downloads

Column A = Criteria Range [1]

We need excel to only include downloads for Fire Red

I2 = Criteria [1]

We have already entered the name of the App we need totals for in cell I2, so we can just reference this cell. We could also enter 'Fire Red App' in quotes and it would work

Column B = Criteria Range [2]

We also need excel to only include certain days

H2 = Criteria [2]

We also entered the days that we need in Column H, so we can just reference these cells.

Note: Remember to use the correct cell references!

The result of the formula is 710 total downloads for Fire Red on 06/01/16. Lets check our work by looking this up on our table.

	A	B	C	D	E
1	App Name	Day	Downloads	Total YTD	
151	Fire Red App	6/1/2016	710	111,989	
1097					
1098					

Looks like the function is right. We can now drag it down and get our total.

	H	I
1	Fire Red App	
2	6/1/16	710
3	6/2/16	936
4	6/3/16	568
5	6/4/16	952
6	6/5/16	522
7	6/6/16	774
8	6/7/16	911
9	6/8/16	905
10	6/9/16	500
11	6/10/16	973
12	6/11/16	759
13	6/12/16	992
14	6/13/16	567
15	6/14/16	627
16	6/15/16	808
17	Total	10,794
18		

The great thing about these functions is that you can make them both flexible and scalable. Lets say you instead need Water Blue App download figures for 7/18/16 – 7/29/16. No problem, just change the labels

H	I	J
	Water Blue App	<--- C
7/18/2016	376	
7/19/2016	248	
7/20/2016	495	
7/21/2016	415	
7/22/2016	425	
7/23/2016	474	
7/24/2016	399	
7/25/2016	426	
7/26/2016	493	
7/27/2016	239	
7/28/2016	207	
7/29/2016	365	
Total	4,186	

VLOOKUPS

What is the big deal anyway?

Chapter Nine

VLOOKUPS

What is the big deal anyway?

Why is VLOOKUP so awesome? The purpose for VLOOKUP is to help you find a single piece of information in a table based on a single criterion. HUH?!? Don't worry; I'll break it down...

Suppose you've downloaded a client list from your CRM and it contains things like Client IDs, addresses, phone numbers, and open balance amount (among tons of other pieces of information). You need to pull data from the original client list into another sheet. VLOOKUP, among other things, can help you build this system dynamically by pulling information over to accompany your reports and dashboards.

Theory behind how it works

Before I dive into how to write the function, I want to discuss how it works in theory first. This way, when we talk about how to write the function and use it you'll already have a foundation of understanding.

Here is the Client ID you need to use to pull that client's phone number:

	A	B
1	Client ID	Phone Number
2	1002	???
3		
4		

Here is the table you are searching in:

6					
7	Client ID	Name	Address	Phone Number	Open Balance
8	1001	Ninja Star Client	123 Vlookup Road	123-456-789	1,000.00
9	1002	Shuriken Client	456 Vlookup Lane	098-765-4321	-
10	1003	Dart Client	789 Hlookup Street	102-938-4756	300.00
11	1004	Katana Client	123 Hlookup Blvd	5674-839-201	2,500.00

The Client IDs (aka Lookup Value) is in the first column

In this example, the VLOOKUP function will search for Client ID 1002 within the data table and return the client's phone number. But how will excel know to return the phone number? You're going to tell it to by entering the column number where the phone exists into the formula, that's how!

7	Client ID	Name	Address	Phone Number	Open Balance
8	1001	Ninja Star Client	123 Vlookup Road	123-456-789	1,000.00
9	1002	Shuriken Client	456 Vlookup Lane	098-765-4321	-
10	1003	Dart Client	789 Hlookup Street	102-938-4756	300.00
11	1004	Katana Client	123 Hlookup Blvd	5674-839-201	2,500.00
12	1	2	3	4	5
13					
14					
15					

By entering Column 4 into your VLOOKUP function, excel will return whatever exists in Column 4 (in this case, a phone number for client 1002). Now, lets bring it full circle:

=VLOOKUP (A2, A7:E11, 4, FALSE)

	A	B	C	D	E	F
1	Client ID	Phone Number				
2	1002	???				
3						
4						
5	1. Look up this value	2. In this table				
6						
7	Client ID	Name	Address	Phone Number	Open Balance	
8	1001	Ninja Star Client	123 Vlookup Road	123-456-700	1,000.00	
9	1002	Shuriken Client	456 Vlookup Lane	098-765-4321	-	
10	1003	Dart Client	789 Hlookup Street	123-987-6543	300.00	
11	1004	Katana Client	123 Hlookup Blvd	123-456-7890	2,500.00	
12	3. Return whatever is in Column 4					
13						
14						
15						

Now that you understand the theory a little better, lets breakdown the VLOOKUP function!

The Syntax

Lookup Value – This is the criterion you intend to use in order to “V-LOOKUP” the other table. In our example, this was the Client ID. You can use whatever is best, but just keep these two things in mind:

1. Make sure that whatever you use as your criteria, it is located in the first column of your data table. If not, your VLOOKUP will return #N/A (I hate those).

2. Your criteria must be spelled the same way in your table. For example, if you use “John Doe” as your VLOOKUP criteria, it can’t show up as “John H. Doe” in your data table. If this is the case, your VLOOKUP will return #N/A.

Data Table – This is the table that contains all the data you need your VLOOKUP to return.

Column Number – The VLOOKUP’s bread and butter. This is where you tell your function where to look.

Pro Tip: I find it useful to number my columns in the first row, especially if I’m working with a large table. This way, I avoid wasting time counting columns.

True or False – Lots of people get hung up over this. Don’t worry about it! I’ll save you some headaches and say that 99% of the time I enter FALSE. This tells excel whether your function is going to be an exact match (tell me *exactly* what I need [FALSE]) or an approximate match (tell me something close to what I need [TRUE]).

The screenshot shows a Microsoft Excel interface. A formula =VLOOKUP(A2,\$A\$7:\$E\$11,4, FALSE) is being entered into a cell. A tooltip or callout box is displayed, containing the text "VLOOKUP(lookup_value, table_array, col_index_num, [range_lookup])". Below the formula entry, there is a table with five columns: Client ID, Name, Address, Phone Number, and Open Balance. The table has five rows of data. The first row is a header row with bolded column titles. The data rows contain the following information:

Client ID	Name	Address	Phone Number	Open Balance
1001	Ninja Star Client	123 Vlookup Road	123-456-789	1,000.00
1002	Shuriken Client	456 Vlookup Lane	098-765-4321	-
1003	Dart Client	789 Hlookup Street	102-938-4756	300.00
1004	Katana Client	123 Hlookup Blvd	5674-839-201	2,500.00

HLOOKUP

If you understand the VLOOKUP, then the HLOOKUP will be a walk in the park. HLOOKUP is VLOOKUP's twin brother; it does the same thing except instead of searching columns for the solution it will search rows. In my career I've seldom used the HLOOKUP since most data tables are structured in a way that makes VLOOKUP more useful.

3						
4						
5						HLOOKUP Searches Rows
6						
7	Client ID	Name	Address	Phone Number	Open	Balance
8	1001	Ninja Star Client	123 Vlookup Road	123-456-789	1,000.00	
9	1002	Shuriken Client	456 Vlookup Lane	098-765-4321	-	
10	1003	Dart Client	789 Hlookup Street	102-938-4756	300.00	
11	1004	Katana Client	123 Hlookup Blvd	5674-839-201	2,500.00	
12						
13	VLOOKUP Searches Columns					
14						
15						
16						
17						

IF Statements

Teach your sheet to
make decisions for you

Chapter Ten

IF Statements

Teach your sheet to make decisions for you.

The IF statement is one of the most important, versatile, and powerful tools excel has to offer and a must have for anyone becoming an excel pro. This function allows you to build decisions and logic into your sheets, which you can leverage in tons of ways.

Theory behind how it works

For example; let's say you need to calculate commissions for a sales executive and the sales commission is based on the incremental revenue brought into the business for each deal closed, like in the table below:

	A	B	C
	Commission		
1	Product A	Quota	Rate
2	Less Than	\$ 8,000	15%
3	Greater Than	\$ 8,000	30%
4			
-			

You could use an IF Statement to tell excel what to do in different scenarios. In our case, we'll use IF to determine what the commission rate is going to be for each of this executive's individual sales.

G	H	I	J	K	L	M	N
Customer							
Sale #	Product	Name	Amount	IF Stmt	Nested IF		
819	Product A	Apple	10106	15%	=IF(J2>8000,15%,30%)		
820	Product B	Microsoft	1947	30%	IF(logical_test, [value_if_true], [value_if_false])		
821	Product B	Google	3595	30%	0%		
822	Product B	Twitter	3119	30%			
823	Product A	Amazon	1602	30%	30%		
824	Product B	FaceBook	2863	30%	0%		
825	Product B	AT&T	3084	30%	0%		
826	Product A	Uber	5225	30%	30%		
827	Product B	Netflix	2580	30%	0%		

IF the sale amount is over \$8k, enter 15%, if not enter 30%

You just saved a ton of time! Instead of going through the logic manually like most do (which would have taken you a while) you used an excel tactic to complete this task in seconds!

You can use an IF statement to add any kind of logic into your spreadsheet that you need. What if your company decides that they will pay a higher rate of commission for any deals closed within a region that has historically been difficult to sell in? Or a more common scenario; a last minute sales contest has been rolled out; any deals closed on Mondays or Fridays, within a three week period are paid at double the rate. No sweat; IF Statements handle this as easily as cutting warm butter!

The IF Statement in the example used criteria that were manually entered, but you can make things more efficient by referring to other cells as well. You could just point the references to a table in another sheet or workbook.

But wait; this is just the tip of the iceberg though. Excel pros don't unlock the true power of IF until they begin nesting it with other functions, or even other IF statements. I'll tell you more, but first lets break down the IF Function in detail.

The Syntax

IF(Logic Test, Value if True, Value if False)

Logical Test – This is where you let excel know what you're evaluating. Is the sale over \$8,000? Does the employee live out of state? The result of the logical test must be either yes (true) or no (false).

Value if True – Here you enter what you want excel to execute if the result of the logical test is true. What do you want excel to do if the sale is over \$8,000? Or if the employee indeed lives out state? You could have Excel return some text by entering the text in quotes (ie. "Lives Out of State"). Or, you could ask excel to execute another function by entering it here. This is called nesting; we'll cover this in more detail a bit later.

Value if False – Last thing here is to tell excel what to do If the logical test is false. Again, You could enter another function or you could have the IF Statement return some text by entering it in quotes (ie. "Does Not Live Out of State").

Nesting

Intermediate excel users know which functions to use in different situations through practice, practice, and more practice. This skill alone will get you far. However, truly advanced excel users have unlocked the power of nesting which will take anything you create in excel to the next level, immediately! The only way to get skilled at nesting is, again, through practice.

Almost anything you want to accomplish in excel can be done through nesting different functions together, like a jigsaw puzzle. Lets get into it...

How Nesting Works

Your company is pushing Product A and introduced a higher commission rate for sales reps that are able to sell it (and no commissions for Product B, its being discontinued). Here is what it looks like:

A	B	C	D
Commission			
Product A	Quota	Rate	
Less Than	\$ 8,000	15%	
Greater Than	\$ 8,000	30%	
4			
5			
Commission			
Product B	Quota	Rate	
None			
8			
9			

G	H	I	J	K	L	M	N
Sale #	Product	Customer Name	Amount	IF Stmt	Nested IF		
819	Product A	Apple	10106	15%	=IF(H2="Product A", IF(J2>8000,15%,30%),0)		
820	Product B	Microsoft	1947	30%	IF(logical_test, [value_if_true], [value_if_false])		
821	Product B	Google	3595	30%	0%		
822	Product B	Twitter	3119	30%	0%		
823	Product A	Amazon	1602	30%	30%		
824	Product B	FaceBook	2863	30%	0%		
825	Product B	AT&T	3084	30%	0%		
826	Product A	Uber	5225	30%	30%		
827	Product B	Netflix	2580	30%	0%		

IF the product sold is "Product A", Check whether the sale amount is for less than \$8,000. If it is, enter 15%, if not enter 30%. If the product is not "Product A", enter zero

IF Statements are basically a true or false logic test, all you need to do is tell excel to execute another IF Statement whenever the function returns FALSE (or TRUE). If the second IF returns FALSE, tell it to execute another IF, and keep nesting until you have what you need.

More Nesting with AND/OR Functions

Continuing with our example; your company decided to make your life a little more painful by introducing a multi-tiered commission schedule, where the higher the sale the higher the commission will be for each individual deal. Here is the table:

	A	B	C	D
1	Any Product	Quota	Commission Rate	
2		\$ 2,000	15%	
3		\$ 4,000	20%	
4		\$ 6,000	25%	
5		\$ 8,000	30%	
6				
7				

In order to accomplish this, we'll need to use a couple of IF's sidekicks; AND and OR. If you needed to use multiple logical tests in a single IF Statement (ie. Is the number is greater than 2,000 *AND* less than 4,000) then you would need to use one of these functions. Lets take a look at how it applies to our example:

	<i>fx</i>	=IF(AND(J4>2000,J4<4000),15%,"Keep Nesting")	G	H	I	J	K
1	Sale #	Product	Customer Name	Amount	Commission		
2	819	Product A	Apple	7536	Keep Nesting		
3	820	Product B	Microsoft	4399	Keep Nesting		
4	821	Product B	Google	3815	15%		
5	822	Product B	Twitter	5606	Keep Nesting		
6	823	Product A	Amazon	7747	Keep Nesting		
7	824	Product B	FaceBook	9975	Keep Nesting		
8	825	Product B	AT&T	4063	Keep Nesting		
9	826	Product A	Uber	8550	Keep Nesting		
10	827	Product B	Netflix	9506	Keep Nesting		
11							
12							
13							

The AND function will return a value of TRUE (comes in handy inside of an IF Statement) only if all logical tests within the function are true. In order to use AND you would need to insert it into the IF function like this:

```
=IF(AND(Logical Test 1, Logical Test 2... and so on), If TRUE, If FALSE)
```

In our case we are checking whether J4 (3,814) is both greater than 2,000 AND less than 4,000. The result returns 15%. If it isn't, you should tell excel to return the words "Keep Nesting" as a temporary placeholder. Lets chain a few of these together and see what happens.

Pro Tip: When I was first learning to nest functions together I would try to write out the entire formula in one cell on my first try. That's like going to a Vegas casino and expecting to hit the jackpot on your first play; it doesn't really work. I realized that it gets increasingly difficult to spot errors as I nest more functions together. I decided it was more effective to break my formulas out into different cells, confirm each one worked the way I wanted, then copy and paste them together into the super-nested formula. This alone has saved me TONS of headaches.

	G	H	I	J	K	L	M	N
1	Sale #	Product	Customer Name	Amount	15%	20%	25%	30%
2	819	Product A	Apple	7536	Keep Nesting	Keep Nesting	25%	Keep Nesting
3	820	Product B	Microsoft	4399	Keep Nesting	20%	Keep Nesting	Keep Nesting
4	821	Product B	Google	3815	15%	Keep Nesting	Keep Nesting	Keep Nesting
5	822	Product B	Twitter	5606	Keep Nesting	20%	Keep Nesting	Keep Nesting
6	823	Product A	Amazon	7747	Keep Nesting	Keep Nesting	25%	Keep Nesting
7	824	Product B	FaceBook	9975	Keep Nesting	Keep Nesting	Keep Nesting	30%
8	825	Product B	AT&T	4063	Keep Nesting	20%	Keep Nesting	Keep Nesting
9	826	Product A	Uber	8550	Keep Nesting	Keep Nesting	Keep Nesting	30%
10	827	Product B	Netflix	9506	Keep Nesting	Keep Nesting	Keep Nesting	30%
11								
12								
13								
14								
15								
16								

Copy and Paste these together!

	G	H	I	J	K
1	Sale #	Product	Customer Name	Amount	Commission
2	819	Product A	Apple	7536	Keep Nesting
3	820	Product B	Microsoft	4399	20%
4	821	Product B	Google	3815	15%
5	822	Product B	Twitter	5606	20%
6	823	Product A	Amazon	7747	Keep Nesting
7	824	Product B	FaceBook	9975	Keep Nesting
8	825	Product B	AT&T	4063	20%
9	826	Product A	Uber	8550	Keep Nesting
10	827	Product B	Netflix	9506	Keep Nesting
11					
12					
13					Now we're getting somewhere...
14					
15					

I	J	K	L	M	N	O	P	Q	R	S	T	U
	=IF(AND(I5>2000,I5<4000),15%,IF(AND(I5>4000,I5<6000),20%,IF(AND(I5>6000,I5<8000),25%,IF(I5>8000,30%,"No Commissions"))))											

Checks if sale is within 15% Bracket, if not...
Checks if sale is within 20% Bracket, if not...
Checks if sale is within 25% Bracket, if not...
Checks if sale is within 30% bracket.

You can use multiple IF statements by nesting them together and go multiple levels deep in order to build super-dynamic templates and calculations that factor in different scenarios. **Practice this;** once you master nesting you will already be levels above your co-workers and on your way to impressing your boss.

G	H	I	J	K
Customer				
Sale #	Product	Name	Amount	Nested IF
819	Product A	Apple	10106	30%
820	Product B	Microsoft	1947	0%
821	Product B	Google	3595	15%
822	Product B	Twitter	3119	15%
823	Product A	Amazon	1602	0%
824	Product B	FaceBook	2863	15%
825	Product B	AT&T	3084	15%
826	Product A	Uber	5225	20%
827	Product B	Netflix	2580	15%

IFERROR

Make pesky formula
errors go away

Chapter Eleven

IFERROR

Make pesky formula errors go away

I'm not sure why, but less people use the IFERROR function than I would expect. If you're someone that likes to see neatly organized and clean spreadsheets (like me) then this section is for you. I cringe when I open a sheet that is riddled in formula errors: #N/A, #VALUE!, #DIV/0! are all signs of a broken spreadsheet (also the bane to my existence), and just looks plain sloppy.

How it works

```
=IFERROR(Value,Value if error)
```

IFERROR saves the day. This function can take the result of any formula or function and turn it into anything you want. You can get rid of all the errors in your sheet by telling the function to return a blank cell, some text, or another function (Yeah, more nesting!). And its one of the simplest functions to use:

Value – This is whatever you are evaluating. In this portion of the function you must enter either a formula or reference a cell with an error. IFERROR will evaluate whether the value returned is an error or not.

Value If Error – Pretty self-explanatory, this is where you tell excel what value to return if it evaluates the result of the previous argument as an error. You can make the cell blank (enter double quotes, ie. ""), text (enter text inside of quotes, ie. "This is some text"), a number, a cell reference, a function, anything!

IFERROR is pretty flexible because of all the options it gives you to address errors in a sheet. Lets look at a practical application of the IFERROR.

Lets Get Practical

Lets say you are using a VLOOKUP to cross reference one list with another. Based on the last few chapters, we already know that the VLOOKUP will return a #N/A error if it doesn't find the lookup value in the table (for more information, read the chapter on VLOOKUPS).

	A	B	C	D
1	ID	Product Name	Unit Price	In Stock
2	1	Chai	\$18.00	39
3	2	Chang	\$19.00	17
4	3	Aniseed Syrup	\$10.00	13
5	9	Mishi Kobe Niku	\$97.00	29
6	10	Ikura	\$31.00	31
7	11	Queso Cabrales	\$21.00	22
8	13	Konbu	\$6.00	24
9	14	Tofu	\$23.25	35
10	15	Genen Shouyu	\$15.50	39
11	16	Pavlova	\$17.45	29
12	17	Alice Mutton	\$39.00	0
13	18	Carnarvon Tigers	\$62.50	42
14	21	Sir Rodney's Scones	\$10.00	3
15	22	Gustaf's Knäckebrot	\$21.00	104
16	23	Tunnbröd	\$9.00	61
17	24	Guaraná Fantástica	\$4.50	20
18	27	Schoggi Schokolade	\$43.90	49
19	28	Rössle Sauerkraut	\$45.60	26
20	29	Thüringer Rostbratwurst	\$123.79	0
21	30	Nord-Ost Matjeshering	\$25.89	10
22	31	Gorgonzola Telino	\$12.50	0
23	32	Mascarpone Fabioli	\$32.00	9
24	33	Geitost	\$2.50	112
25	34	Sasquatch Ale	\$14.00	111
26	35	Steeleye Stout	\$18.00	20
27	36	Inlagd Sill	\$19.00	112
28	37	Gravad lax	\$26.00	11
29	38	Côte de Blaye	\$263.50	17
30	39	Chartreuse verte	\$18.00	69
31	40	Boston Crab Meat	\$18.40	123
32	41	Jack's New England Clam	\$9.65	85
33	42	Singaporean Hokkien Frie	\$14.00	26

Product Name	Units In Stock
Chang	17
Chocolade	15
Fried Rice	#N/A
Gorgonzola Telino	0
Grilled Chicken Breast	#N/A
Guaraná Fantástica	20
Gudbrandsdalsost	26
Gustaf's Knäckebrot	104
Ice Cream	#N/A
Ipoh Coffee	17
Jack's New England Clam	85
Konbu	24
Laughing Lumberjack Lager	52
Mango Juice	#N/A
Manjimup Dried Apples	20
Mozzarella di Giovanni	14
Pasta	#N/A
Perth Pasties	0
Queso Cabrales	22
Raclette Courdavault	79
Rogede sild	5
Schoggi Schokolade	49
Sir Rodney's Scones	3
Steamed Vegetables	#N/A
Tofu	35
Tourtière	21
Valkoininen suklaa	65
Zaanse koeken	36
TOTAL	#N/A

In this example, the products that returned an error are obviously not found in our product database (on the left). No matter, because the boss wants a total of the units in stock for the list she sent us so we better get to it.

There is one problem though; when we use a SUM function to total up the units in stock, we get another error:

The SUM can't give us a total because of all the #N/As. Lets use IFERROR!



I want the IFERROR to return a zero because they don't exist in the original table. If they don't exist, they probably have zero units in stock.

Lets try this again:

Product Name	Units In Stock
Chang	17
Chocolade	15
Fried Rice	0
Gorgonzola Telino	=IFERROR(VLOOKUP(I7,B:D,3,FALSE),0)
Grilled Chicken Breast	IFERROR(value, value_if_error)
Guaraná Fantástica	20
Gudbrandsdalsost	26
Product Name	Units In Stock
Chang	17
Chocolade	15
Fried Rice	0
Gorgonzola Telino	0
Grilled Chicken Breast	0
Guaraná Fantástica	20
Gudbrandsdalsost	26
Gustaf's Knäckebröd	104
Ice Cream	0
Ipoh Coffee	17
Jack's New England Clam Chowder	85
Konbu	24
Laughing Lumberjack Lager	52
Mango Juice	0
Manjimup Dried Apples	20
Mozzarella di Giovanni	14
Pasta	0
Perth Pasties	0
Queso Cabrales	22
Raclette Courdavault	79
Rogede sild	5
Schoggi Schokolade	49
Sir Rodney's Scones	3
Steamed Vegetables	0
Tofu	35
Tourtière	21
Valkoinen suklaa	65
Zaanse koeken	36
TOTAL	709

All of our errors are gone! Now you can impress your boss with the exact number she needs, and a fancy table to go along with it.

MATCH

The Ultimate Matchmaker

Chapter Twelve

MATCH

The ultimate matchmaker

Whenever you need to cross reference two lists, the MATCH function is a pretty useful function to have in your arsenal. Just as the name implies, it checks whether an item in one list is present in another list. If it is, it returns a number that indicates in which row that item is located in.

How it works

Here we have a list of fruits and vegetables and we need to find out if Grapes is on the list.

The MATCH function is a simple one; it will take whatever you're searching for, try to find it in the list you're cross referencing it against, and return the row its located in. In our example, we are searching for grapes. The MATCH function tells us it's located in row number 6.

	A	B	C	D	E
1	Fruits & Vegetables			Lookup	Row Number
2	Apple			Grapes	????
3	Banana				
4	Broccoli				
5	Cantaloupe				
6	Grapes				
7	Green Apple				
8	Kiwi				
9	Lemon				
10	Manadarin				
11	Orange				
12	Pineapple				
13	Raisins				
14	Red Peppers				
15	String Peas				
16	Tangerine				
17	Watermelon				
18					
19					
--					

	A	B	C	D	E
1	Fruits & Vegetables			Lookup	Row Number
2	Apple			Grapes	????
3	Banana				
4	Broccoli				
5	Cantaloupe				
6	Grapes	In the 6th Row			
7	Green Apple				
8	Kiwi				
9	Lemon				
10	Manadarin				
11	Orange				
12	Pineapple				
13	Raisins				
14	Red Peppers				
15	String Peas				
16	Tangerine				
17	Watermelon				
18					

Lets breakdown MATCH a little further.

The Syntax

Lookup Value – This is the value that you're trying to cross reference with your list.

Lookup Array - This list you want to cross-reference against.

Match Type – This will tell excel whether to use an exact or relative match (much like the VLOOKUP). You can either enter a 1, 0, or -1. I usually enter 0 (exact match) which means the list doesn't have to be sorted a certain way and will return the exact row of the value in question.

Lets Get Practical

There are many uses for the MATCH function; I tend to use it mostly as a more precise substitute for the VLOOKUP when I'm looking to cross-reference different databases. However, just like a lot of other excel functions, MATCH is most useful when nested with other functions to create even more automation.

Another use for MATCH would be to see if an item in a running list has been duplicated. Lets say you have a long list of invoices and you need to ensure there aren't any duplicated values. There are many ways to accomplish this, but one way is to use a MATCH formula with a mixed cell reference (See my previous chapter on absolute vs. relative references for more details).

Here is an example of what I'm talking about:

```
=MATCH(A15,$A$1:A14,0)
```

A	B	C	D	E
1	Invoice Num	Duplicate?		
2	1551	#N/A		
3	1075	#N/A		
4	1846	#N/A		
5	5895	#N/A		
6	2129	#N/A		
7	6068	#N/A		
8	4392	#N/A		
9	5814	#N/A		
10	5895	5		
11	2319	#N/A		
12	6069	#N/A		
13	6473	#N/A		
14	4392	8		
15	3262	=MATCH(A15,\$A\$1:A14,0)		
16	1474	MATCH(lookup_value, lookup_array, [match_type])		
17	2319	11		
18	6910	#N/A		
19	6541	#N/A		
20				

Notice the mixture of relative and absolute reference. This allows you the flexibility of writing your formulas where the reference table expands as you drag your function downward. The formula I created checks any of the prior records and indicates whether the invoice number already exists (and in which row). Based on the last screen capture it looks like three of our invoices have already been duplicated!

You can then build an IF Statement around this MATCH function if you want excel to execute an action whenever it comes across a duplicate number (like the text “DUPLICATE”).

I added the text in green to show you what I mean:

```
=IF(MATCH(A15,$A$1:A14,0)>0,"DUPLICATE", MATCH(A15,$A$1:A14,0))
```

If you are like me and hate seeing errors (that last screen capture makes me cringe) you can also wrap that IF/MATCH formula within an IFERROR and get rid of all those #N/A errors.

```
=IFERROR(IF(MATCH(A15,$A$1:A14,0)>0,"DUPLICATE", MATCH(A15,$A$1:A14,0)), "")
```

The important thing is to practice and get creative. There is no limit to the formulas you can come up with that will help improve and automate your work.

Information Functions

Is it, or is it not?

Chapter Thirteen

Information Functions

Is it, or is it not?

There are many functions in excel that were intentionally created for use within other functions. To an excel novice, these functions seem useless. But not a pro who can spot the importance of such functions and leverage them to create more efficiency and automation in their sheets.

Information functions are mainly used to determine whether a value fits a certain criteria and returns either a TRUE or FALSE statement (which you can then be nested within an IF statement). Lets take a look at a few:

ISBLANK

Checks whether a value is blank, returns TRUE if it is.

=ISBLANK (A1)

returns TRUE if A1 is a blank cell

ISERROR

Checks whether the result of another function or formula is an error. This is similar to the IFERROR function, except ISERROR can be used in conjunction with an IF Statement in order to execute a command when the result is not an error (as opposed to IFERROR which only gives you the option to execute a command if the reference *is* an error).

=ISERROR (25/0)

The result of the formula being evaluated is #DIV/0! Since nothing can be divided by 0, and since the result is an error, ISERROR will return TRUE.

ISNUMBER

ISNUMBER checks if the value being evaluated is, you guessed it, a number! If it is, the function returns true, if it isn't it returns false.

```
=ISNUMBER(19) = TRUE  
=ISNUMBER(100*24) = TRUE  
=ISNUMBER("Ninja") = FALSE
```

ISTEXT

ISTEXT checks if the value being evaluated is text. If it is, the function returns true, if it isn't it returns false.

```
=ISTEXT("NINJA") = TRUE  
=ISTEXT(100*24) = FALSE  
=ISTEXT(19) = FALSE
```

Text Functions

Best way to
manipulate text in Excel

Chapter Fourteen

Text Functions

Best way to manipulate text in Excel

Ever have a cell that contains a value and you wished you can go in and extract a small piece of the value but leave the rest behind (ie. just the last name in a list of names)? How do you go about doing so? Well, you can go one by one and do it manually or ask one of your co-workers. You could also just use one of the functions we're about to discuss.

How it works

LEFT, RIGHT, and MID are functions used to extract alphanumeric characters from other cells. Lets say you have a cell that contains the text “Invoice 123456” and you just need the invoice numbers for a VLOOKUP; use the RIGHT function to get those numbers. Here is an example:

	A	B	C	D
1	Original Text	Function	Result	
2	Invoice 123456	=RIGHT(A2,1)	6	
3	Invoice 123456	=RIGHT(A3,2)	56	
4	Invoice 123456	=RIGHT(A4,3)	456	
5	Invoice 123456	=RIGHT(A5,4)	3456	
6	Invoice 123456	=RIGHT(A6,5)	23456	
7	Invoice 123456	=RIGHT(A7,6)	123456	
8				
9				

As you can see, the RIGHT function begins on the right side of the cell, and extracts exactly how many characters you tell it to by moving in sequential order towards the left side. LEFT does the same thing, except you begin from the left side instead of the right.

The Syntax

Here is how the syntax works for both LEFT and RIGHT

=RIGHT(Text, Number of Characters)

=LEFT(Text, Number of Characters)

Text – This is the value or cell containing the characters you want to extract.

Number of Characters – The number of characters you want to extract.

The MID Function

Pretty straight forward, right? Now, lets talk about MID. MID does the same thing that LEFT and RIGHT do, except it starts extracting from any point within the string of characters (not just exclusively from the left or right side). Take a look at the text string below:

		A
1	GREEN123	
2	1 2 3 4 5 6 7 8	

What do I do if I need to extract the middle four characters (“EEN1”) from this text string?

I can accomplish this using MID because it not only asks for how many characters you want to extract, but also asks where you want to begin extracting from. In our case, I want to extract the characters “EEN1” so I would need to tell the function to begin from the 3rd character in the string (the first “E”).

Here is what it would look like:

```
MID(text, start number, number of characters)
```

```
=MID(A1, 3, 4)=EEN1
```

Text – This is the value or cell containing the characters you want to extract.

Start Number – This is where MID makes all the difference. Here, you tell it which character number to begin from. In our example, we chose the number 3 because we needed it to start at the first “E”.

Number of Characters – The number of characters you want to extract.

Lets look at some more examples:

F	G	H
Original Text	Function	Result
GREEN123	=MID(F2,2,4)	REEN
GREEN123	=MID(F3,3,4)	EEN1
GREEN123	=MID(F4,4,4)	EN12
GREEN123	=MID(F5,5,4)	N123
GREEN123	=MID(F6,3,4)	EEN1

As you can see, the only thing that changes in our example is which character within the string of characters we’re starting from.

The FIND + MID functions

There is a bonus text function that few excel users know about. If you were looking for a specific set of characters within another string (ie. Anyone with “Joel” in their name in a list of names), you could use the FIND function. FIND, as the name implies, helps you find any set of characters within another set of characters.

Here is how it works:

```
=FIND(Find Text, Within Text ,Start Number)
```

Find Text – This is the set of characters you are searching for. You can enter a text by using quotes or you can reference another cell that contains the text you're looking for.

Within Text – This is the cell or set of characters you want to search within. Again, you can enter a text by using quotes or you can reference another cell.

Start Number – Just like the MID Function, here you tell excel which character number to begin from. If you enter the number 1, excel will begin its search from the first character in the string.

If the function doesn't find the set of characters, it will return the #VALUE! Error

Lets look at an example:

Here we have a list of characters from one of my favorite TV shows (and books) Game of Thrones and I need to find out which characters are part of the Stark family.

A	B
1	Character
2	Tyrion Lannister
3	Cersei Lannister
4	Daenerys Targaryen
5	Jon Snow
6	Sansa Stark
7	Arya Stark
8	Jorah Mormont
9	Jaime Lannister
10	Samwell Tarly
11	Theon Greyjoy
12	Petyr Baelish
13	Varys
14	Brienne of Tarth
15	Tywin Lannister
16	Sandor Clegane
17	Grand Maester Pycelle
18	Bronn
19	Joffrey Baratheon
20	Catelyn Stark
21	Bran Stark
22	Stannis Baratheon

For those who watch the show and will undoubtedly point out that I didn't box Jon Snow, I know. I did that because he doesn't have 'Stark' in his name (you know, because he is a product of an affair) and doesn't further the example of using Excel's FIND function.

We'll use the FIND function in order to identify any characters with 'Stark' in their name.

A	B	C
1 Character	Stark Family	
2 Tyrion Lannister	=FIND("Stark",A2,1)	
3 Cersei Lannister		
4 Daenerys Targaryen		
5 Jon Snow		
6 Sansa Stark		

Pretty straight forward, I think. Here is the result!

A	B
1 Character	Stark Family
2 Tyrion Lannister	#VALUE!
3 Cersei Lannister	#VALUE!
4 Daenerys Targaryen	#VALUE!
5 Jon Snow	#VALUE!
6 Sansa Stark	7
7 Arya Stark	6
8 Jorah Mormont	#VALUE!
9 Jaime Lannister	#VALUE!
10 Samwell Tarly	#VALUE!
11 Theon Greyjoy	#VALUE!
12 Petyr Baelish	#VALUE!
13 Varys	#VALUE!
14 Brienne of Tarth	#VALUE!
15 Tywin Lannister	#VALUE!
16 Sandor Clegane	#VALUE!
17 Grand Maester Pycelle	#VALUE!
18 Bronn	#VALUE!
19 Joffrey Baratheon	#VALUE!
20 Catelyn Stark	9
21 Bran Stark	6
22 Stannis Baratheon	#VALUE!
23 Missandei	#VALUE!
24 Robb Stark	6

There are tons of #Value! errors (and my eyes are burning), but there are also some numbers. These numbers basically indicate which character the word "Stark" begins in the referenced cell. For cell A20 (Catelyn Stark), the word "Stark" begins on the 9th character in the cell.

Useless, right? For an excel noobie, but not you. You can nest the Find function with other functions and do some pretty cool things Lets extract the word “Stark” from the cell and display it in Column B:

A	B	C	D
1 Character	Stark Family		
2 Tyrion Lannister	#VALUE!		
3 Cersei Lannister	#VALUE!		
4 Daenerys Targaryen	#VALUE!		
5 Jon Snow	#VALUE!		
6 Sansa Stark	=MID(A6,FIND("Stark",A6,1),5)		
7 Arya Stark	S MID(text, start_num, num_chars)		
8 Jorah Mormont	#VALUE!		

I nested the result of the FIND function (7) with the MID function and extracted the word “Stark” from the name in A6.

The best way to learn this is to get into Excel and start practicing with different examples that are more specific to you and your company.

Bonus functions: LEN & TRIM

LEN and TRIM are two functions that are also useful when dealing with texts. LEN returns the number of characters in a cell and TRIM removes any spaces before or after a string of alphanumeric characters.

You can NEST LEN with some of the other text functions to make your text extracting exercise even more dynamic and scalable.

If you use some of the functions we discussed earlier on a cell that has a space before or after the string of characters you’re analyzing, your functions won’t return what you’re expecting.

Here are both functions in action:

	A	B	C	D	E	F
1	String	LEN	String	RIGHT		
2	123456789	9	I have a space at the end	nd		
3	1234	4	I don't have a space at the end	end		
4	Awesome	7				
5						
6						
7						
8						

Use TRIM to get rid of spaces

INDEX MATCH

VLOOKUP On
Steroids!

Chapter Fifteen

INDEX MATCH

VLOOKUP ON STEROIDS!

INDEX MATCH

INDEX MATCH is a set of functions nested together that essentially performs the same task that VLOOKUP does, except it does it a little differently (and more efficiently). This formula is a popular among the most elite Excel users because it offers some advantages over the VLOOKUP that we'll get into later in this chapter.

This formula is a combination of the INDEX and MATCH functions. Since we've already covered MATCH in an earlier chapter I won't go into details about how it works. Lets instead jump into how INDEX works.

The INDEX Function

INDEX is a lookup function that returns a value within a column array based on the row number you specify.

=INDEX(array, row number)

Array – The column where you're looking for your data

Row number – The row number where your data exists

A	B	C	D	E
1	Client ID	VLOOKUP	INDEX	INDEX MATCH
2	1002	098-765-4321	=INDEX(D8:D11,2)	098-765-4321
3			INDEX(array, row_num, [column_num])	
4			INDEX(reference, row_num, [column_num], [area_num])	
5				
6				
7	Client ID	Name	Address	Phone Number
8	1001	Ninja Star Client	123 Vlookup Road	123-456-789
9	1002	Shuriken Client	456 Vlookup Lane	098-765-4321
10	1003	Dart Client	789 Hlookup Street	102-938-4756
11	1004	Katana Client	123 Hlookup Blvd	5674-839-201
12				

As you can see from our example, INDEX returns a cell value based on the row number you give it. Nice, huh? What happens when we're dealing with data and we don't know the row number for the value we're looking for? There is one function we can use to get that row number automatically, the MATCH function.

NESTING INDEX with MATCH: How it works

When we nest MATCH with INDEX, it looks like this:

```
=INDEX(array, MATCH Function)
```

Lets try this with another example

	A	B	C	D	E
1	Client ID	VLOOKUP	INDEX	INDEX MATCH	
2	1002	098-765-4321		=INDEX(D8:D11,MATCH(A2,A8:A11,0))	
3				INDEX(array, row_num , [column_num])	
4				INDEX(reference, row_num , [column_num], [area_num])	
5					
6					
7	Client ID	Name	Address	Phone Number	Open Balance
8	1001	Ninja Star Client	123 Vlookup Road	123-456-789	1,000.00
9	1002	Shuriken Client	456 Vlookup Lane	098-765-4321	-
10	1003	Dart Client	789 Hlookup Street	102-938-4756	300.00
11	1004	Katana Client	123 Hlookup Blvd	5674-839-201	2,500.00
12					

	A	B	C	D	E
1	Client ID	VLOOKUP	INDEX	INDEX MATCH	
2	1002	098-765-4321	098-765-4321	098-765-4321	0
3					
4					
5					
6					
7	Client ID	Name	Address	Phone Number	Open Balance
8	1001	Ninja Star Client	123 Vlookup Road	123-456-789	1,000.00
9	1002	Shuriken Client	456 Vlookup Lane	098-765-4321	-
10	1003	Dart Client	789 Hlookup Street	102-938-4756	300.00
11	1004	Katana Client	123 Hlookup Blvd	5674-839-201	2,500.00
12					
13					

You're probably wondering, "What's the big deal here? I can just do that with VLOOKUP; why is INDEX MATCH such a popular formula?" Well, for starters, the INDEX MATCH formula is much more efficient than VLOOKUP because it only has to analyze the two columns of relevant data, not an entire table like VLOOKUP does.

	A	B	C	D	E
1	Client ID	VLOOKUP	INDEX	INDEX MATCH	
2		=VLOOKUP(A2,\$A\$8:\$E\$11,4, FALSE)	5-4321	098-765-4321	
3		VLOOKUP(lookup_value, table_array, col_index_num, [range_lookup])			
4					
5					
6					
7	Client ID	Name	Address	Phone Number	Open Balance
8	1001	Ninja Star Client	123 Vlookup Road	123-456-789	1,000.0
9	1002	Shuriken Client	456 Vlookup Lane	098-765-4321	-
10	1003	Dart Client	789 Hlookup Street	102-938-4756	300.0
11	1004	Katana Client	123 Hlookup Blvd	5674-839-201	2,500.0
12					

	A	B	C	D	E
1	Client ID	VLOOKUP	INDEX	INDEX MATCH	
2	1002	098-765-4321		=INDEX(D8:D11,MATCH(A2,A8:A11,0))	
3				INDEX(array, row_num, [column_num])	
4				INDEX(reference, row_num, [column_num], [area_num])	
5					
6					
7	Client ID	Name	Address	Phone Number	Open Balance
8	1001	Ninja Star Client	123 Vlookup Road	123-456-789	1,000.00
9	1002	Shuriken Client	456 Vlookup Lane	098-765-4321	-
10	1003	Dart Client	789 Hlookup Street	102-938-4756	300.00
11	1004	Katana Client	123 Hlookup Blvd	5674-839-201	2,500.00
12					

This can make a huge difference in the performance of your workbook when you're dealing with thousands of cells.

One of the biggest advantages this formula has over the VLOOKUP is that you don't have to have the first column as the index column, so you can essentially look things up no matter which column its in. Lets use another example to illustrate this:

	A	B	C	D	E	F	G	H	I
1	Client ID	VLOOKUP	INDEX	INDEX MATCH		Phone Number	Name		
2	1002	098-765-4321	098-765-4321	098-765-4321		098-765-4321	=INDEX(B8:B11,MATCH(F2,D8:D11,0))		
3							INDEX(array, row_num, [column_num])		
4							INDEX(reference, row_num, [column_num], [area_num])		
5									
6									
7	Client ID	Name	Address	Phone Number	Open Balance				
8	1001	Ninja Star Client	123 Vlookup Road	123-456-789	1,000.00				
9	1002	Shuriken Client	456 Vlookup Lane	098-765-4321	-				
10	1003	Dart Client	789 Hlookup Street	102-938-4756	300.00				
11	1004	Katana Client	123 Hlookup Blvd	5674-839-201	2,500.00				
12									

F	G
Phone Number	Name
098-765-4321	Shuriken Client

The INDEX MATCH is actually not that bad once you understand it and get used to using it. It can be one of the most versatile formulas in your arsenal once you start building advanced reports and dashboards.

PIVOT TABLES

Powerful analysis,
in seconds

Chapter Sixteen

Pivot Tables

Powerful analysis, in seconds

Pivot Tables

The pivot table is one of the most powerful data analysis tools in excel, and one of the most asked about as well. Pivot tables can take a large amount of data and organize it in a way that is easy to digest and analyze. It also offers tools to let you change the pivot table on the fly so you can continue to look at data in different ways.

You can take sales data and easily create a report of sales broken down by any other element in the original list (ie. by region, sales rep, month, etc.). Lets get right into it!

How to create a pivot table

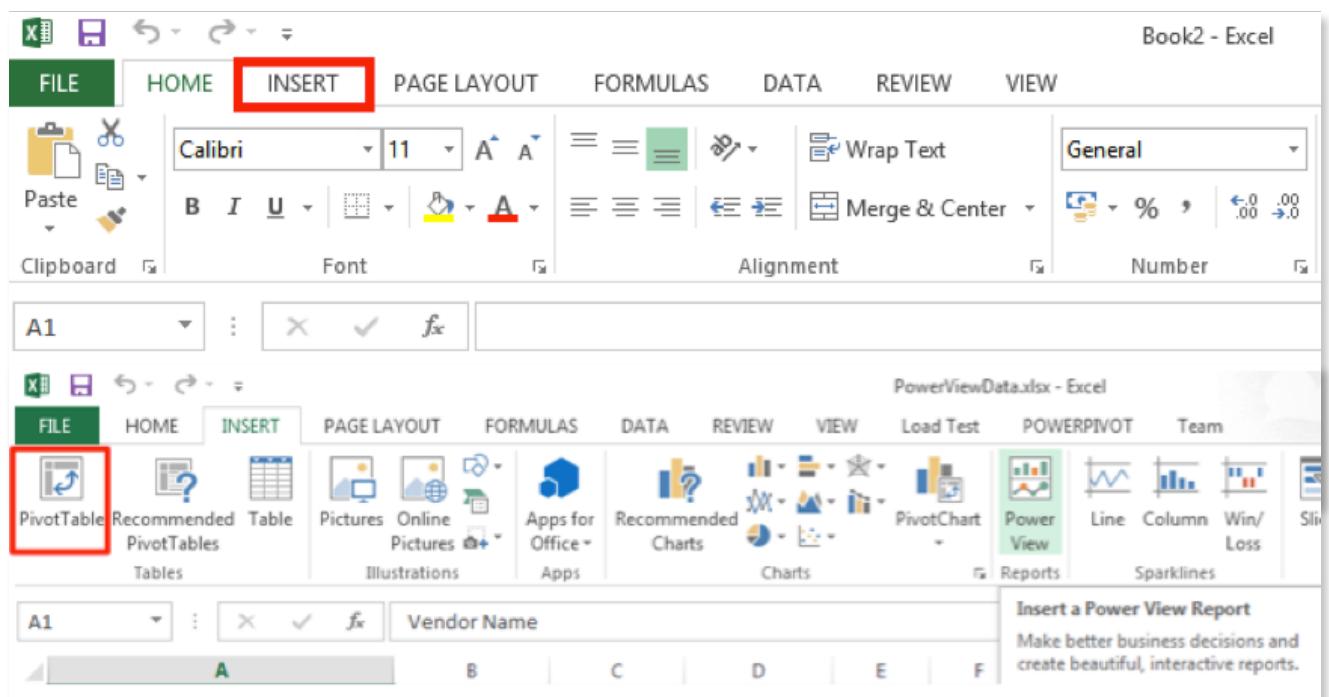
Step 1: You need a list of data first.

Before we begin, you'll need a list of data organized by column headers. The sorting of the data or the order of columns doesn't matter, and if you have duplicate column headers you're still good to go. The only thing you need to make sure of is that each column has a title. If you're missing even one column title, excel will give you an error and you won't be able to create your pivot table.

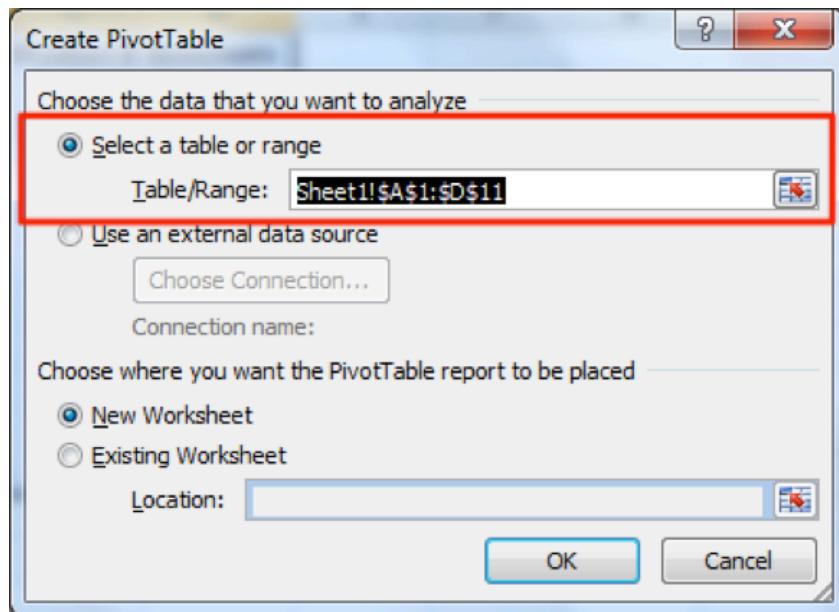
For our example, we'll use this sample sales data.

	A	B	C	D	E
1	Unit Color	Sale Date	Sale Amount	Sale Region	Sales Rep
2	Blue	1/2/2016	\$ 31	New York	Chewbacca
3	Yellow	1/4/2016	\$ 22	Miami	Anakin Skywalker
4	Blue	1/4/2016	\$ 30	Miami	Han Solo
5	Red	1/12/2016	\$ 28	Miami	Anakin Skywalker
6	Blue	1/14/2016	\$ 25	Miami	Anakin Skywalker
7	Blue	1/20/2016	\$ 22	Miami	Luke Skywalker
8	Yellow	1/23/2016	\$ 28	Los Angeles	Han Solo
9	Yellow	2/5/2016	\$ 32	Los Angeles	Boba fett
10	Orange	2/6/2016	\$ 35	Los Angeles	Chewbacca
11	Green	2/7/2016	\$ 29	Los Angeles	Han Solo
12	Red	2/10/2016	\$ 35	Los Angeles	Boba fett
13	Blue	2/15/2016	\$ 35	New York	Boba fett
14	Blue	2/18/2016	\$ 22	Los Angeles	Anakin Skywalker
15	Green	2/18/2016	\$ 28	Miami	Han Solo
16	Yellow	2/18/2016	\$ 35	Los Angeles	Chewbacca
17	Red	3/2/2016	\$ 21	Miami	Chewbacca
18	Red	3/3/2016	\$ 28	Miami	Chewbacca
19	Blue	3/3/2016	\$ 21	New York	Chewbacca
20	Green	3/7/2016	\$ 19	Los Angeles	Boba fett
21	Blue	3/7/2016	\$ 30	Miami	Boba fett
22	Yellow	3/28/2016	\$ 27	Chicago	Boba fett
23	Red	4/4/2016	\$ 24	Los Angeles	Anakin Skywalker
24	Green	4/5/2016	\$ 33	Los Angeles	Boba fett
25	Green	4/6/2016	\$ 26	Chicago	Anakin Skywalker
26	Yellow	4/7/2016	\$ 22	Chicago	Anakin Skywalker
27	Orange	4/13/2016	\$ 25	New York	Boba fett

Step 2: Go to the Insert tab and select ‘Pivot Table’

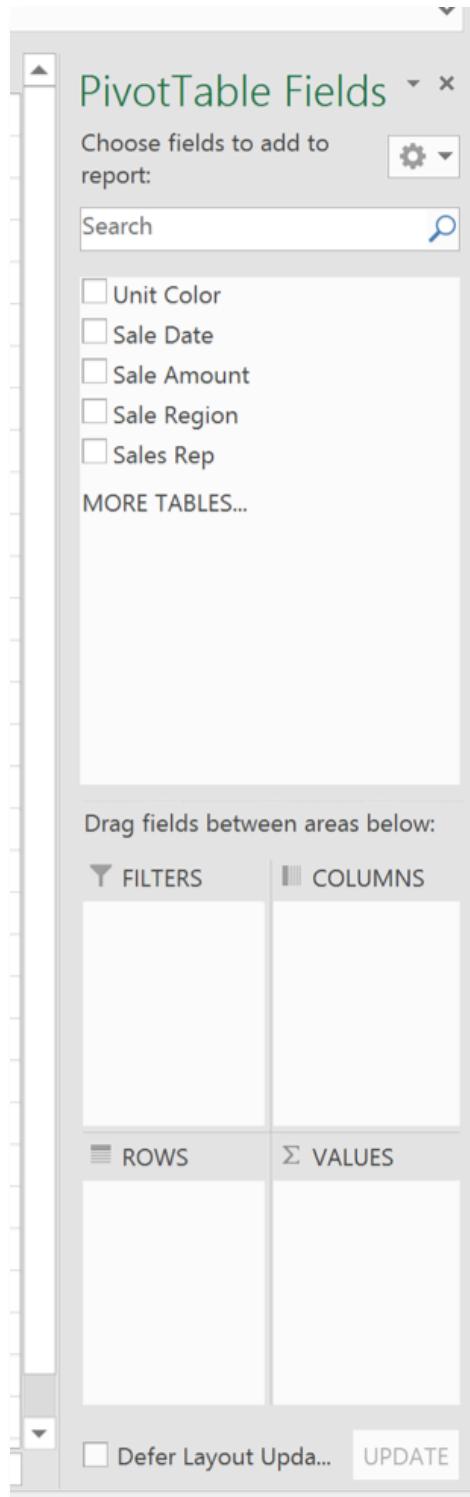


Step 3: Make sure your data range is selected



Step 4: Start adding data to your table

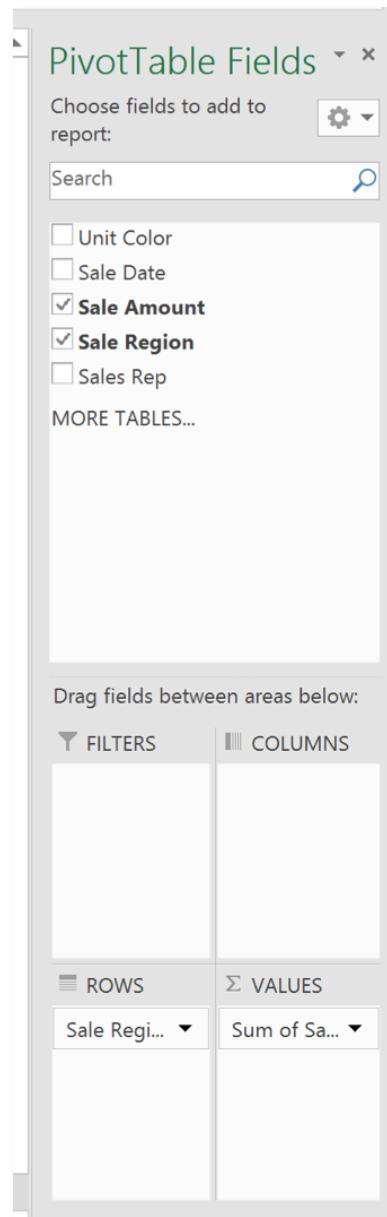
You'll notice that there is a menu on the right hand side. This menu is where you will build your pivot table by dragging column headers into the different sections of your table.



Lets Get Practical

Let's create a sales report broken down by year and by region!

All we have to do is take the data labeled 'Sales Region' and drag it in the 'Rows' section, and the Sale Amount into the 'Values' section, like this:



Here is what the result looks like:

	A	B	C
1			
2			
3	Row Labels	Sum of Sale Amount	
4	Chicago	221	
5	Los Angeles	748	
6	Miami	596	
7	New York	352	
8	Grand Total	1917	
9			
10			

If you want to break this report down further and include the sales rep, all you have to do is add the sales rep data to the 'Columns' Section.

The screenshot shows a Microsoft Excel spreadsheet with a PivotTable. The PivotTable Fields pane on the right indicates that 'Sale Amount' and 'Sales Rep' are being used for values. The main table shows sales data for four cities: Chicago, Los Angeles, Miami, and New York, with a grand total of 1917. The 'Sales Rep' column is currently empty. The PivotTable Fields pane also shows 'Sale Region' and 'Unit Color' as additional fields available for dragging into the table.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1															
2															
3	Sum of Sale Amount	Column Labels													
4	Row Labels	Anakin Skywalker	Boba Fett	Chewbacca	Han Solo	Luke Skywalker	Grand Total								
5	Chicago	74	80	34	33		221								
6	Los Angeles	138	242	206	113	49	748								
7	Miami	174	79	144	124	75	596								
8	New York	116	208			28	352								
9	Grand Total	386	517	592	270	152	1917								
10															
11															
12															
13															
14															
15															
16															
17															
18															
19															
20															
21															
22															
23															
24															
25															
26															
27															
28															
29															
30															
31															
32															

You'll notice that the pivot table automatically adds column and row labels, and totals them for you. This makes things really convenient on you to analyze the data on the fly. If you don't like how the data is arranged, you can flip the columns and rows in the pivot table menu.

Sum of Sale Amount Column Labels

	Chicago	Los Angeles	Miami	New York	Grand Total
Anakin Skywalker	74	138	174		386
Boba fett	80	242	79	116	517
Chewbacca	34	206	144	208	592
Han Solo	33	113	124		270
Luke Skywalker		49	75	28	152
Grand Total	221	748	596	352	1917

Lets create another report: Sales by Sales Rep, Broken Down by Month

Again, lets select the sales reps and drag them over to the rows section and the sales date into the column section

Drag fields between areas below:

FILTERS		COLUMNS
		Sale Date ▾
ROWS		VALUES
Sales Rep ▾		Sum of Sa... ▾

Defer Layout Upda... UPDATE

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	
1																								
2																								
3		Sum of Sale Amount	Column Labels																					
4	Row Labels	2-Jan	4-Jan	12-Jan	14-Jan	20-Jan	23-Jan	5-Feb	6-Feb	7-Feb	10-Feb	15-Feb	18-Feb	2-Mar	3-Mar	7-Mar	28-Mar	4-Apr	5-Apr	6-Apr	7-Apr	13-Apr	2-May	
5	Anakin Skywalker		22	28	25												22							
6	Boba fett							32				35	35						49	27		26	22	
7	Chewbacca		31						35					35	21	49								25
8	Han Solo		30					28		29				28										
9	Luke Skywalker			22																				
10	Grand Total	31	52	28	25	22	28	32	35	29	35	35	85	21	49	49	27	24	33	26	22	25	33	
11																								
12																								

Something is wrong; the pivot table is giving us all this data broken down by day, but we need it grouped by month. No worries just right click and select Grouping. From the Grouping menu, select to group by Month.

The screenshot shows a Microsoft Excel spreadsheet with a pivot table. The pivot table has 'Row Labels' (A10) set to '2-Jan' and 'Sum of Sale Amount' (B10) set to '31'. The data area includes rows for Anakin Skywalker, Boba Fett, Chewbacca, Han Solo, Luke Skywalker, and a Grand Total of 31. The columns represent dates from 2-Jan to 2-May. A context menu is open over the data area, with 'Group...' selected under the 'Subtotal' option. To the right, the 'Grouping' dialog box is displayed, showing 'Starting at' 1/2/2016 and 'Ending at' 12/31/2016. Under 'By', 'Months' is selected, and 'Number of days:' is set to 1. Buttons for 'OK' and 'Cancel' are at the bottom.

If you need to format your data a specific way, just right click on the data inside the Values section and select Value settings:

The image shows three overlapping dialog boxes in Microsoft Excel:

- PivotTable Fields** dialog: Shows fields to add to the report. **Sale Date**, **Sale Amount**, and **Sales Rep** are checked.
- Value Field Settings** dialog: Set Source Name to **Sale Amount** and Custom Name to **Sum of Sale Amount**. Under **Summarize value field by**, **Sum** is selected. Buttons for **Number Format**, **OK**, and **Cancel** are visible.
- Format Cells** dialog: Set Category to **General**. Sample value is **4-Jan**. Buttons for **OK** and **Cancel** are visible.

A context menu is open over the **Sales Rep** field in the PivotTable Fields dialog, with options like **Move Up**, **Move Down**, **Move to Beginning**, **Move to End**, **Move to Report Filter**, **Move to Row Labels**, **Move to Column Labels**, **Move to Values**, **Remove Field**, and **Value Field Settings...**.

With pivot tables, you can also drill down into any number and see the details behind it. All you have to do is double click a number and excel will automatically create a tab with a table listing out all the details of that number. Happy auditing!

A	B	C	D	E	F	G	H	I	J	K	L	M	N	C
1														
2														
3	Sum of Sale Amount	Column Labels												
4	Row Labels	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Grand Total
5	Anakin Skywalker	\$75.00	\$22.00	\$72.00	\$58.00	\$24.00	\$34.00			\$58.00		\$43.00	\$386.00	
6	Boba fett		\$102.00	\$76.00	\$58.00	\$51.00	\$26.00	\$57.00	\$29.00			\$118.00	\$517.00	
7	Chewbacca	\$31.00	\$70.00	\$70.00		\$34.00	\$63.00		\$66.00	\$69.00	\$83.00	\$53.00	\$53.00	\$592.00
8	Han Solo	\$58.00	\$57.00					\$67.00	\$33.00			\$55.00	\$270.00	
9	Luke Skywalker	\$22.00				\$28.00	\$45.00		\$25.00	\$32.00			\$152.00	
10	Grand Total	\$186.00	\$251.00	\$146.00	\$130.00	\$143.00	\$141.00	\$136.00	\$162.00	\$127.00	\$173.00	\$226.00	\$96.00	\$1,917.00
11														
12														
13														
14														
15														

A	B	C	D	E	F	G
1	Unit Color	Sale Date	Sale Amount	Sale Region	Sales Rep	
2	Yellow	3/28/2016		27 Chicago	Boba fett	
3	Blue	3/7/2016		30 Miami	Boba fett	
4	Green	3/7/2016		19 Los Angeles	Boba fett	
5						
6						
7						
8						
9						
10						
11						

Let's say, for example, you need sales by sales rep but only for one region, New York. Just add Sales Region as a report filter by dragging it into the filters section and you will be able to hide all the other regions in your data, only displaying data for New York.

Drag fields between areas below:

<input checked="" type="checkbox"/> FILTERS	<input type="checkbox"/> COLUMNS
Sale Regi... ▾	Sale Date ▾
<input type="checkbox"/> ROWS	<input type="checkbox"/> VALUES
Sales Rep ▾	Sum of Sa...
<input type="checkbox"/> Defer Layout Upda... UPDATE	

The screenshot shows a Microsoft Excel interface with a Pivot Table selected. The Pivot Table is organized by 'Sale Region' (Rows) and 'Month' (Columns). The data includes sales figures for Chicago, Los Angeles, Miami, and New York across the months of March through December. A 'Grand Total' row is present at the bottom. The 'Home' tab is active in the ribbon, and various Excel tools like 'Cut', 'Copy', and 'Format Painter' are visible in the ribbon's top-left corner.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O				
1	Sale Region	(All)																	
2		Search																	
3	Sub	(All)																	
4	Ro	Chicago																	
5	An	Los Angeles																	
6	Bo	Miami																	
7	Ch	New York																	
8	Ha																		
9	Lul																		
10	Gr																		
			Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec		Grand Total					
					\$72.00	\$58.00	\$24.00	\$34.00			\$58.00	\$43.00			\$386.00				
					\$76.00	\$58.00	\$51.00	\$26.00	\$57.00	\$29.00		\$118.00			\$517.00				
					\$70.00		\$34.00	\$63.00		\$66.00	\$69.00	\$83.00	\$53.00	\$53.00	\$592.00				
									\$67.00	\$33.00		\$55.00			\$270.00				
									\$28.00	\$45.00		\$25.00	\$32.00		\$152.00				
									\$146.00	\$130.00	\$143.00	\$141.00	\$136.00	\$162.00	\$127.00	\$173.00	\$226.00	\$96.00	\$1,917.00

	A	B	C	D	E	F	G	H	I	J	K	L	M
1	Sale Region	New York											
2													
3	Sum of Sale Amount	Column Labels											
4	Row Labels	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Dec	Grand Total	
5	Boba fett		\$35.00		\$25.00	\$22.00		\$34.00				\$116.00	
6	Chewbacca		\$31.00		\$21.00		\$34.00	\$31.00		\$35.00	\$35.00	\$21.00	\$208.00
7	Luke Skywalker							\$28.00					\$28.00
8	Grand Total		\$31.00	\$35.00	\$21.00	\$25.00	\$56.00	\$59.00	\$34.00	\$35.00	\$35.00	\$21.00	\$352.00
9													
10													
11													
12													
13													

There is no end to the possibilities with Pivot Tables. You can slice and dice your data a ton of different ways and have reports ready in minutes!

Pivot tables can add a ton of efficiency to your daily work, but there are some drawbacks. You need to update the pivot table each time you add data to your tables; which, if you're reporting to stakeholders daily or weekly can become a hassle. Depending on your company's reporting requirements this may not be a big deal, but consider using some of the functions we've already discussed in earlier chapters (SUMIFS, VLOOKUPS, IF Statements) and create dynamic dashboards that feeds off of live data instead of pivot tables for ongoing reporting.

I tend to use pivot tables when I am analyzing static data for ad hoc reporting needs (ie. month-end closing audits, answering management inquiries). Consider your options; dashboards may take a long time to setup but they are fairly automated in the long run. Pivot tables are easy to setup initially but may take more effort to maintain.

Conditional Formatting

Automatically highlight
key data points

Chapter Seventeen

Conditional Formatting

Automatically highlight key data points

Conditional Formatting

Although this Book has mainly focused on useful excel function, being an excel pro isn't always about knowing a ton of functions. Conditional formatting is one of the areas of excel that can be especially useful when building reports for upper management or your clients by allowing you the ability to make formatting changes automatically to any cell depending different conditions.

During my career I've probably built hundreds, maybe thousands, of reports and dashboards for individuals of various backgrounds. What I've noticed is regardless of whom your audience members are, it's critical to make any report you build simple and easy for them to understand. It seems like common sense but the reality is that when we're in the trenches grinding away to try and meet important deadlines, we usually don't tend to take a step back and look at the big picture. I finally realized this when I noticed myself having to repeatedly explain the same things to the same individuals. The problem wasn't my audience and it wasn't my ability to explain, it was the reports I was building. My reports were too confusing to read, even for people with an accounting or finance background.

Being able to present data in clean, easy to understand manner is part of creating effective reports but it's so often times overlooked. Conditional formatting not only makes things easier on you to highlight important data points, but it does it in a way that can be automated and scales with your data.

Lets Get Practical

Let's use conditional formatting to turn a boring old sales report into a heat map! We will highlight cells containing numbers that are increasingly above average a darker shade of green, and cells containing numbers decreasingly below average a darker shade of red.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	Sales Rep Name	Jan 2016	Feb 2016	Mar 2016	Apr 2016	May 2016	Jun 2016	Jul 2016	Aug 2016	Sep 2016	Oct 2016	Nov 2016	Dec 2016	Totals
2	Anakin Skywalker	\$ 75.00	\$ 22.00	\$ -	\$ 72.00	\$ 58.00	\$ 24.00	\$ 34.00	\$ -	\$ -	\$ 58.00	\$ -	\$ 43.00	\$ 385.00
3	Boba fett	\$ -	\$ 102.00	\$ 76.00	\$ 58.00	\$ 51.00	\$ 26.00	\$ 57.00	\$ 29.00	\$ -	\$ -	\$ 118.00	\$ -	\$ 517.00
4	Chewbacca	\$ 31.00	\$ 70.00	\$ 70.00	\$ -	\$ 34.00	\$ 63.00	\$ -	\$ 66.00	\$ 69.00	\$ 63.00	\$ 53.00	\$ 53.00	\$ 592.00
5	Han Solo	\$ 58.00	\$ 57.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 67.00	\$ 33.00	\$ -	\$ 55.00	\$ -	\$ 270.00
6	Luke Skywalker	\$ 22.00	\$ -	\$ -	\$ -	\$ 28.00	\$ 45.00	\$ -	\$ 25.00	\$ 32.00	\$ -	\$ -	\$ -	\$ 152.00
7	Grand Total	\$ 186.00	\$ 251.00	\$ 146.00	\$ 130.00	\$ 143.00	\$ 141.00	\$ 136.00	\$ 162.00	\$ 127.00	\$ 173.00	\$ 226.00	\$ 96.00	\$ 1,917.00
8														
9														
10														
11		BORING!												
12														

Here is how it's done:

Highlight the data you want the conditional formatting to apply to and in your home tab select Conditional Formatting > New Rule...

	A	B	C	D	E	F	G	H	I	J	K
1	Sales Rep Name	Jan 2016	Feb 2016	Mar 2016	Apr 2016	May 2016	Jun 2016	Jul 2016	Aug 2016	Sep 2016	Oct 2016
2	Anakin Skywalker	\$ 75.00	\$ 22.00	\$ -	\$ 72.00	\$ 58.00	\$ 24.00	\$ 34.00	\$ -	\$ -	\$ 58.00
3	Boba fett	\$ -	\$ 102.00	\$ 76.00	\$ 58.00	\$ 51.00	\$ 26.00	\$ 57.00	\$ 29.00	\$ -	\$ -
4	Chewbacca	\$ 31.00	\$ 70.00	\$ 70.00	\$ -	\$ 34.00	\$ 63.00	\$ -	\$ 66.00	\$ 69.00	\$ 83.00
5	Han Solo	\$ 58.00	\$ 57.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 67.00	\$ 33.00	\$ -
6	Luke Skywalker	\$ 22.00	\$ -	\$ -	\$ -	\$ -	\$ 28.00	\$ 45.00	\$ -	\$ 25.00	\$ 32.00
7	Grand Total	\$ 186.00	\$ 251.00	\$ 146.00	\$ 130.00	\$ 143.00	\$ 141.00	\$ 136.00	\$ 162.00	\$ 127.00	\$ 173.00

The Conditional Formatting dropdown menu is open on the Home tab, showing options like 'Highlight Cells Rules', 'Top/Bottom Rules', 'Data Bars', 'Color Scales', 'Icon Sets', 'New Rule...', 'Clear Rules', and 'Manage Rules...'. The 'New Rule...' option is highlighted.

This is the screen you will get:

Under the first section, *format all cells based on their values*, we will leave everything the same except for the colors. Change the color selected on the left to Red (or pink if you feel its easier on the eyes), and the color on the right to green.

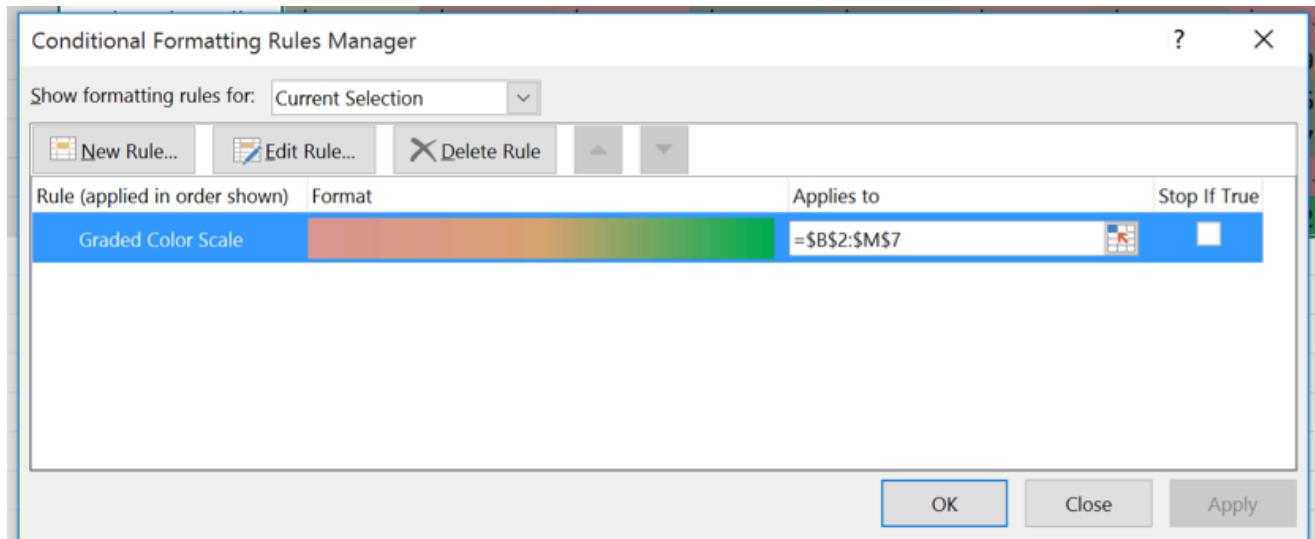
Here is what it should look like.

We can also tie the conditional formatting to another cell's value. Let's see if we can make the sheet dynamically update the heat map based on a sales quota. In order for this to work, we'll need to create two rules; one if the sales amount is less than the quota and another if it's greater than the quota.

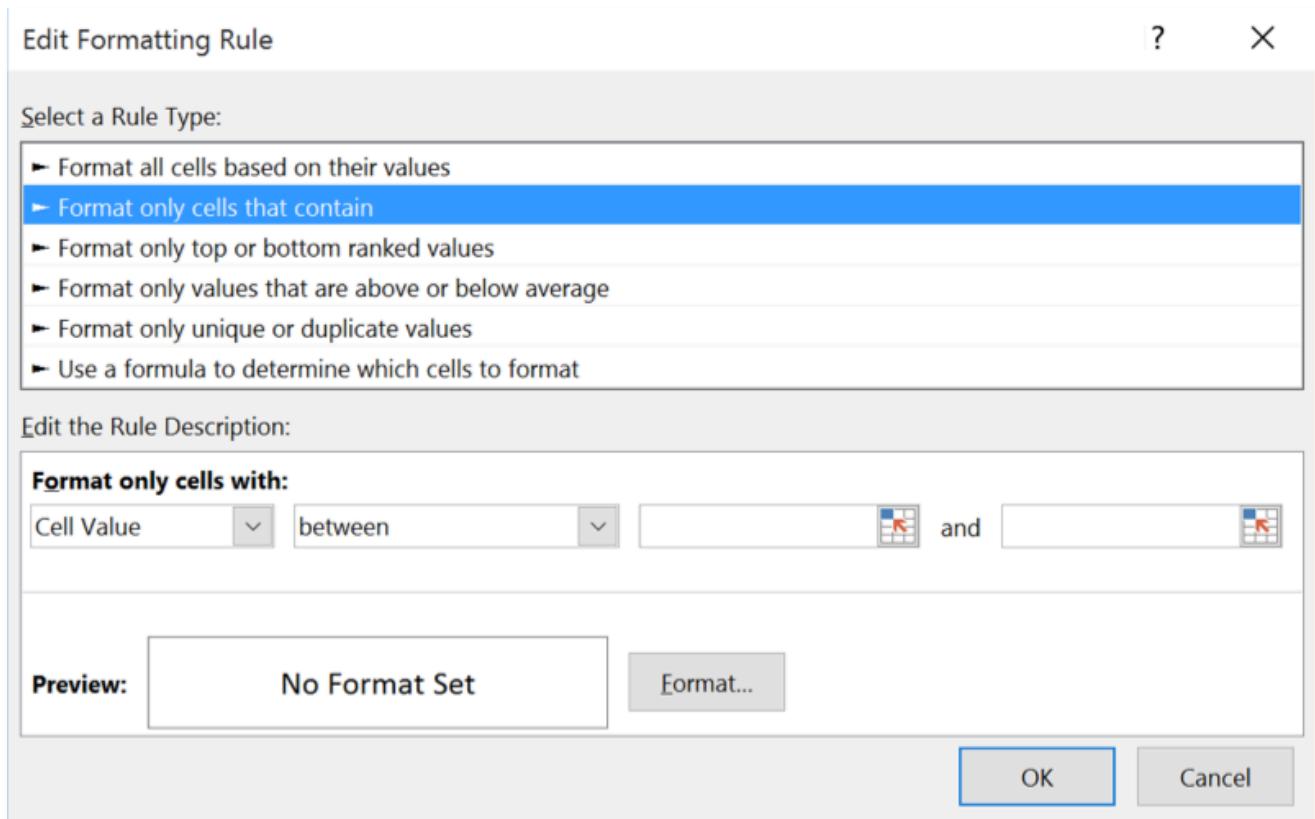
Again, Highlight the data this applies to and in your home tab select Conditional Formatting, but this time select Manage Rules.

The screenshot shows a Microsoft Excel spreadsheet titled "04-02 Conditional Formatting - Excel". The ribbon menu is visible at the top, with "File", "Home", "Insert", "Page Layout", "Formulas", "Data", "Review", and "View" tabs. The "Home" tab is selected. The "Clipboard" group contains "Cut", "Copy", and "Format Painter" buttons. The "Font" group includes "Calibri", font size "12", bold ("B"), italic ("I"), underline ("U"), and font color ("A"). The "Font" dropdown also includes "Wrap Text" and "Merge & Center" options. The "Number" group shows "General" format with decimal separators. The "Conditional Formatting" button is highlighted. A context menu is open from the "Conditional Formatting" button, listing options: "Highlight Cells Rules", "Top/Bottom Rules", "Data Bars", "Color Scales", "Icon Sets", "New Rule...", "Clear Rules", and "Manage Rules...". The main content area displays a table with 7 rows and 12 columns. Row 1 is a header row with columns labeled A through K. Rows 2 through 6 contain data for Sales Reps: Anakin Skywalker, Boba fett, Chewbacca, Han Solo, and Luke Skywalker. Row 7 is a Grand Total row. The data is color-coded using conditional formatting: Jan 2016 through Oct 2016 are in green, while Nov 2016 through Dec 2016 are in red. The "Grand Total" row is also highlighted in green.

	A	B	C	D	E	F	G	H	I	J	K
1	Sales Rep Name	Jan 2016	Feb 2016	Mar 2016	Apr 2016	May 2016	Jun 2016	Jul 2016	Aug 2016	Sep 2016	Oct 2016
2	Anakin Skywalker	\$ 75.00	\$ 22.00	\$ -	\$ 72.00	\$ 58.00	\$ 24.00	\$ 34.00	\$ -	\$ -	\$ 58.00
3	Boba fett	\$ -	\$ 102.00	\$ 76.00	\$ 58.00	\$ 51.00	\$ 26.00	\$ 57.00	\$ 29.00	\$ -	\$ -
4	Chewbacca	\$ 31.00	\$ 70.00	\$ 70.00	\$ -	\$ 34.00	\$ 63.00	\$ -	\$ 66.00	\$ 69.00	\$ 83.00
5	Han Solo	\$ 58.00	\$ 57.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 67.00	\$ 33.00	\$ -
6	Luke Skywalker	\$ 22.00	\$ -	\$ -	\$ -	\$ -	\$ 28.00	\$ 45.00	\$ -	\$ 25.00	\$ 32.00
7	Grand Total	\$ 186.00	\$ 251.00	\$ 146.00	\$ 130.00	\$ 143.00	\$ 141.00	\$ 136.00	\$ 162.00	\$ 127.00	\$ 173.00

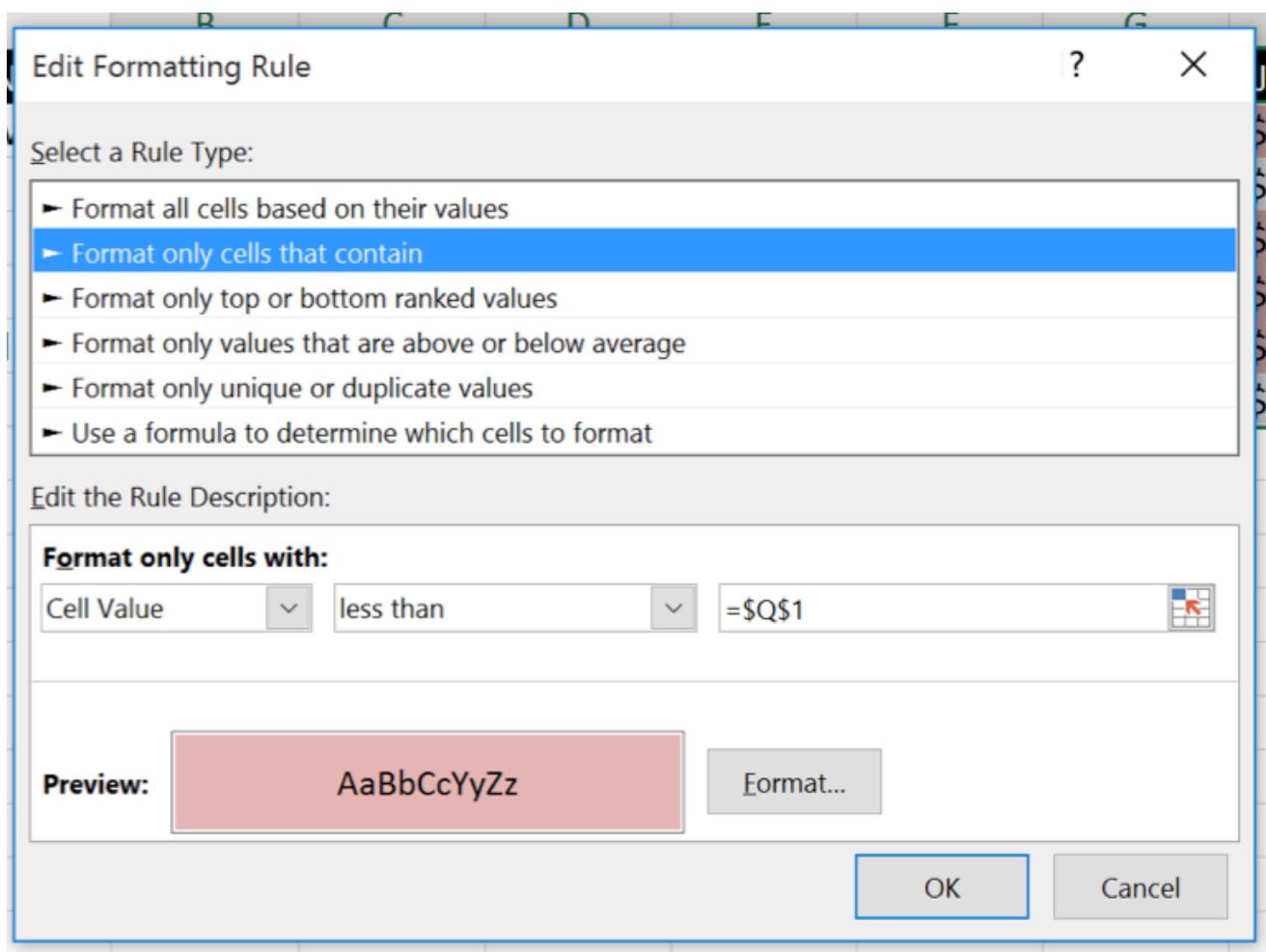


Double click on the first conditional formatting rule you created earlier



Select the second rule type.

We are going to set the second dropdown to “Less than” and enter “=\$Q\$1” into the last field because, in my example, i’m using cell Q1 to indicate what the sales quota is for the month.

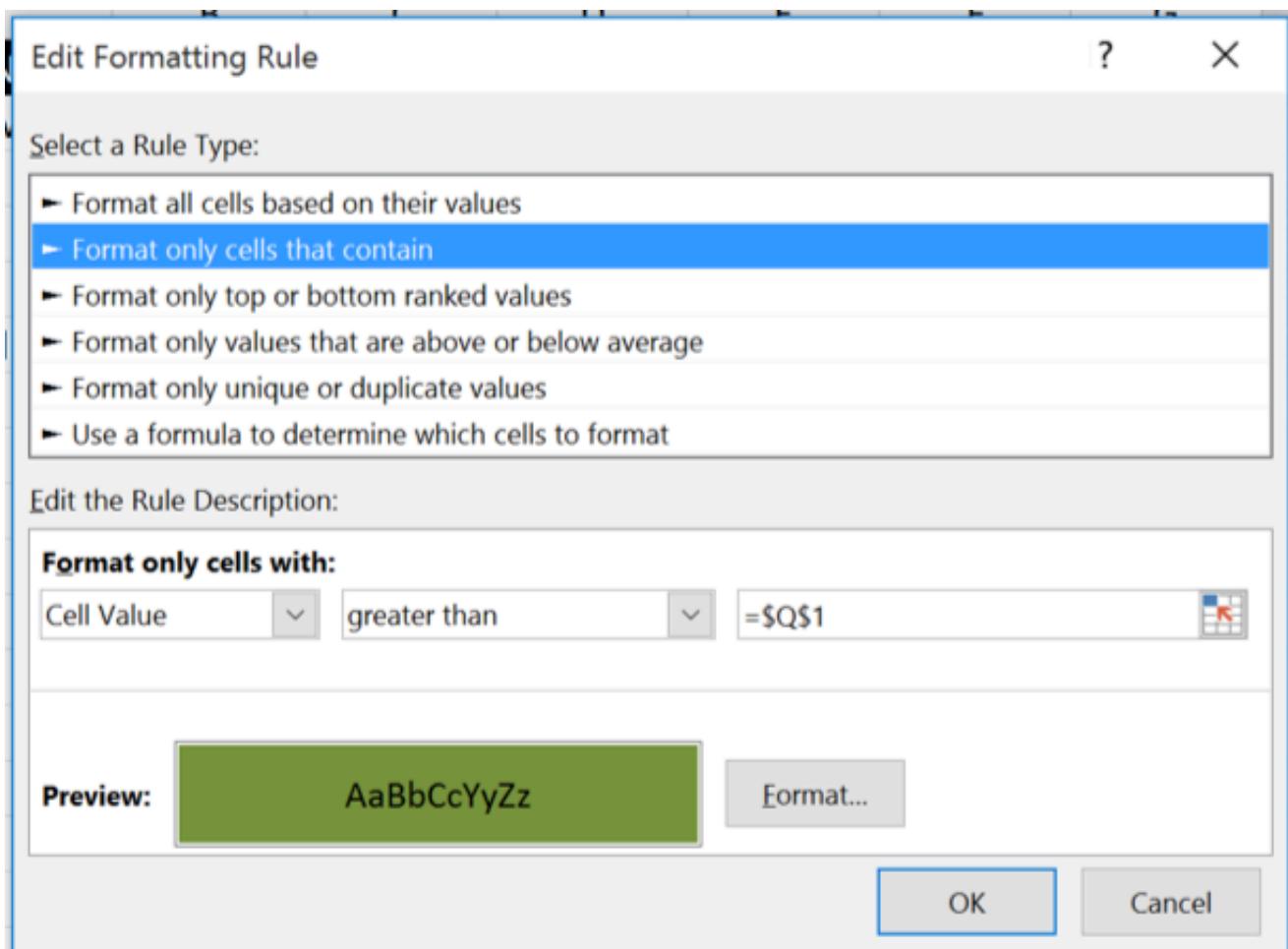


Once you do that, you will change the color to pink by selecting the format button. You are basically giving excel the following instructions:

Any Cell that contains a value less than what is in cell Q1, color it pink.

Note: You can also just select the cell you need by clicking on the little box with the arrow in it.

Hit ok, and then we do this again but this time we will set the second dropdown to “Greater than” and keep the cell reference the same:



Here is the result of our efforts. Now we can change cell Q1 to any number and our conditional formatting will update based on the sales quota.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1	Sales Rep Name	Jan 2016	Feb 2016	Mar 2016	Apr 2016	May 2016	Jun 2016	Jul 2016	Aug 2016	Sep 2016	Oct 2016	Nov 2016	Dec 2016	Totals
2	Anakin Skywalker	\$ 75.00	\$ 22.00	\$ -	\$ 72.00	\$ 58.00	\$ 24.00	\$ 34.00	\$ -	\$ -	\$ 58.00	\$ -	\$ 43.00	\$ 386.00
3	Boba fett	\$ -	\$ 102.00	\$ 76.00	\$ 58.00	\$ 51.00	\$ 26.00	\$ 57.00	\$ 29.00	\$ -	\$ -	\$ 118.00	\$ -	\$ 517.00
4	Chewbacca	\$ 31.00	\$ 70.00	\$ 70.00	\$ -	\$ 34.00	\$ 63.00	\$ -	\$ 66.00	\$ 69.00	\$ 83.00	\$ 53.00	\$ 53.00	\$ 592.00
5	Han Solo	\$ 58.00	\$ 57.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 67.00	\$ 33.00	\$ -	\$ 55.00	\$ -	\$ 270.00
6	Luke Skywalker	\$ 22.00	\$ -	\$ -	\$ -	\$ -	\$ 28.00	\$ 45.00	\$ -	\$ 25.00	\$ 32.00	\$ -	\$ -	\$ 152.00
7	Grand Total	\$ 186.00	\$ 251.00	\$ 146.00	\$ 130.00	\$ 143.00	\$ 141.00	\$ 136.00	\$ 162.00	\$ 127.00	\$ 173.00	\$ 226.00	\$ 96.00	\$ 1,917.00
8														
9														
10														

Let's try something else. We have a list of unique transaction IDs but we suspect that some have been duplicated. Let's use conditional formatting to sniff out the duplicates.

Highlight the data you want your conditional formatting to apply to and in your home tab select Conditional Formatting > New Rule...

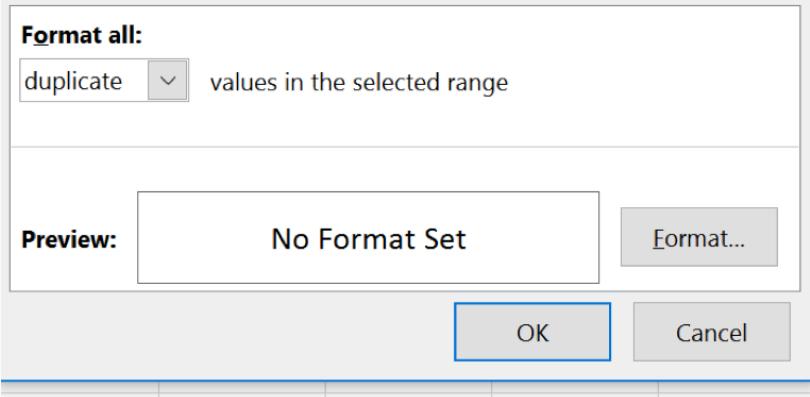
A	B
1	Transaction ID
2	62836
3	62389
4	63210
5	64551
6	63212
7	69575
8	69915
9	66799
10	67377
11	63330
12	66357
13	64252
14	65373
15	64301
16	61998
17	62836
18	68397
19	66028
20	65972
21	69882
22	63991
23	64720

Select a Rule Type:

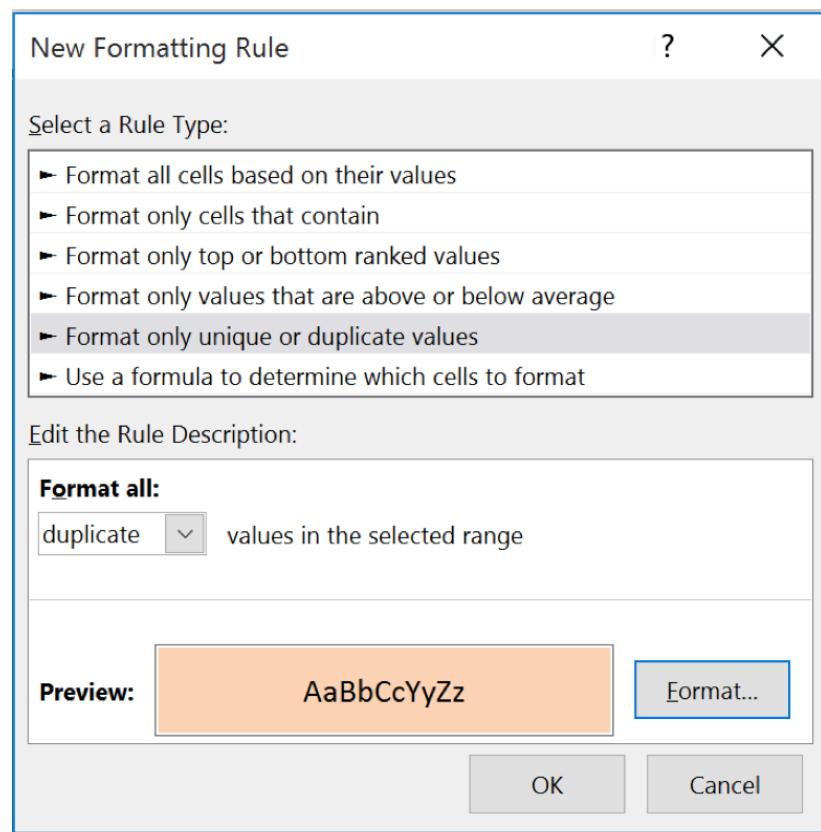
- Format all cells based on their values
- Format only cells that contain
- Format only top or bottom ranked values
- Format only values that are above or below average
- Format only unique or duplicate values**
- Use a formula to determine which cells to format

This time we'll use the fifth rule type: Format only unique or duplicate values.

Edit the Rule Description:



All we have to do is select the color that we want excel to highlight any duplicate values:



Now we know exactly where our duplicates are!

A
1 Transaction ID
2 62836
3 62389
4 63210
5 64551
6 63212
7 69575
8 69915
9 66799
10 67377
11 63330
12 66357
13 64252
14 65373
15 64301
16 61998
17 62836
18 68397
19 66028
20 65972
21 69882
22 63991
23 64720

We can now filter the list by color for some added precision:

The screenshot shows two parts of the Microsoft Excel interface. On the left, a context menu is open over the data range A1:A23, with the 'Filter by Cell Color' option selected. A tooltip provides instructions: 'Turn on filtering for the selected cells. Then, click the arrow in the column header to narrow down the data.' On the right, the main worksheet displays the filtered data, where rows 16, 17, and 18 are highlighted in orange, corresponding to the transaction IDs 61998, 62836, and 68397 respectively.

A	B	C	D	E
1 Transaction				
2	Sort Smallest to Largest			
3	Sort Largest to Smallest			
4	Sort by Color			
5	Clear Filter From "Transaction ID"			
6	Filter by Color			
7	Number Filters			
8	Search			
9	(Select All)			
10	60175			
11	60453			
12	60461			
13				
14				
15				
16	61998			
17	62836			
18	68397			
19	66028			
20	65972			
21	69882			

	A	B
1	Transaction	
2	62836	
17	62836	
26	66646	
29	66646	
34	62976	
45	60517	
52	60517	
66	63047	
71	63047	
82	62279	
89	62279	
97	61051	
.00	61163	
.04	61051	
.09	61163	
.13	61051	
.28	63866	
.33	63866	
.44	62976	
.52	65152	
.66	65152	
.77	65152	
.83		
.84		
.85		
.86		

Voila!

We can use conditional formatting for many different things. If you build a dashboard with multiple KPIs, conditional formatting is extremely useful to highlight good and bad metrics so that a high-level decision maker can take one glance and know whether things are going according to plan or they need to crack the whip.

The key here is to get creative. There are many different things you can do; look through the options and familiarize yourself with this feature. When the opportunity comes up don't be afraid to experiment.

Charts & Graphs

Make your data
stand out

Chapter Eighteen

Charts and Graphs

Make your data stand out

I noticed a huge change in my audience's reception to the way I presented my analysis once I began incorporating more charts and graphs into my presentations. They understood the data better, they asked better questions, and they were able to make better-informed decisions. They went from wasting time trying to understand the data (entirely my own fault) to just needing a high level walk through of the analysis and then jumping right into strategic planning. The latter should always be your goal; make your data as self-explanatory as possible. Excel charts & graphs will definitely help!

If you're not already using these powerful excel tools, I urge you to consider it for yourself and for your company. In this section I'll show you how to create graphs, how to choose the right graph to illustrate your data better, and how to synchronize your PowerPoint presentations to excel so that when you make changes excel can automatically update your power point slides.

Let's use the same sales data we've been using and illustrate our data with a line graph.

Highlight the data you want to be represented by your graph (yes, leave out the totals here because that will skew the graph):

Go to the Insert tab and you'll see a menu full of options for creating graphs:

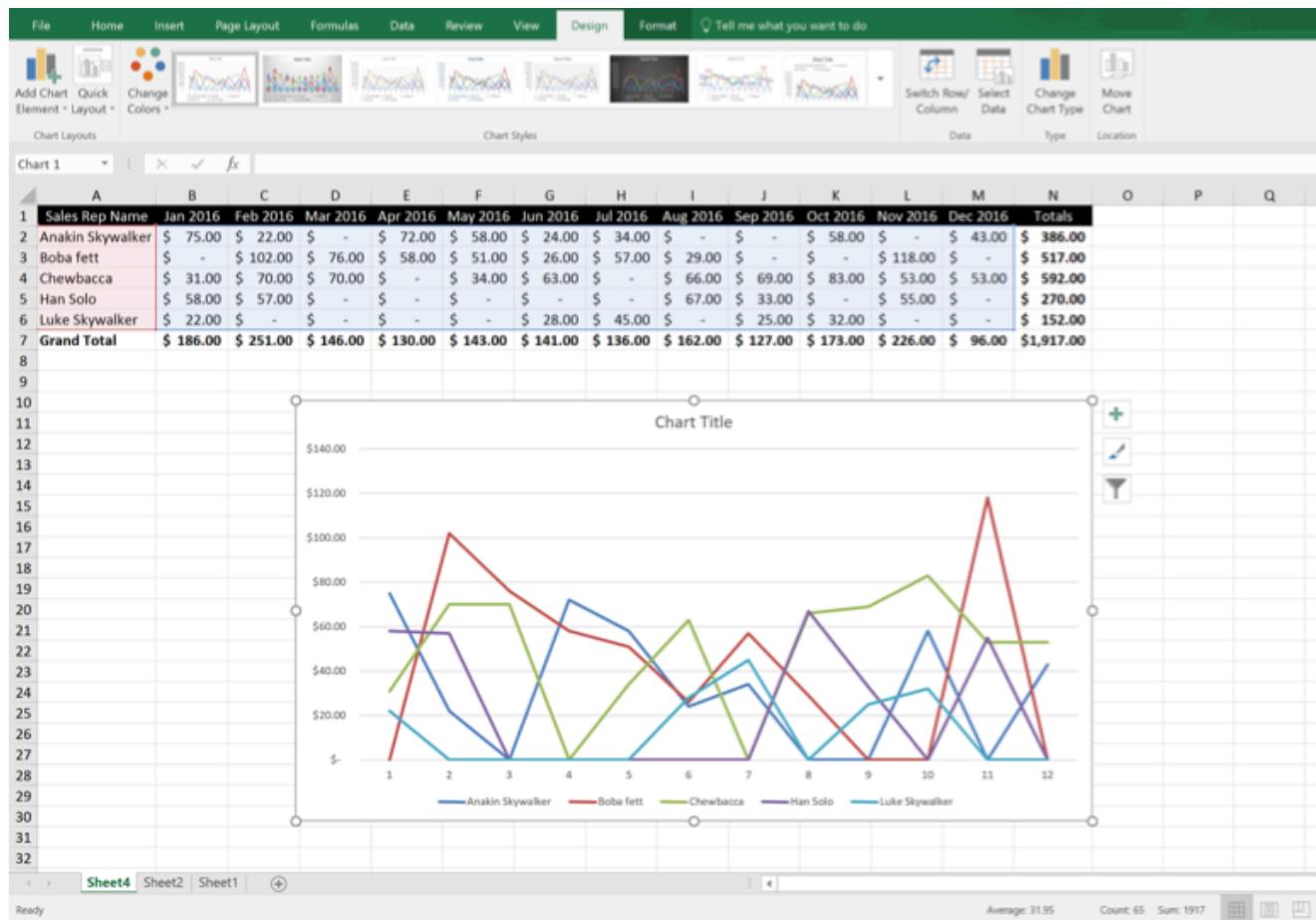


Choosing “Recommended Charts” is a great way to start out if you’re new to this or want some suggestions. I’ve used this option many times and ended up with a graph that represents my data much better than the one I originally intended to use. For our graph, we’ll use this option:

A screenshot of Microsoft Excel showing the 'Insert Chart' dialog box. The dialog box is titled 'Recommended Charts' and shows a preview of a 'Clustered Column' chart. The chart displays sales data for five characters over four months. The legend identifies the series: Anakin Skywalker (blue), Boba Fett (red), Chewbacca (green), Han Solo (orange), and Luke Skywalker (purple). The chart has a title 'Chart Title' and includes a note explaining that it's used for comparing values across categories. The background shows a portion of an Excel spreadsheet with a table of sales data for these characters.

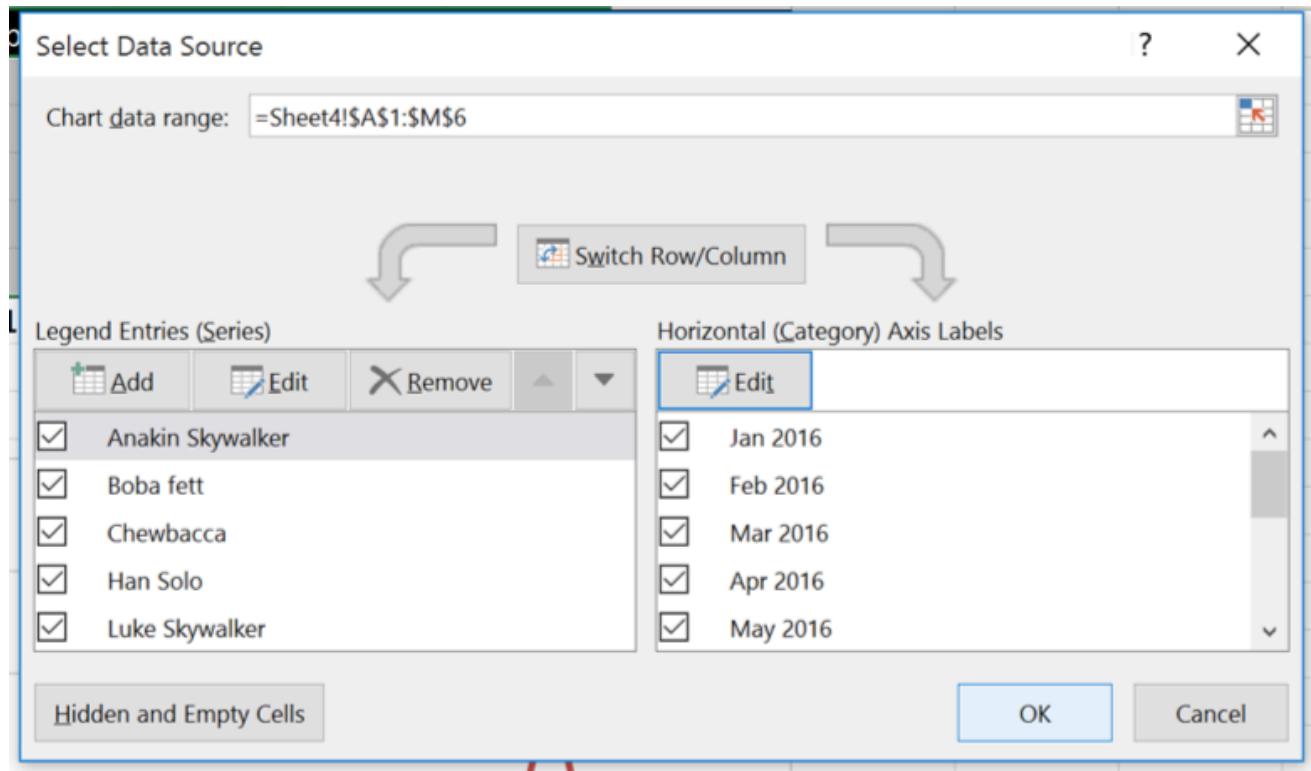
Excel already has a ton of great options for us to use. For now, we'll go with the third option, the line graph:

Easy-peasy! Now we have a graph to represent our data, and we didn't even break a sweat.

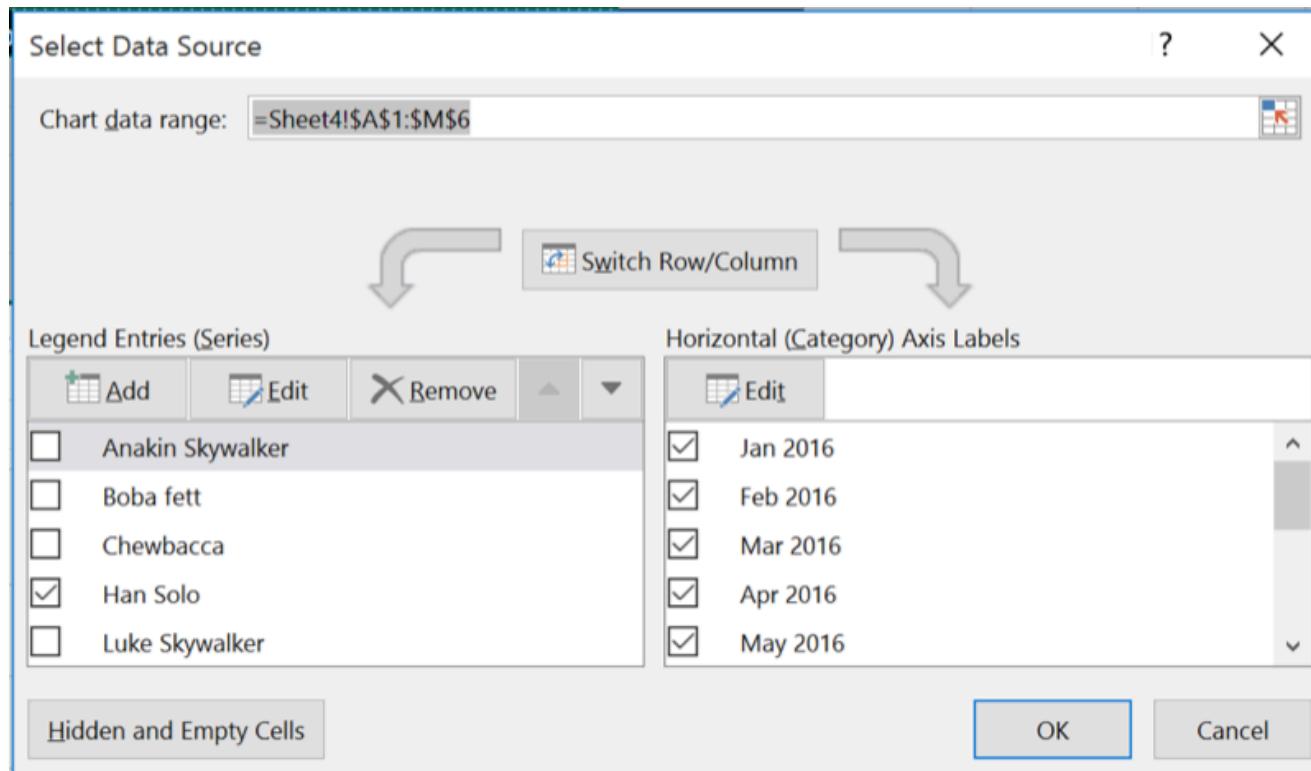


Something isn't quite right though, there's a lot going on in our line graph and its difficult to decipher meaningful information! Maybe we should only focus on one rep for this kind of graph; we'll leave everyone out and only illustrate Han Solo's performance since he likes to talk a big game!

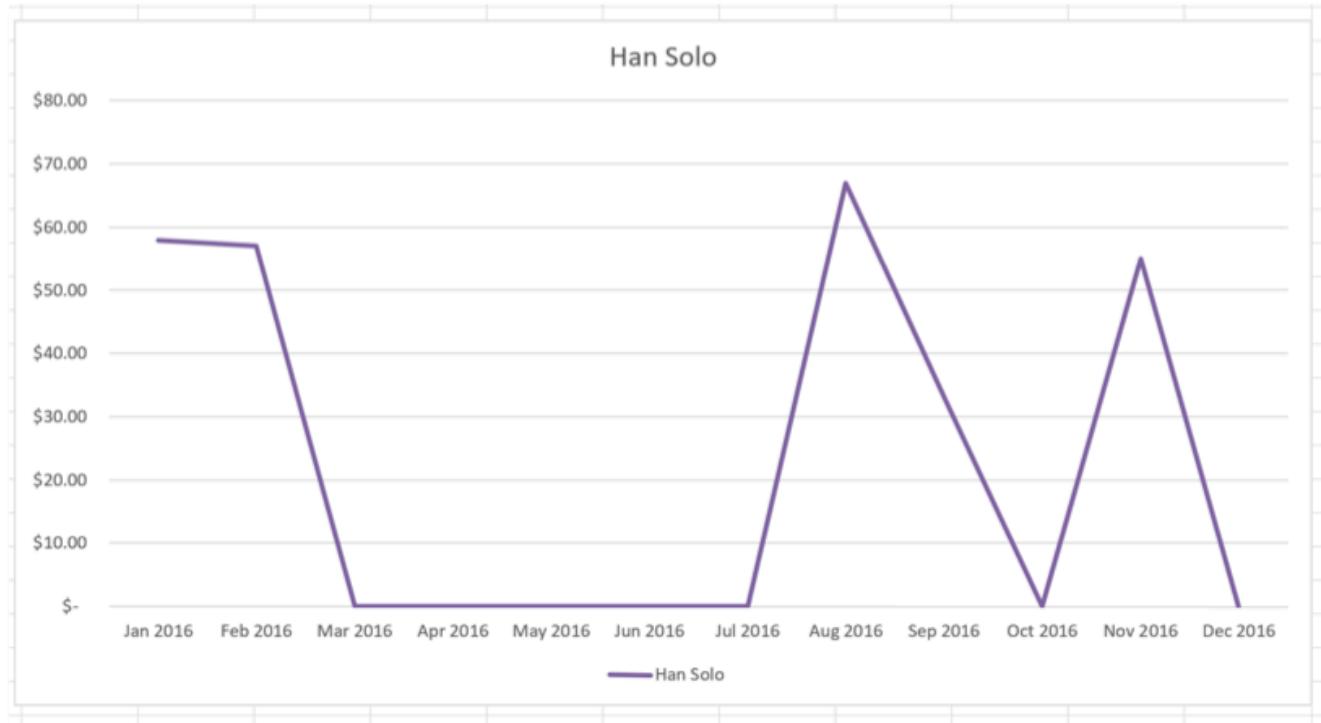
Select the graph and go to the design tab under chart tools. In this area, click on Select Data and you should get the following window:



Go ahead and deselect everyone in the Legend Entries (left hand side) except for that arrogant Han Solo guy!



Once you hit ok, the graph will update and only show you Han Solo's performance for the year.

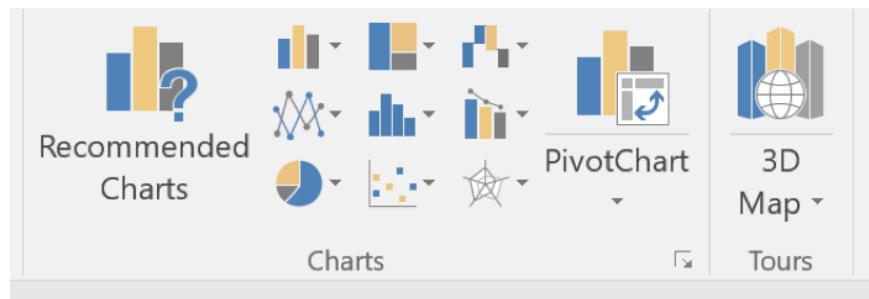


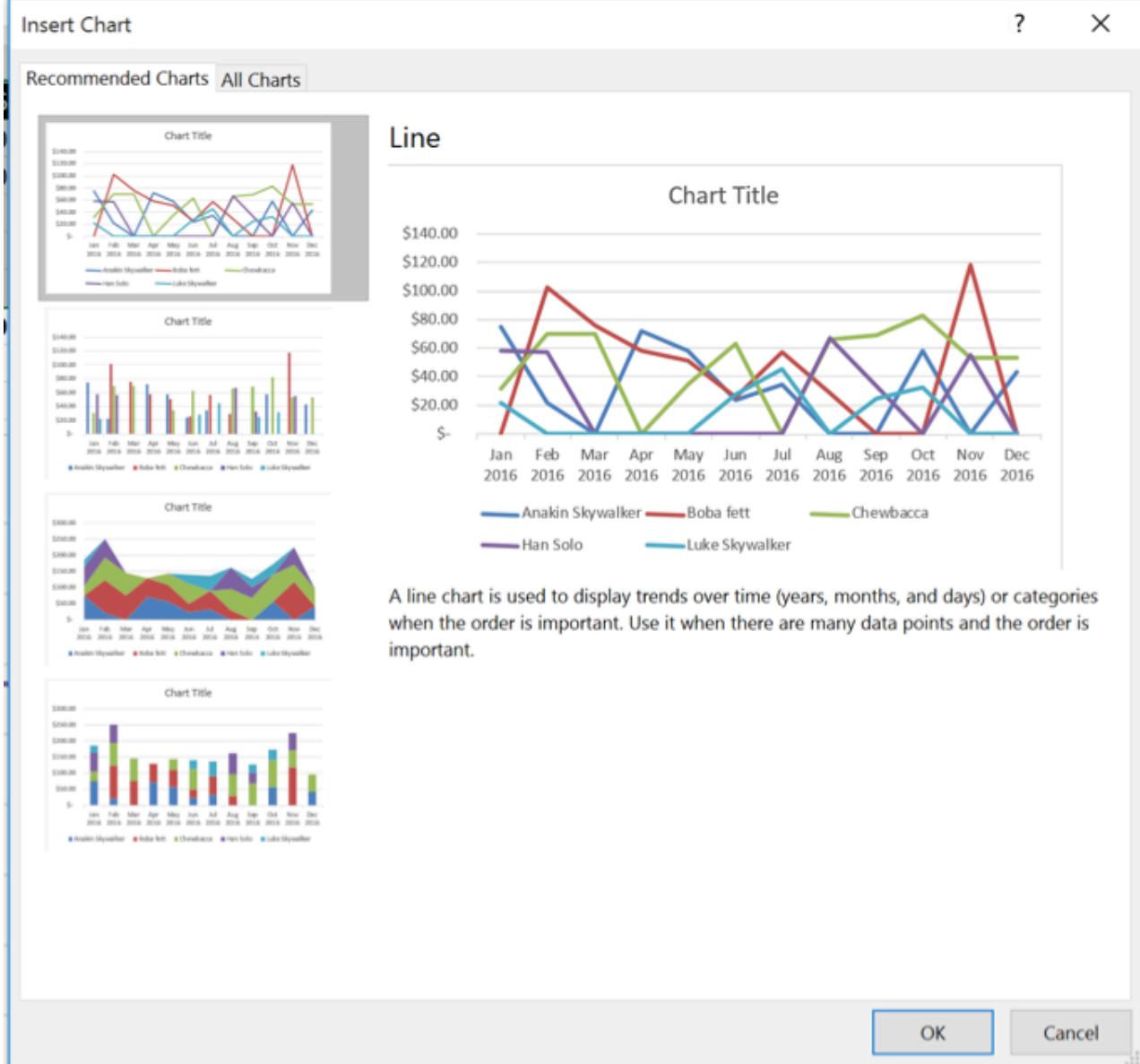
Hmm... between March and July he should have spent less time talking to Leia and more time focused on bringing in new business!

Now that we've satisfied our curiosity, the Sr. VP of sales still needs this data for all reps, and a line graph won't cut it because you don't have the time, or the patience, to answer his million questions about how to read the data. Remember, the key here is to make your data as self-explanatory as possible so that you can finally go to lunch on time!

Lets see the different ways excel can display our data in a graphical format:

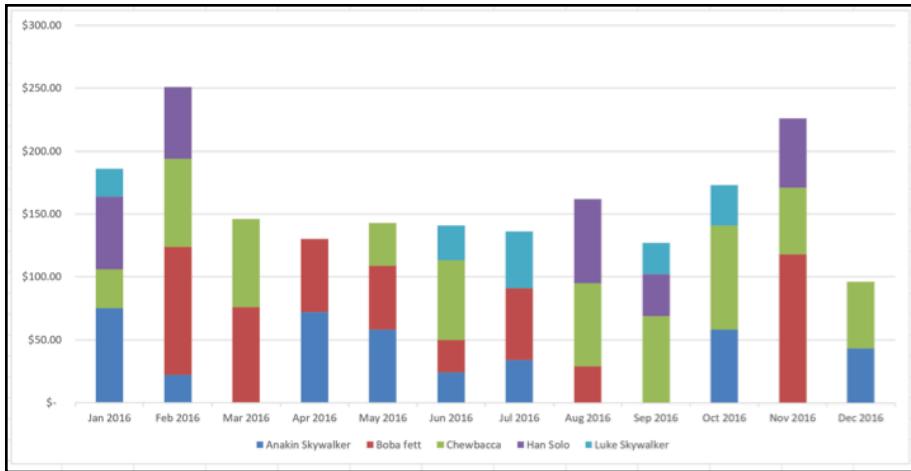
Highlight your data again, go to the insert tab and click on recommended charts





Each of the four recommendations has its advantages and disadvantages, but I think the best one to go with is the stacked bar graph. It displays all of our data in an easy to ready, easy to follow format.

Select the stacked bar chart and click ok.



I can already tell, just at first glance, that Boba Fett and Chewbacca are the two best sales people (lots of red and green). Always aim, as best you can, to give instant impressions with your charts and graphs; your boss will love you for it and you'll save a lot of time explaining things.

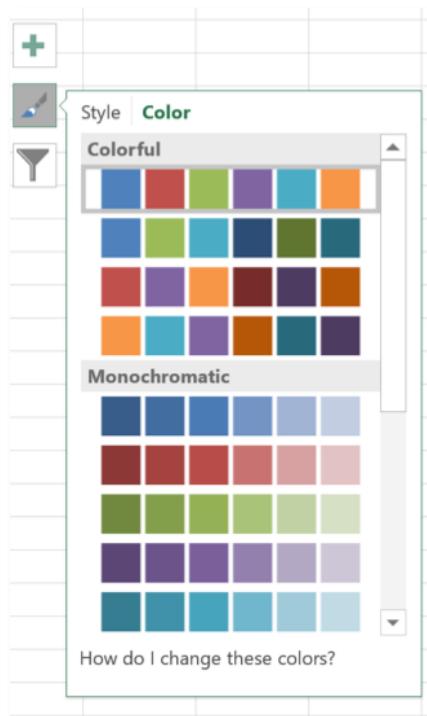
Excel makes it easy to customize the style and colors of your graph with a few clicks.

If you click on your graph you'll immediately notice three boxes appear on the right side:

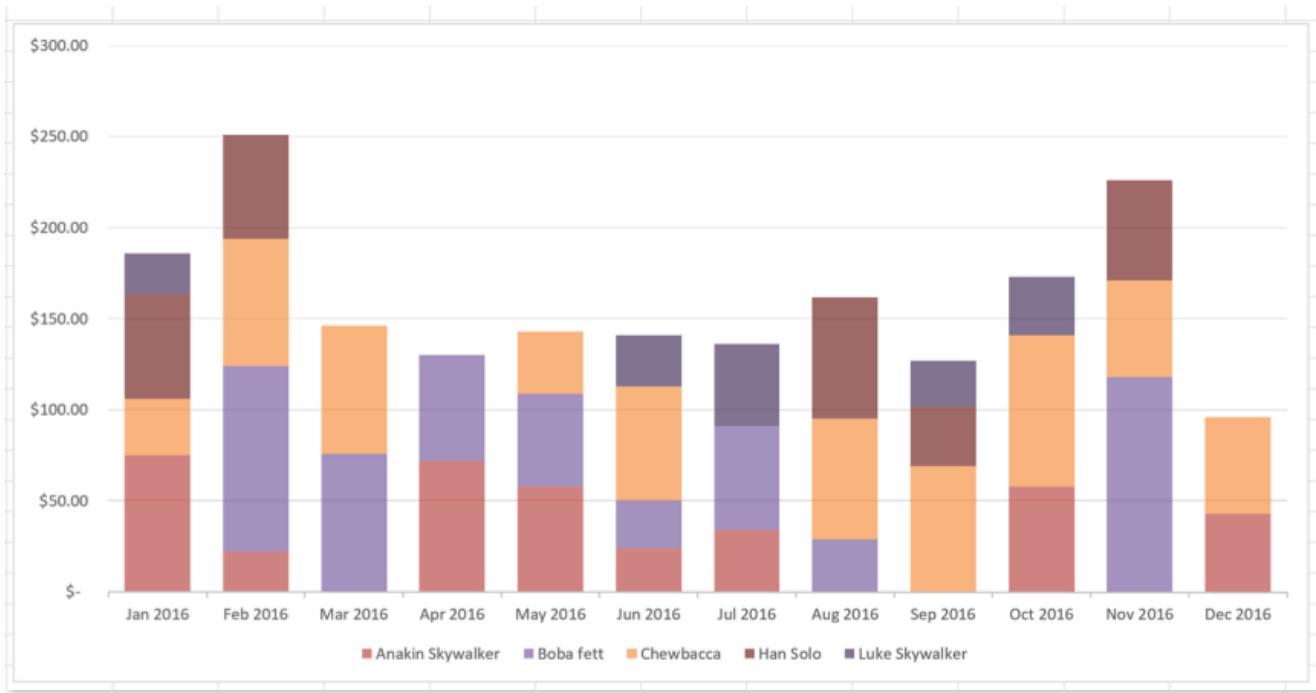


When you click on the paint brush tool, you'll see different styling options to choose from:

Notice there's another tab to choose from at the top; Color. Here, you'll find different color options to use:



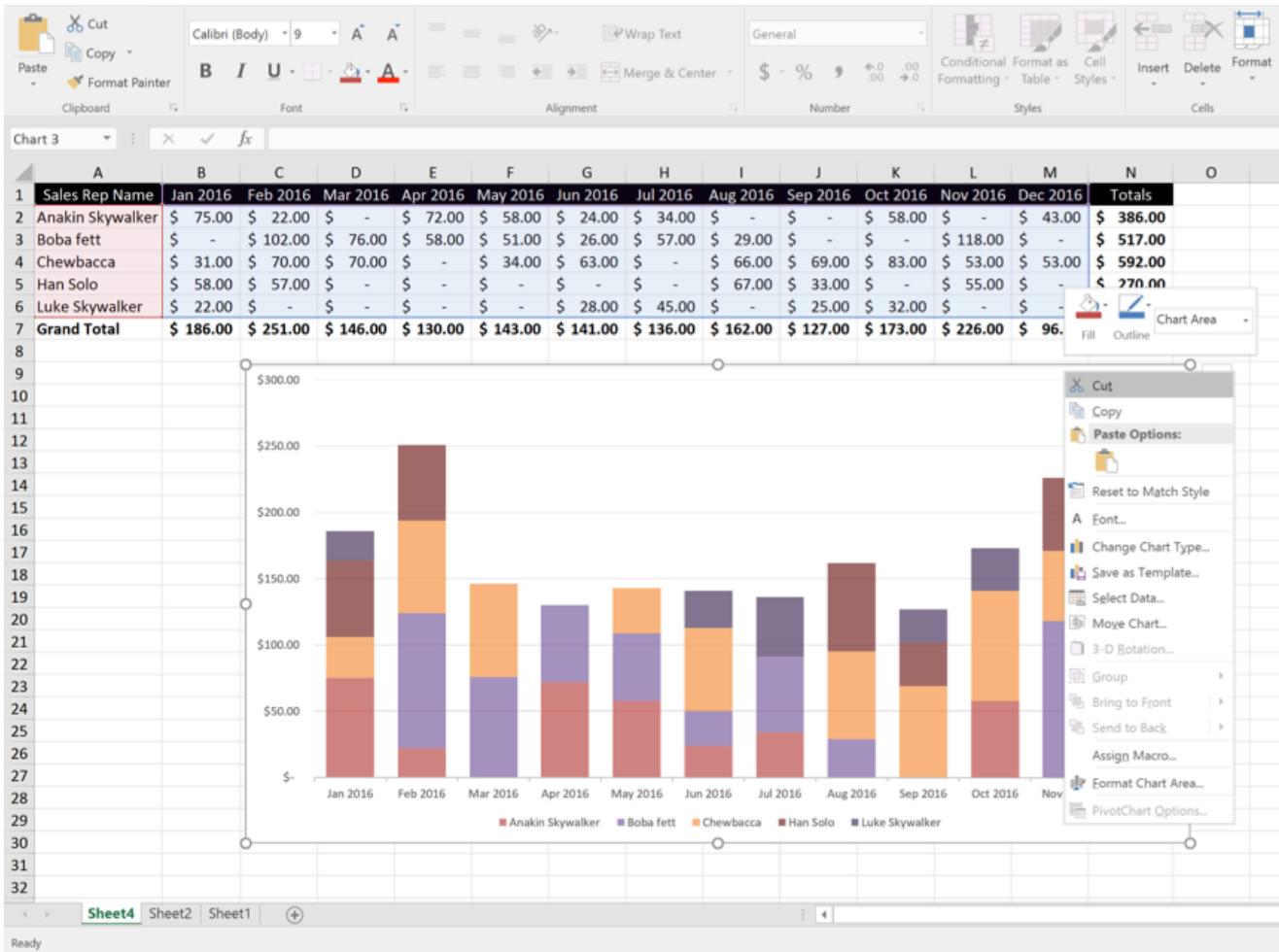
Maybe the person who will see these charts appreciates seasonal fall themes:



Syncing Excel with Power Point

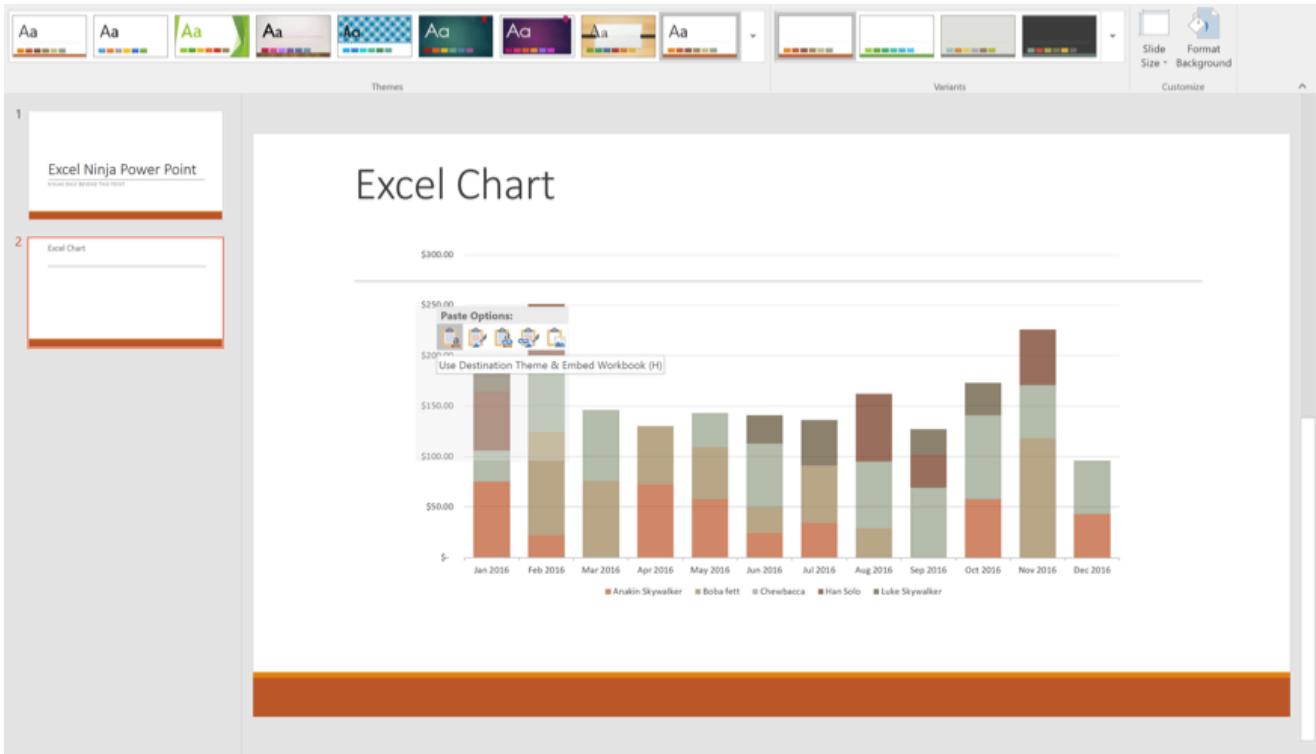
During one of my many late nights trying to complete the financial reporting cycle I was in the middle of manually updating graphs on my monthly slide deck. I asked myself if there was a better, faster way updating all my slides data; and there is! I banged my head against the wall a few times, but I finally figured it out and got my slides synchronizing with excel. I'll show you how it's done, and its easier than you might think!

Once you have PowerPoint open, all you have to do is cut and paste your chart over from excel.



Just select your graph and cut (NOT copy, it won't work the same).

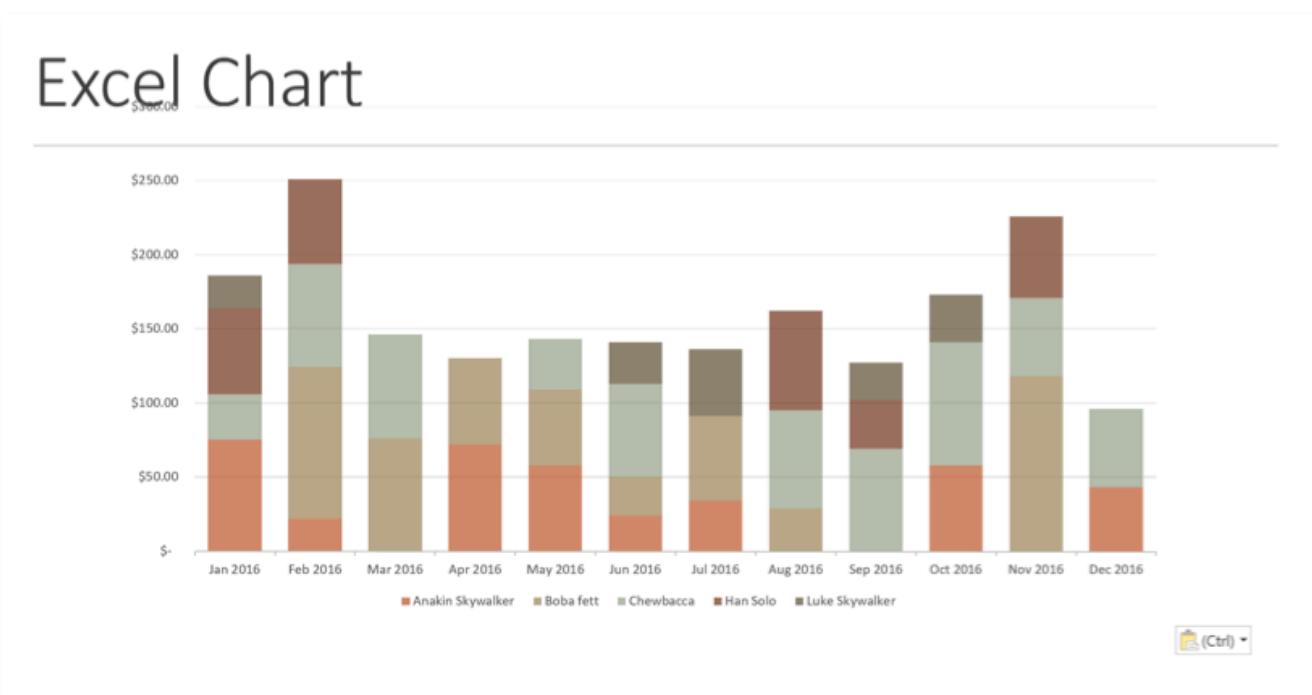
Then paste it in PowerPoint:



You'll notice that when you paste over the graph the colors change. This is because PowerPoint automatically changes the formatting and colors of the graph to match the slide deck's theme. If you want to keep the original colors, there is an extra step.

After the graph has been pasted to PowerPoint, a small icon should appear to you on the bottom right-hand corner. Click on it

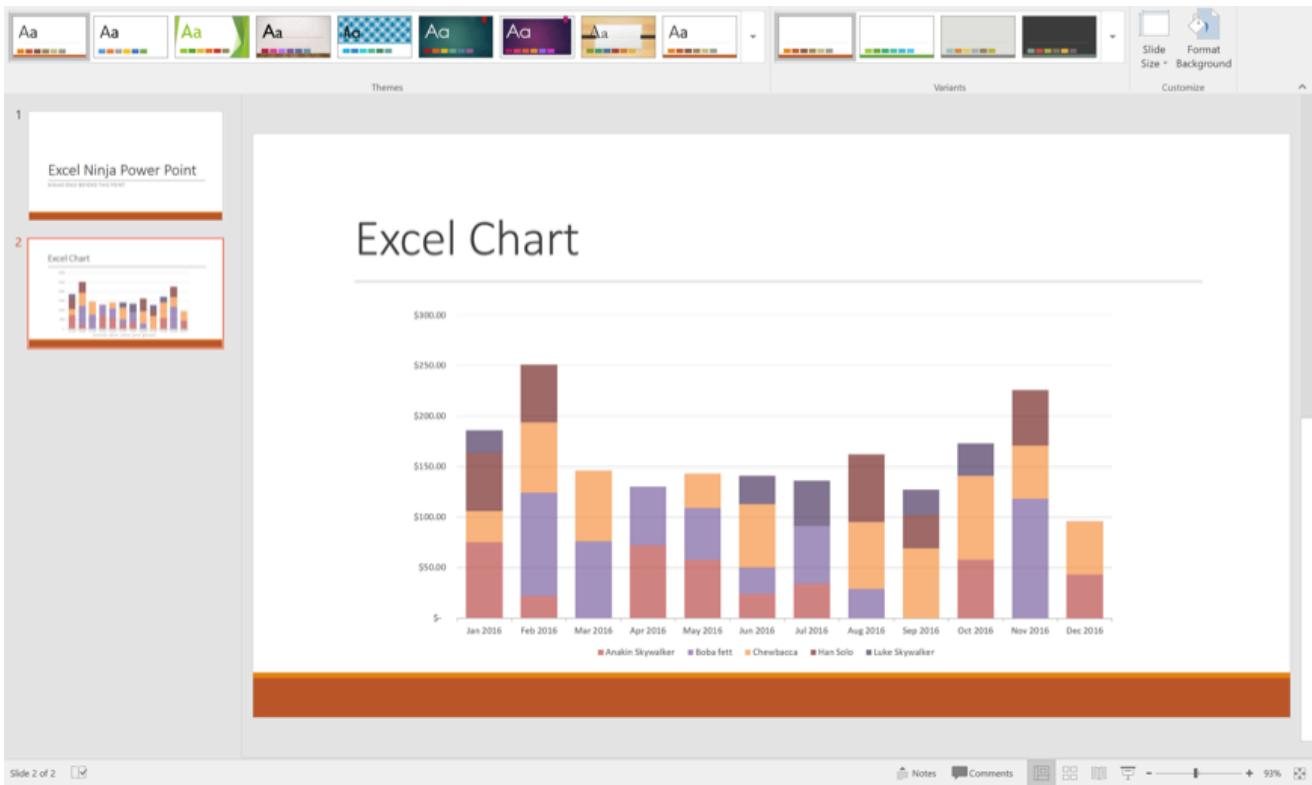
Excel Chart



The fourth icon in the dropdown gives you the option to keep the source formatting and link the data. Click on this and you are good to go!

The screenshot shows a Microsoft PowerPoint slide with the following details:

- Slide Content:** The slide is titled "Excel Chart". It contains a stacked bar chart with the same data as the previous figure, showing monthly values from January 2016 to December 2016.
- Chart Selection:** The chart is currently selected, as evidenced by the selection handles and a small preview window showing the chart's structure.
- Ribbon:** The PowerPoint ribbon is visible at the top, displaying various tabs like Home, Insert, Page Layout, etc., along with their respective icons and dropdown menus.
- Navigation:** On the left side, there is a slide navigation pane showing two slides: "Excel Ninja Power Point" and "Excel Chart".
- Bottom Bar:** At the bottom of the screen, there is a standard Windows-style taskbar with icons for Start, Task View, File, Notes, Comments, and other system functions.



Now, let's see if the data is really synchronizing with excel.

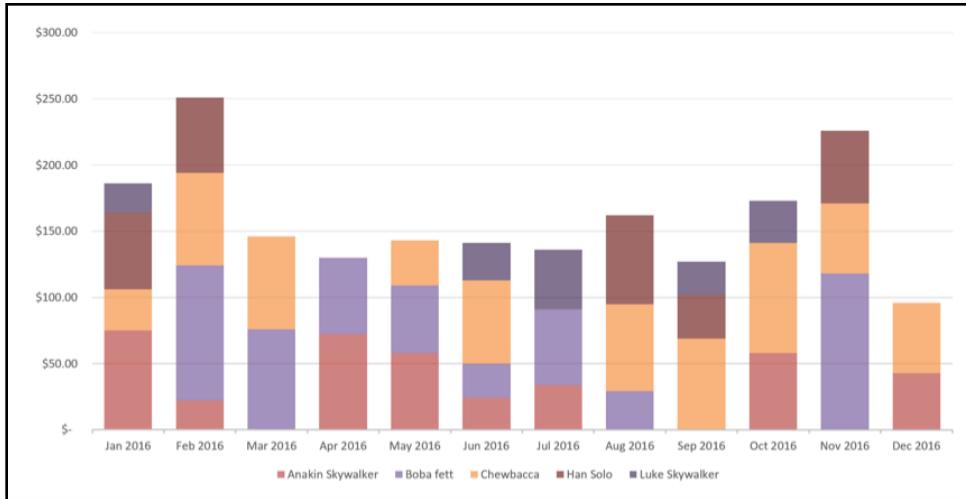
It turns out that Han Solo didn't spend as much time flirting with Leia as we thought during March, April and May of last year and actually closed some sales. He sends you an email with his sales numbers for those months:

Month	Sale Amount
March	\$22
April	\$134
May	\$87

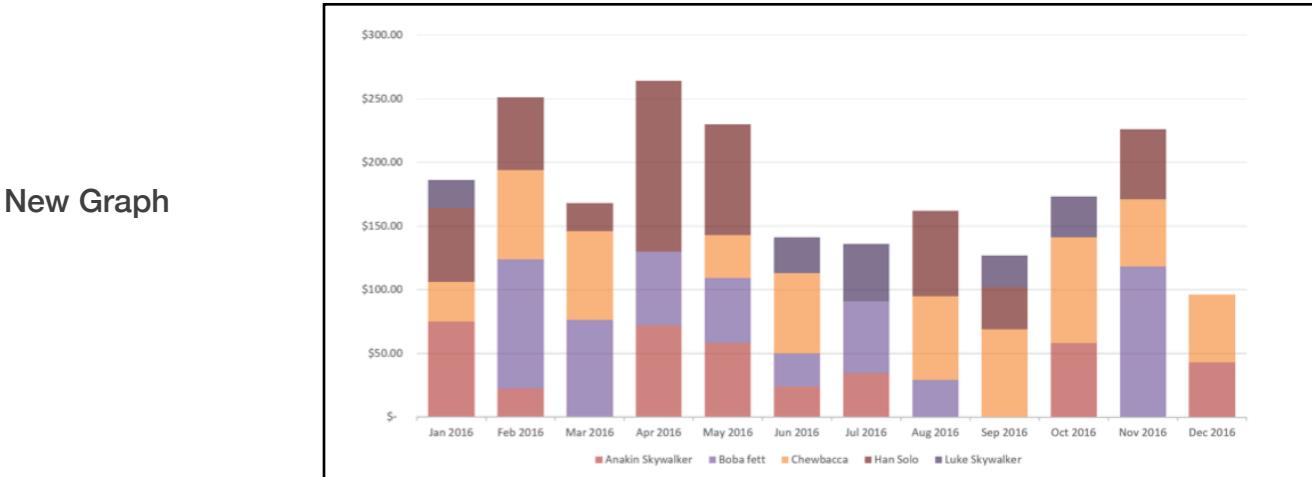
Let's enter these sales on our data table:

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	Sales Rep Name	Jan 2016	Feb 2016	Mar 2016	Apr 2016	May 2016	Jun 2016	Jul 2016	Aug 2016	Sep 2016	Oct 2016	Nov 2016	Dec 2016	Totals
2	Anakin Skywalker	\$ 75.00	\$ 22.00	\$ -	\$ 72.00	\$ 58.00	\$ 24.00	\$ 34.00	\$ -	\$ -	\$ 58.00	\$ -	\$ 43.00	\$ 386.00
3	Boba fett	\$ -	\$ 102.00	\$ 76.00	\$ 58.00	\$ 51.00	\$ 26.00	\$ 57.00	\$ 29.00	\$ -	\$ -	\$ 118.00	\$ -	\$ 517.00
4	Chewbacca	\$ 31.00	\$ 70.00	\$ 70.00	\$ -	\$ 34.00	\$ 63.00	\$ -	\$ 66.00	\$ 69.00	\$ 83.00	\$ 53.00	\$ 53.00	\$ 592.00
5	Han Solo	\$ 58.00	\$ 57.00	\$ 22.00	\$ 134.00	\$ 87.00	\$ -	\$ -	\$ 67.00	\$ 33.00	\$ -	\$ 55.00	\$ -	\$ 270.00
6	Luke Skywalker	\$ 22.00	\$ -	\$ -	\$ -	\$ -	\$ 28.00	\$ 45.00	\$ -	\$ 25.00	\$ 32.00	\$ -	\$ -	\$ 152.00
7	Grand Total	\$ 186.00	\$ 251.00	\$ 146.00	\$ 130.00	\$ 143.00	\$ 141.00	\$ 136.00	\$ 162.00	\$ 127.00	\$ 173.00	\$ 226.00	\$ 96.00	\$ 1,917.00
8														
9														
10														

Notice how our graph changed now that we updated the table:



Old Graph

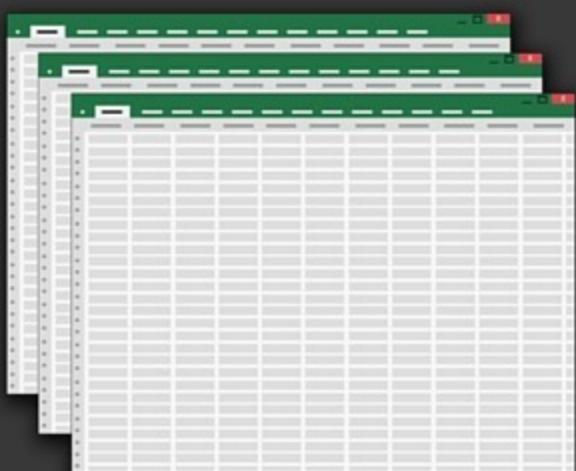


New Graph

This added a tremendous amount of efficiency for me during my financial reporting cycles. Instead of redoing each graph every month; I created a workbook that had all the monthly data my CFO wanted to see. All I had to do is update my workbook each month, rollover the previous month's PowerPoint file and update/refresh the charts.

FREE BONUSES

Thank You Readers



As a Thank you for downloading my book
you get:

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About the Author

Hi future excel expert,

My name is Joel Villar and I'm a CPA living in Miami, FL. Over the last five years I've worn many hats: Financial reporting manager, accounting manager, Hedge fund accountant, tax preparer, and entrepreneur just to name a few. Although I've been blessed and have enjoyed my career thus far, the thing that brings me the most fulfillment of all is teaching others.

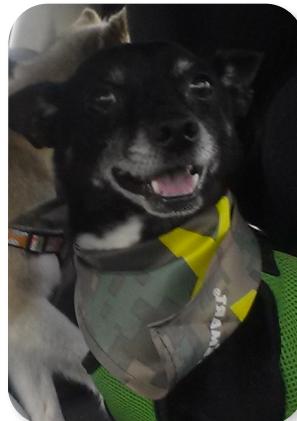


I've always felt a sense of accomplishment when I can teach someone a new concept and help him or her improve. In college I worked in the school library and was involved in tutoring other students. I didn't know it at the time but it was my passion for learning new things and teaching others that drew me toward that chapter of my life and, in many ways, that experience propelled me on a long journey that has lead to me writing the book you're reading.



Besides being an accountant and loving to teach, I enjoy reading, bike riding (or any outdoor activity), graphic design, *very* amateur astronomy, hip-hop music, and watching Netflix (who doesn't). I am very happily married to my high school sweetheart, Ivana, and we have two dogs; Matthew (A Chihuahua) and Hailey (A Husky).

I truly hope that this book exceeds your expectations, that you learn a ton from it and that it serves as the foundation for you to build your career even further.



Congratulations...

You're done reading this book and, by now, your spreadsheets skills should already be way past that of your co-workers

...But it doesn't end here!

I put together a huge resource for my audience where we can share ideas, discuss new excel topics, and learn even more together. I release content frequently so be sure to visit the page often to get the latest.



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