



The Power Modeling Bootcamp: Course Notes



Introduction & Formatting



CORE SKILLS:



Excel



Modeling

Excel and financial modeling go hand in hand.



A financial model is a virtual representation of a business.

It also translates a set of hypotheses into numerical predictions.



MAIN GOAL:

Reduce complexity and uncertainty

A financial model's main goal is to reduce complexity and uncertainty. It can be very detailed or rather short, but should always aim to be easy to understand and work with.



APPLICATIONS:

- BUSINESS VALUATION
- SCENARIO PLANNING
- CAPITAL BUDGETING
- WACC ESTIMATION
- PROJECT FINANCE
- M & A
- ASSET MANAGEMENT

It is a tool that has gained substantial popularity in the modern corporate world.



Name of the spreadsheet - Arial 12, Bold; Dark blue

Highlighted text – White font color, Bold, Dark blue fill;
This formatting refers to the forecast period 2017 - 2021

Header - Bold, Italics,
Dark blue bottom line;
*Displays the currency
and the unit of
measurement*

	A	B	C	D	E	F	G	H
1		Company A						
2								
3								
4		\$ in mln.						
5		Revenues	3,850	4,120	4,408	4,716	5,047	5,400
6		Cogs	1,230	1,236	1,222	1,115	1,514	1,620
7		Gross Profit	2,620	2,884	3,086	3,301	3,533	3,780
8		Operating expenses	-890	-865	-926	-990	-1,060	-1,134
9		EBITDA	1,730	2,019	2,160	2,311	2,473	2,646
10		D&A	-300	-320	-320	-320	-320	-320
11		EBIT	1,430	1,699	1,840	1,991	2,153	2,326
12		Interest expenses	-250	-683	-632	-569	-494	-405
13		EBT	1,180	1,015	1,208	1,422	1,659	1,920
14		Taxes	-236	-203	-242	-284	-332	-384
15		Net Income	944	812	967	1,138	1,327	1,536

Header - Bold,
Dark blue letters, Dark
blue bottom border
line;
*Represents the
forecast period*

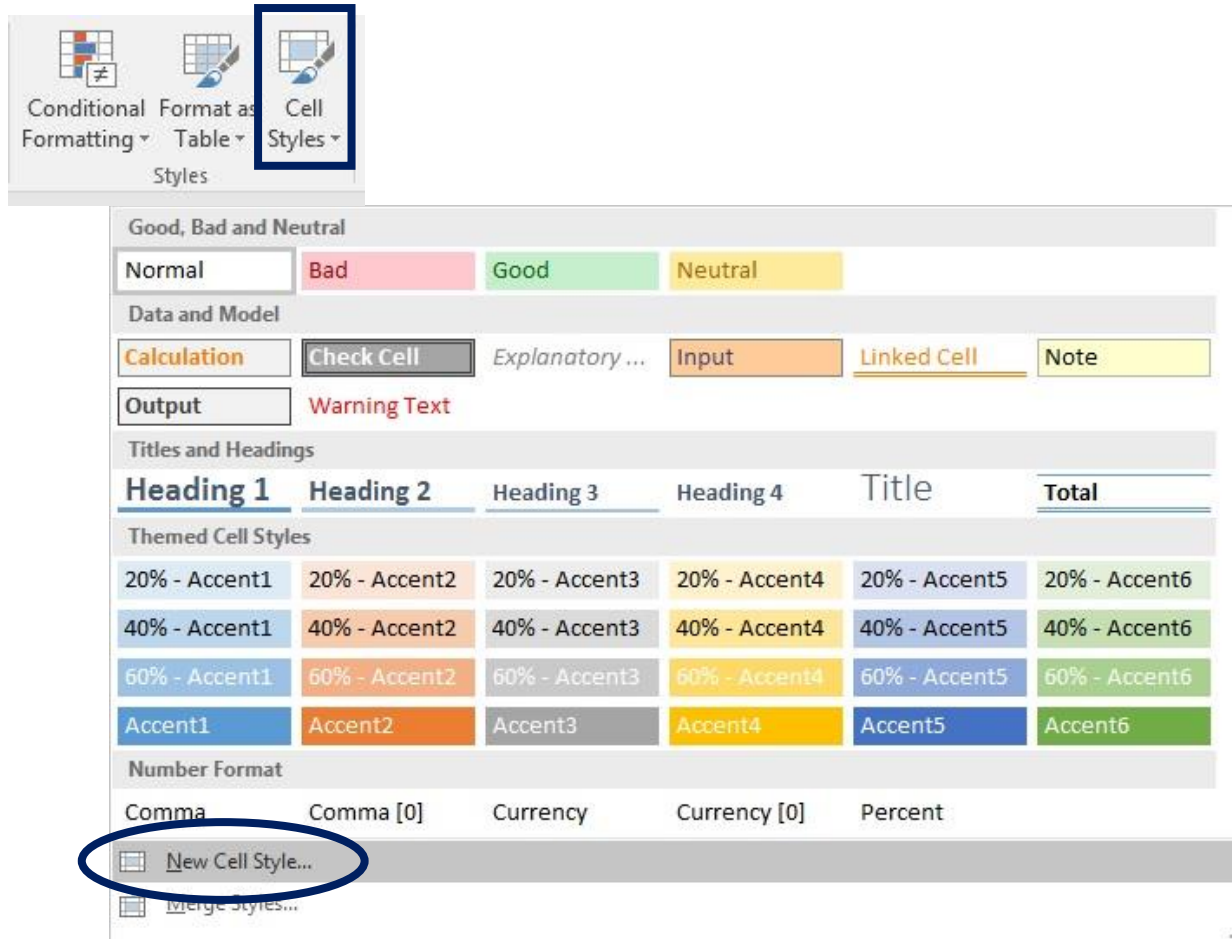
Subtotal - Bold,
Thin black top border
line;
*Displays the subtotal
values in the table*

Total – Bold, Thin top border line, thicker bottom border line; *Shows total values*

Note: Remember – words are aligned to the left and numbers are aligned to the right



	A	B	C	D	E	F	G	H
1		Company A						
2								
3								
4		\$ in mln.	2016	2017	2018	2019	2020	2021
5		Revenues	3,850	4,120	4,408	4,716	5,047	5,400
6		Cogs	-1,230	-1,236	-1,322	-1,415	-1,514	-1,620
7		Gross Profit	2,620	2,884	3,086	3,301	3,533	3,780
8		Operating expenses	-890	-865	-926	-990	-1,060	-1,134
9		EBITDA	1,730	2,019	2,160	2,311	2,473	2,646
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14		Taxes	-236	-203	-242	-284	-332	-384
15		Net Income	944	812	967	1,138	1,327	1,536



After you select a cell, in the **Cell Styles** section you can create a **New Cell Style**.

Alt + H + J + N



A small dialog box opens up. The characteristics of this formatting are shown here. You can see the default formatting of numbers, cell alignment, font, and so on. You can choose which ones should be applied by ticking or unticking some of these boxes.

By clicking on Format, all aspects of a cell's formatting can be readjusted.

Now, all you have to do is name this style. We recommend you use names that are intuitive.

Once you have decided on a name, click OK.

Cell Styles



Conditional Formatting | Format as Table | **Cell Styles**

Custom

Header 1	Header 2	Highlight	Subtotal	Total Value
----------	----------	-----------	----------	-------------

Good, Bad and Neutral

Normal	Bad	Good	Neutral
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Data and Model

Calculation	Check Cell	Explanatory ...	Input	Linked Cell	Note
Output	Warning Text				

Titles and Headings

Heading 1	Heading 2	Heading 3	Heading 4	Title	Total
-----------	-----------	-----------	-----------	-------	-------

Themed Cell Styles

20% - Accent1	20% - Accent2	20% - Accent3	20% - Accent4	20% - Accent5	20% - Accent6
40% - Accent1	40% - Accent2	40% - Accent3	40% - Accent4	40% - Accent5	40% - Accent6
60% - Accent1	60% - Accent2	60% - Accent3	60% - Accent4	60% - Accent5	60% - Accent6
Accent1	Accent2	Accent3	Accent4	Accent5	Accent6

Number Format

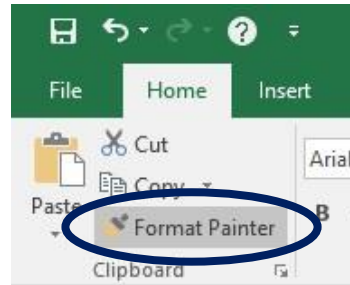
Comma	Comma [0]	Currency	Currency [0]	Percent
-------	-----------	----------	--------------	---------

New Cell Style...
Merge Styles...

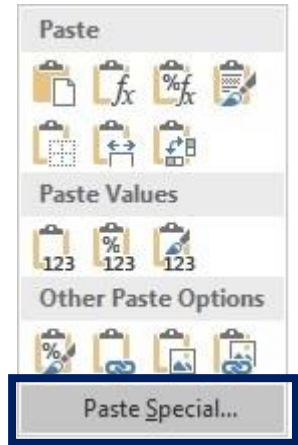
The next time when you open **Cell Styles**, you can see a new section called **Custom**. And within Custom, you will see the new cell style you created.

You only need to create new cell styles once. And once you do that, you can use them in all new spreadsheets.

Format Painter

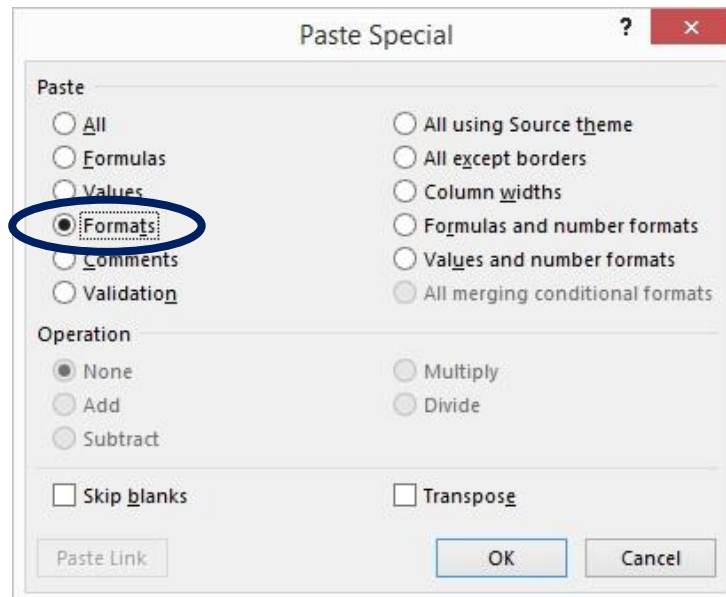


Format Painter copies the formatting of a selected cell or a group of cells, and Excel is ready to apply it to other cells in the spreadsheet.



Alt + E + S

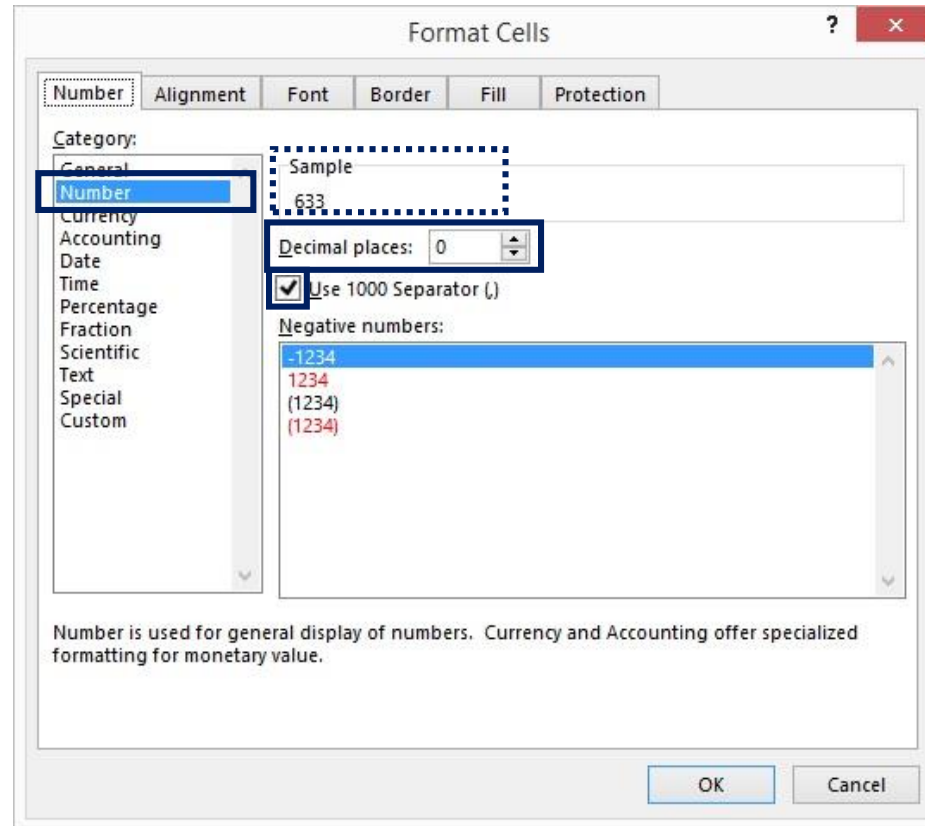
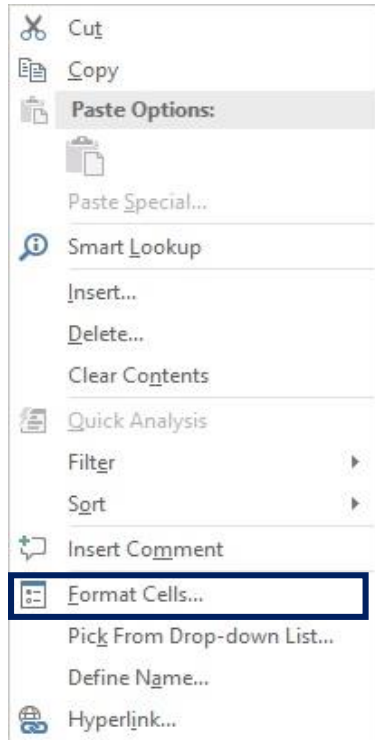
Ctrl + Alt + V



An alternative way to do that is to copy the cells whose format you would like to carry over, select the range that must be formatted, and use **Paste special**.

You must either expand the **Paste** icon or use a keyboard shortcut.

Format Cells

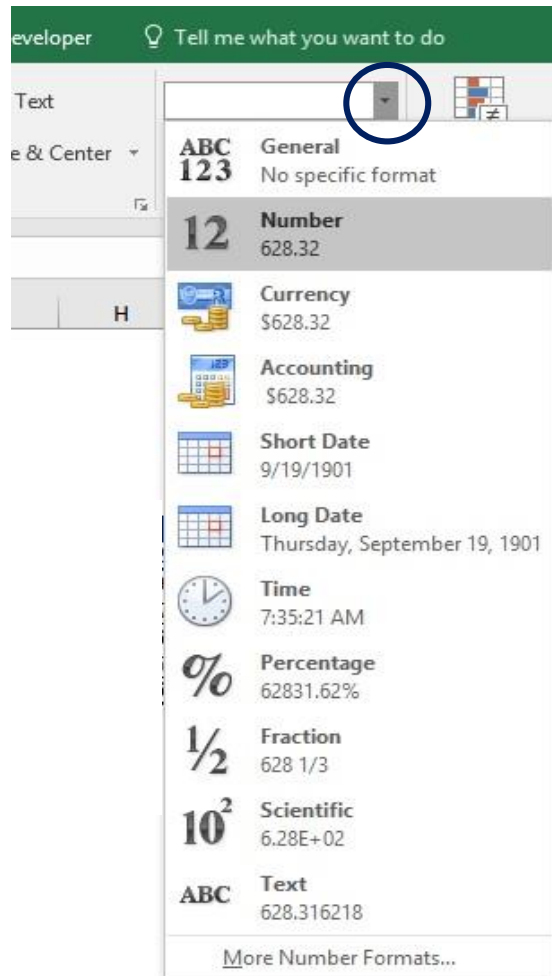


Right click on a cell and press Format cells. Adjust the settings in the dialog box.

When the values you are working with are large, you can remove the figures behind the decimal separator (Decimal places: 0). Since we are talking about money, the thousands separator is indispensable.

Make a snappy check of the sample value. It shows how the numbers will look like after you press OK.

Format Cells



As you probably know, Excel doesn't work only with numbers. Its cells can contain information about text, date, time, currencies, percentages, values, fractions, and other types of data.

Format Cells



<u>Shortcut Key</u>	<u>Number Format</u>	<u>Pre-formatting</u>	<u>After formatting</u>		
Ctrl + Shift + <table><tr><td>`</td><td>~</td></tr></table>	`	~	<i>General</i>	123	123
`	~				
Ctrl + Shift + <table><tr><td>1</td><td>!</td></tr></table>	1	!	<i>Number</i>	123	123.00
1	!				
Ctrl + Shift + <table><tr><td>2</td><td>@</td></tr></table>	2	@	<i>Time</i>	22:11	10:11 PM
2	@				
Ctrl + Shift + <table><tr><td>3</td><td>#</td></tr></table>	3	#	<i>Date</i>	8/15/2016	15-Aug-16
3	#				
Ctrl + Shift + <table><tr><td>4</td><td>\$</td></tr></table>	4	\$	<i>Currency</i>	123	\$123.00
4	\$				
Ctrl + Shift + <table><tr><td>5</td><td>%</td></tr></table>	5	%	<i>Percent</i>	0.123	12%
5	%				
Ctrl + Shift + <table><tr><td>6</td><td>^</td></tr></table>	6	^	<i>Scientific</i>	123	1.23E+02
6	^				

Ctrl + Shift + Grave

Ctrl + Shift + 1

Ctrl + Shift + 2

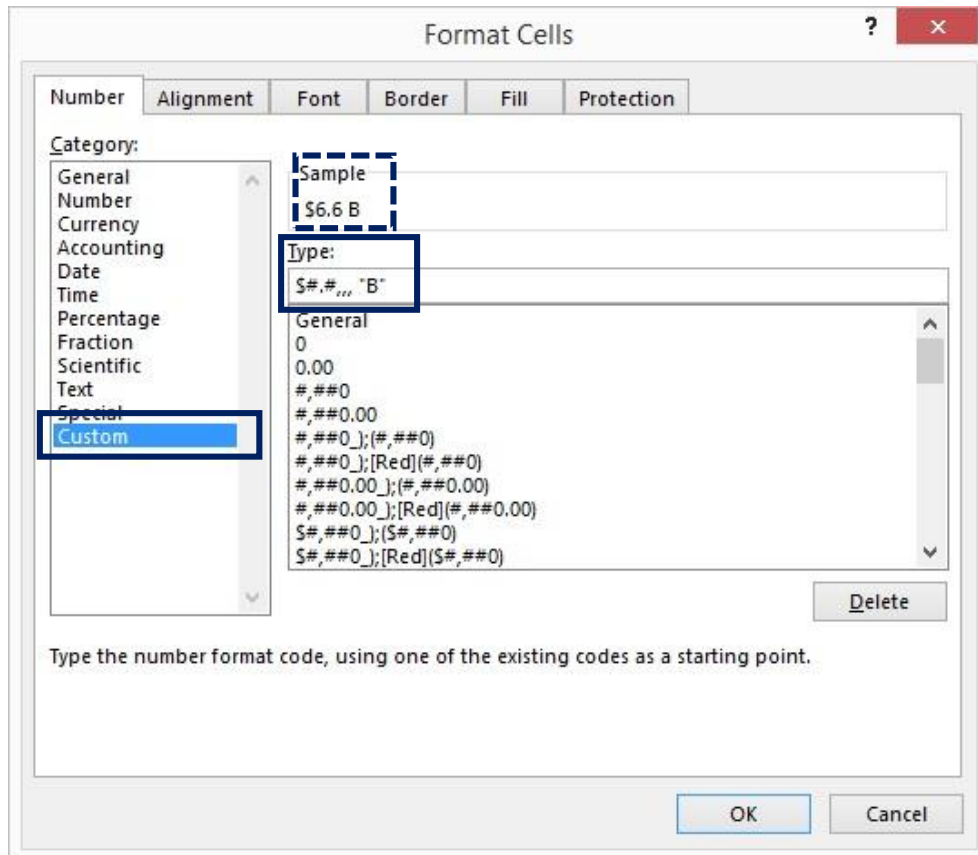
Ctrl + Shift + 3

Ctrl + Shift + 4

Ctrl + Shift + 5

Ctrl + Shift + 6

These shortcuts can save you time when you need to change the cell formats quickly. Each combination starts by holding the Control and Shift keys. And then the third key is a number from 1 to 6. Remember them as Ctrl, Shift plus one of the numbers from 1 to 6.



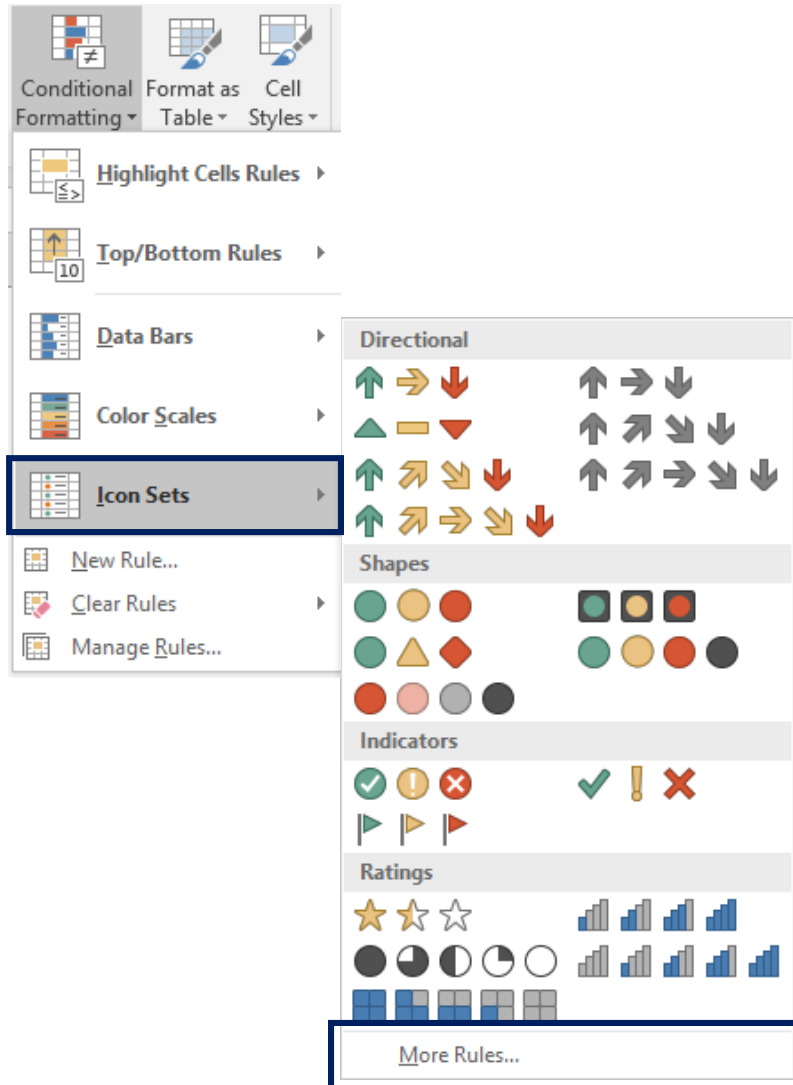
Rules:

- 1) # - a digit
- 2) Symbols in “ ”

Exceptions:

~ ! \$ % ^ & .

Conditional Formatting



Conditional Formatting highlights cells from a given table according to a rule that reflects the information shown in these cells. Conditional formatting can serve as a quick rule of thumb that helps you visualize and read data.

We can find it in the **Home** Tab. Note the different visualization tools it offers— data bars, color scales, icon sets. All of these can be applied to improve data readability.

For example, in Icon Sets, we can create the so-called **traffic lights formatting**. we advise you to stick to a slightly more professional approach: open the **More Rules** dialog box and specify the rules and the threshold values yourself.

Conditional Formatting



New Formatting Rule ? x

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

Edit the Rule Description:

Format all cells based on their values:

Format Style: Icon Sets Reverse Icon Order

Icon Style: Show Icon Only

Display each icon according to these rules:

Icon	Value	Type
Green	\geq 0.1	Number
Yellow	\geq 0	Number
Red		

OK Cancel

If a number is above a certain threshold, it will be colored in green. If it is lower than the threshold, but still higher than a lower bound threshold, it will be colored in yellow. And then if it is lower than both thresholds, it will be colored in red. If you specify no criterion to be used to format the data, Excel will do that for you automatically.

The approach we propose is to use *numbers*, which makes things much easier. Just type in the numbers as decimals and everything will be perfect.

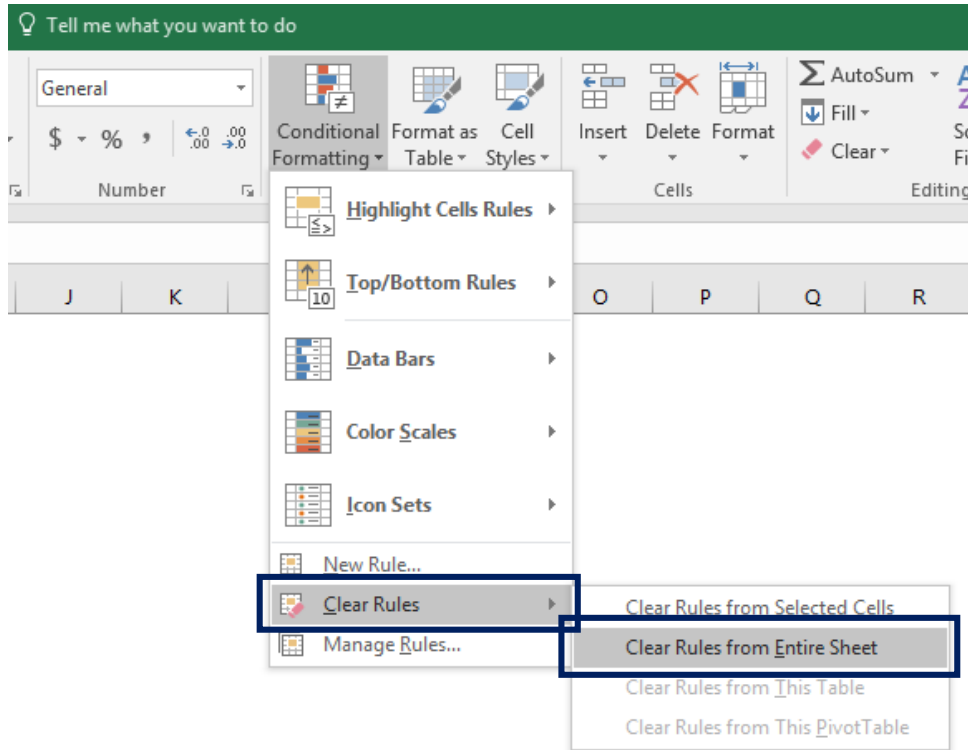
Conditional Formatting



Var%	Var%
FY14-FY15	FY15-FY16
11.4%	-6.8%
45.2%	-8.4%
-9.2%	67.3%
15.6%	1.1%
23.4%	3.9%
13.7%	0.3%
9.1%	80.5%
30.8%	-27.7%
-6.4%	-90.5%
-27.7%	6.4%
32.0%	5.1%
0.0%	0.0%
-85.9%	-59.7%
-48.9%	-8.2%
-0.1%	-7.6%
-64.8%	-8.8%
-39.8%	8.2%
0.0%	0.0%
-85.0%	-61.9%
-90.5%	36.6%
-82.1%	-89.1%

Now the formatting is much more meaningful – you see the positive values in amber and those above ten percent in green. Everything below zero is red. This means you consider a change larger than ten percent good, between zero and 10 percent just ok, and anything below zero as negative.

Conditional Formatting



Finally, if you want to get rid of a rule, it will suffice to expand the already well-known conditional formatting menu and then clear the rule. The quickest way to do that would be to clear the entire sheet.

Filter by Color



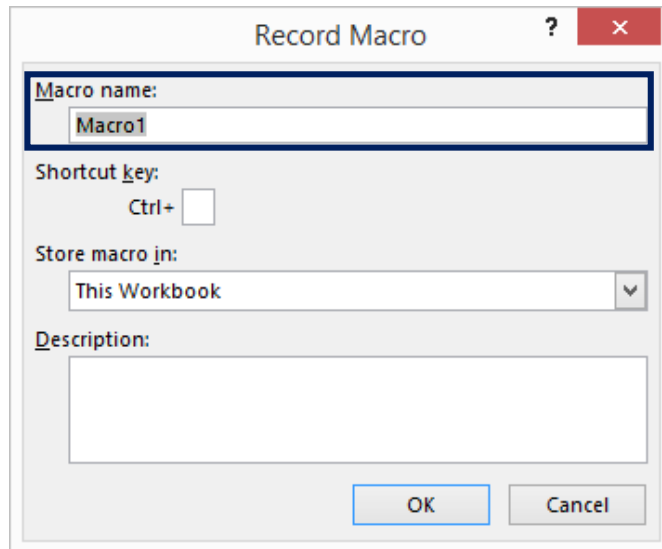
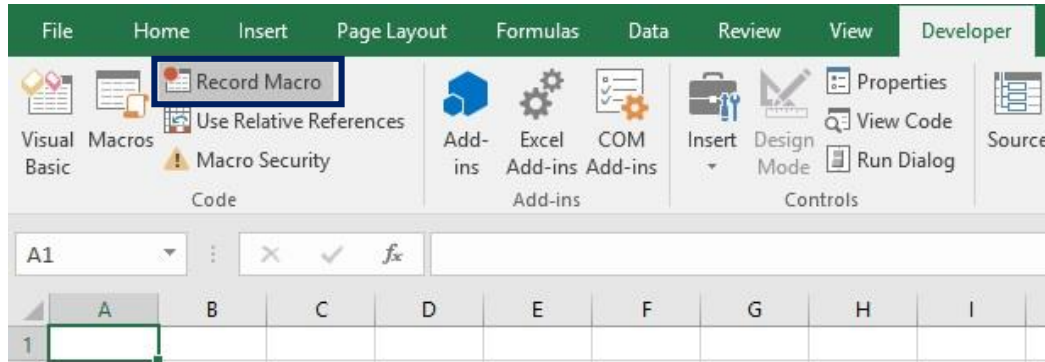
The screenshot shows the Excel ribbon with the 'Data' tab selected. The 'Filter' button is highlighted in the 'Sort & Filter' group. Below the ribbon, a table of data is visible, with the 'Material Number' column highlighted. A dropdown menu is open for the 'Material Number' column, showing options like 'Sort Smallest to Largest', 'Sort Largest to Smallest', 'Sort by Color', and 'Filter by Color'. The 'Filter by Color' option is selected, and a dialog box is open showing a list of material numbers with checkboxes. The 'No Fill' option is highlighted in the dialog box.

Material Number	Size
11504000	250ML
11506000	250ML
11508000	250ML
11660150	2.25L
11660180	2.25L
11660200	2.25L
11660100	2.25L
11660200	2.25L
11100600	2.25L
11100800	2.25L
11100120	2.25L
11100150	2.25L
11100180	2.25L
11100200	2.25L
11150200	2.25L
11150400	2.25L
11150600	2.25L
11150800	2.25L
11150120	2.25L
11150150	2.25L

To **filter by color**, you will have to create a filter.

Then once we've done this, you can select the type of filter that will be applied to the rows of the table. If you only want to filter rows colored in yellow, in the middle of the drop-down list that opens, you can select **Filter by Color**. Press the yellow rectangle and only the highlighted cells of the table will be displayed.

Alternatively, you could filter by **No Fill**, which would mean you would see all the cells in the table that have no color applied to them.



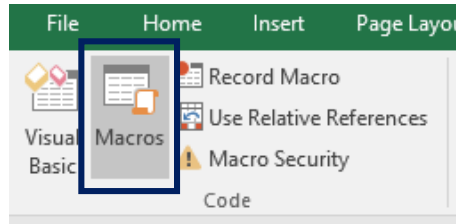
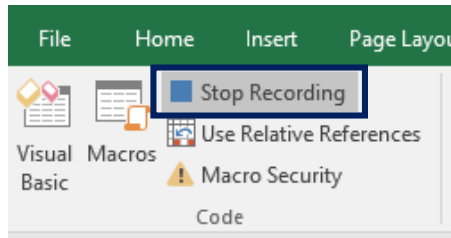
An **Excel Macro** is a set of instructions that can be triggered by a shortcut, toolbar or an icon in a spreadsheet.

Click **Record Macro**. Give it a name. Press “OK”.

From this moment on, every action you do is recorded.

A piece of advice: use macros which work on a single sheet.

Do not record macros that involve operations on multiple sheets as this carries risks for errors.



It can be any type of action – typing formulas, text, formatting a sheet... anything.

Once you record it, you'll be able to replicate the same sequence of actions on a new sheet.

Once you have done that, you can click on the **Stop Recording** button.

Every time you create a new sheet you'll be able to format it easily with the macro you've recorded. Go to the **Macros** button and select the macro that you saved. Press the **Run** button.

Excel is doing the operations you carried out while recording.

You can use macros for any kind of repetitious operations in order to save time and be more efficient.

