Excel 2016
Custom Number Formats

By

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Introduction

Custom number formats have been around almost since Excel was created. In the old days they were used to do some basic conditional formatting. Since conditional formatting has been improved, custom number formats have fallen by the wayside.

Custom number formats still offer a simple way to achieve some useful formats.

In this session we will examine some of the more common uses for customer number formats as well as a few tricks.

Over the years some custom number formats have been dropped from the standard list. I will show you how you can reinstate them.

Formats in general

Note formats change how a number, date or text is displayed. A format doesn't change the value in the cell. You need to be aware of this when doing calculations.

You can display rounded numbers with a format but that won't change the value itself.

To actually round the values in a cell you need to use the ROUND function. Note there are a few other functions based on ROUND such as ROUNDUP and ROUNDDOWN.

Home ribbon

The middle of the Home ribbon has a drop down that contains a lot of standard formats – see image on right.

I don't use the Accounting format as it separates the $ sign from the values. I prefer the Currency format.
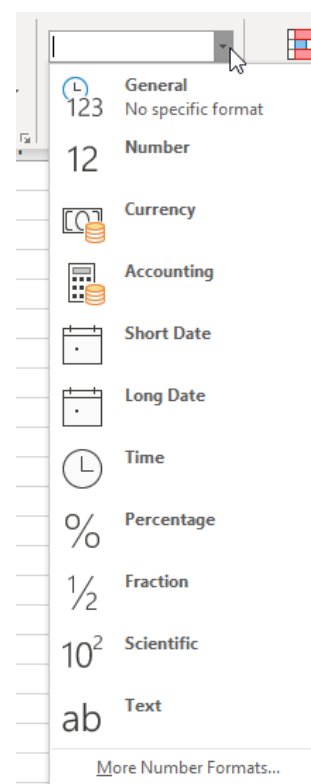
The Basics

This is the custom number format dialog.

Pressing Ctrl + 1 opens the dialog. Use the 1 on the keypad not the 1 on the numeric keypad. Click the number tab if it doesn't display.

You have probably used some of the date custom number formats but there are many others available.

Custom number formats are saved with the workbook file.

If you copy a cell with a custom number format and paste to another file it will copy across the format to the other file.
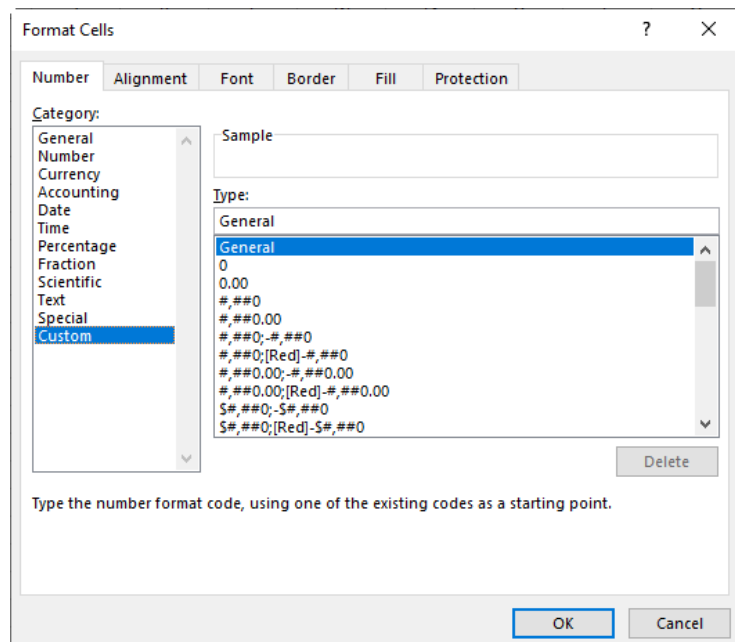
The Sample box at the top of the dialog will display the contents of the current cell using the selected format.

The structure of the custom number format is as follows

<div align="center">

positive;negative;zero;text

</div>

There are four parts to a custom number format. You don't have to use them all. If you don't use all the parts, then see below on how Excel handles less than four parts.

Each part is separated by a semi-colon. You can specify as many parts as you require.

The first part defines positive numbers.

The second part provides a format for negative numbers. This can include things like the negative sign as well as colour and parentheses (brackets).

The third part handles zeros. This allows you to create a custom number format that hides zero values. Some people don't like to display zeros in reports and a custom number format can achieve that in a range. (**Note:** there is an Options setting that hides zeros on a sheet – shown later in the session.)

The last, fourth part, handles text. This is probably the least used part.

Less then four parts defined

If you don't provide all fours sections this is how Excel treats the format

1 part (no semi-colon) – all entries are formatted this way

2 parts (one semi-colon) – first part is positives and zeroes – second part is negatives

3 parts (two semi-colons) - first part is positives – second part is negatives – third part zeroes

Symbols - Letters

There are a number of symbols that you can use to build a custom number format. Some of them are explained below.

 # (hash) - the hash symbol is a digit placeholder – it displays digits but doesn't display insignificant zeroes (these are zeroes that don't add any greater accuracy to a number. Eg 100.00 will be displayed as 100).

0 (zero) - the zero character – is a digit placeholder that does display insignificant zeroes.

. (decimal point) – used to define how many decimal points to display.

, (comma) - the comma is used as the thousands separator. Can also be used to round to thousands and millions.

% (percent) – defines a number as a percentage.

$ - + / ( ) : Space – other valid characters to include in format. These don't require the use of quotation marks.

_ (underscore) – leaves a space equal to the width of a character.

"text"– text must be enclosed in quotation marks.

[colour] – you specify a colour for a format in square brackets eg [Red]. Colours available are Black, White, Red, Blue, Cyan, Green, Magenta and Yellow.

Date and Time Codes

d the letter d represents days. The number of d's used will affect how the day is displayed eg d, dd, ddd or dddd

m is used for months the number of m's changes the display eg m, mm, mmm, mmmm or mmmmm

yy or yyyy is used for two or four digit years

s or ss is used for seconds

m or mm is used for minutes

h or hh is used for hours

[ ] square brackets are used to exceed the limit of numbers for time eg [hh] will exceed 24 when adding up hours. [mm] will exceed 60 minutes.


Case

Note the formats are not case sensitive, so mmm displays Jan, but MMM won't display JAN. If you need to change the case you will need to use the TEXT function – see examples later in the session.

Date Examples

Let's first look at some date examples.

The image on the right is the format from cell B5 in the table below.

Note the Sample box. This updates as you create the format in the Type box.
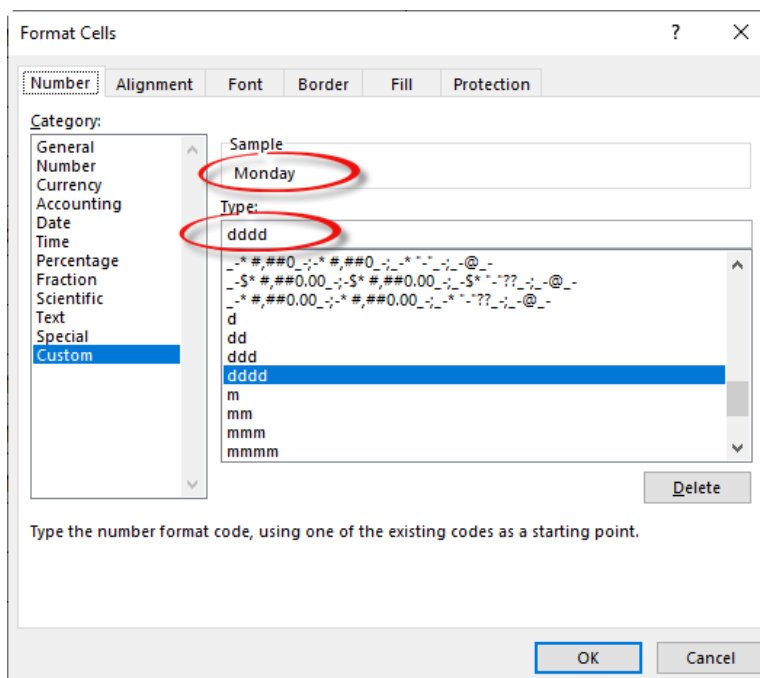
	A	B	C
1	**Entry**	**Formatted (linked to column A)**	**Format used**
2	1/04/2019	1	d
3	1/04/2019	01	dd
4	1/04/2019	Mon	ddd
5	1/04/2019	Monday	dddd
6	1/04/2019	4	m
7	1/04/2019	04	mm
8	1/04/2019	Apr	mmm
9	1/04/2019	April	mmmm
10	1/04/2019	A	mmmmm
11	1/04/2019	19	yy
12	1/04/2019	2019	yyyy
13	1/04/2019	Mon, 01/04/19	ddd, dd/mm/yy
14	1/04/2019	Monday, 1 Apr 2019	dddd, d mmm yyyy
15	1/04/2019	Monday 1-April-19	dddd d-mmmm-yy

You can use spaces, commas, dashes and the backslash to create a format.

The mmmmm format shows the first letter of the month. This can be handy for dashboard charts where space is at a premium and you want to show the month letters like J A S O N D J F M A M J for the financial year months.

Number Formats

The table below has examples of different number formats.

You can combine the # and 0 to get the format you require.

	A	B	C
1	**Entry**	**Formatted (linked to column A)**	**Format**
2	1234.567	1235	0
3	1234.567	1235	#
4	0	0	0
5	0		#
6	1234.567	1234.57	0.00
7	1234.567	1234.57	#.##
8	1234	1234.	#.##
9	1234	1234.0	#.#0
10	1234	1,234	#,##0
11	0	.	#.##
12	0	0.00	0.00
13	123456	123	#,##0,
14	12345678	12	#,##0,,

Things to note in column B

- Row 5 doesn't display the zero.
- Row 8 displays the decimal point, but not the zero after it. Row 9 does.
- Row 11 just displays the decimal point.
- Row 13 rounds to thousands – the single comma at the end causes this.
- Row 14 rounds to millions – the two commas at the end cause this.

Linking Warning

If you link to cells B13 or B14 the cell with the link will take on the format of cell B13 or B14. This means it will display the same value. The underlying values are still the larger amounts so be careful using these type of formats – an alternative will be shown later in the session.

Handling Zeros

As we saw in the numbers examples you can hide zeroes using the # symbol. There is also a dedicated zero section in the customer number format syntax. You can use a format to hide zeroes in a range.

If you want to hide all the zeroes on a sheet the easy way is to change one of the Options settings.
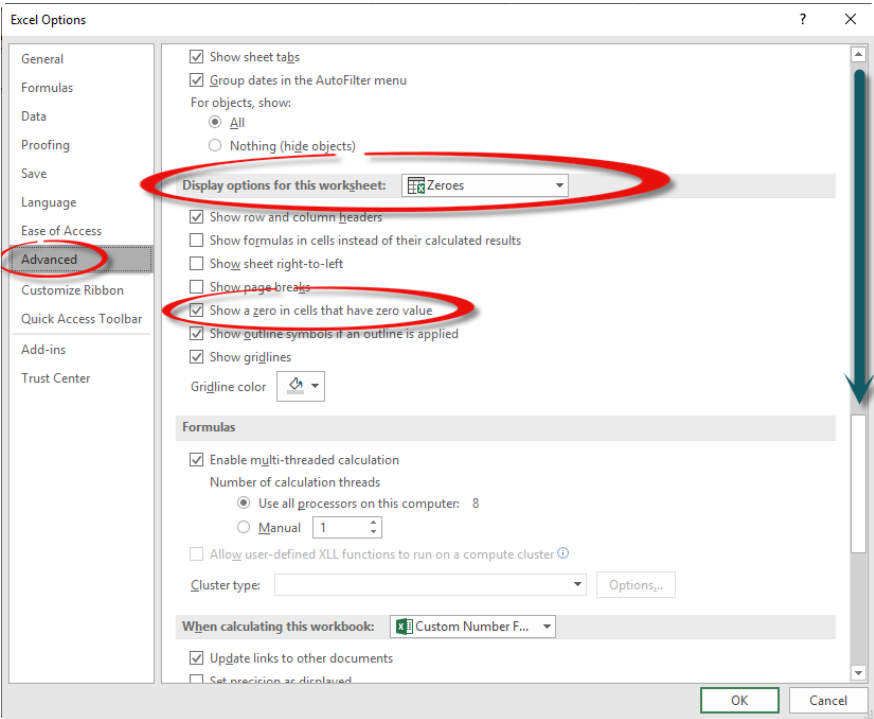
First open the sheet then click the File ribbon and click Options, bottom left of screen.

See image on the right in the Advanced section - scroll down to the Worksheet options.

Untick the option "Show a zero …" to hide the zeroes.

If you want to make other sheets the same use the drop down to select other sheets.

In the examples below, rows 3 and 4 show alternatives to zero or a bank cell.

	A	B	C
1	**Entry**	**Formatted (linked to column A)**	**Format**
2	0	0	0
3	0		#
4	0	-	#,##0;-#,##0;-
5	0	Enter a value	#,##0;-#,##0;"Enter a value"
6	444444444	0444 444 444	0000 000 000

In the case of cell B5, the format doesn't make sense as the cell contains formula linking to cell A6. You would use this format on an input cell like A6 rather than a formula cell. Note when using text you must enclose them in quotation marks. The dash used on row 4 is allowed on its own, no quotation marks required.

Leading Zeros

Row 6 above shows how you can create a custom number format to handle mobile phone numbers which start with a zero. You can also use the Text format to retain leading zeroes but Text stops formulas being used in those cells.

Displaying Letters with Numbers

Sometimes when you are displaying certain values you need to include letters. For example, you may need to display the letter m after numbers that represent metres.

This is usually achieved by using a separate column where the letters are entered.

Using a custom number format allows you to display the number with the letter and still perform calculations with the values.

You must use the quotation marks around any text you use.

	A	B	C	D
1	Entry	Formatted (linked to column A)	Format	Column B doubled
2	5	5 m	0 "m"	10
3	6	6 kg	0 "kg"	12
4	7	7 people	0 "people"	14
5	8	8 AUD	0 "AUD"	16
6	2000000	2,000 K	#,##0, "K"	4000000
7	2000000	2 M	#,##0,, "M"	4000000

Column D is doubling the number in column B to show you can use it in a calculation.

Rounded numbers

As we have seen you can create custom number formats that will round the values that are displayed whilst not changing the underlying value. This can be a dangerous because people may think that the value is as shown. One way around that is to add a letter to the end of the value.

For example you may be displaying values in millions and so you want to display a capital M after the value. This can also be used for thousands where you can use the K which is a common abbreviation for thousands. Rows 6 and 7 above have examples of these.

Useful Number Formats

A commonly requested format is red brackets (parentheses) for negatives – with or without $ signs.

The table below shows the formats to use.

These formats line up the decimal places for the positive and negative numbers.

	A	B	C
1	Entry	Formatted (linked to column A)	Format
2	-123456	($123,456.00)	$#,##0.00_);[Red]($#,##0.00)
3	123456	$123,456.00	$#,##0.00_);[Red]($#,##0.00)
4	-123456	(123,456.00)	#,##0.00_);[Red](#,##0.00)
5	123456	123,456.00	#,##0.00_);[Red](#,##0.00)
6	-123456789	($123.46 M)	$#,##0.00,, "M"_);[Red]($#,##0.00,, "M")
7	123456789	$123.46 M	$#,##0.00,, "M"_);[Red]($#,##0.00,, "M")

The last two include the millions format from the previous page.

Note the use of _) on the end of the positive section. This ensures the brackets and decimal points line up.

Adding up Hours and Minutes

Working with hours and minutes can be problematic. There are two issues you need to be aware of

1. Time is treated as a fraction of a day. So 6am is 0.25 and 6 PM is 0.75. This is solved by formula changes when doing calculations involving time.

2. When you add up hours or minutes the standard format will not allow more than 24 hours or 60 minutes. This is solved with a custom number format change.

Cell B6 has the standard hours format and shows the hours in excess of 24.

Cell B7 uses the custom number format

[h]:mm

which allows more than 24 hours to be displayed.

Because hours are a fraction of a day you must multiply them by 24 when doing numeric calculations like charging hours by a rate, as shown in cell B12.

	A	B	C
1		**Hours**	
2		2:00	
3		8:30	
4		6:25	
5		9:50	
6	Total Normal Format	2:45	=SUM(B2:B5)
7	Total [h]:mm Format	26:45	=SUM(B2:B5)
8			
9	Rate per hour	125	
10			
11	Hours times Rate	139.3229	=B9*B7
12	Hours times Rate (times 24)	3343.75	=B7*24*B9

TEXT function

The same formats you use for custom number formats can be used with the TEXT function to allow you to create flexible and dynamic text strings.

The TEXT function returns text.

You will see in the TEXT sheet that all the cells in column D are left aligned which means they are text.

The formula in cell D2 is

=TEXT(A2,C2)

The TEXT function is commonly used to create headings for reports.

The formula in cell F3 is

=TODAY()

This displays the current date. To use it in a sentence is problematic see cell F5. Its formula is

=F2&" is "&F3

The date is shown as its numeric value. To convert it into text you must use the TEXT function. The formula in cell F6 is

=F2&" is "&TEXT(F3,"dddd")

Note the red negatives in the custom number formats used at the bottom of the table in the TEXT sheet are not replicated in the TEXT function result.

Today
8/03/2019

Changing case

Excel has two functions that can change case, called LOWER and UPPER.

Note there is also a PROPER function, but that uses the same format that Excel uses as the default for its formatting.

I have included examples in cells F8 and F9 in the TEXT sheet.

Today is 43532
Today is Friday

today is friday
TODAY IS FRIDAY

Displaying $

There is also a DOLLAR function that allows you to display $ signs and decimal places more easily than using the TEXT function. The formula in cell 12 is

=F11&DOLLAR(F12,2)

| The value is	
	1234.567
The value is $1,234.57	

Comma Format Hack

The standard Comma format on the Home ribbon is useful except that it includes 2 decimal places.

I prefer no decimal places.

You can change the format by changing a default Comma Style in the Styles section of the Home ribbon.

You can right click the Comma Style and choose Modify.

Click the Format button and remove the decimal places click OK and OK again to change the Style.
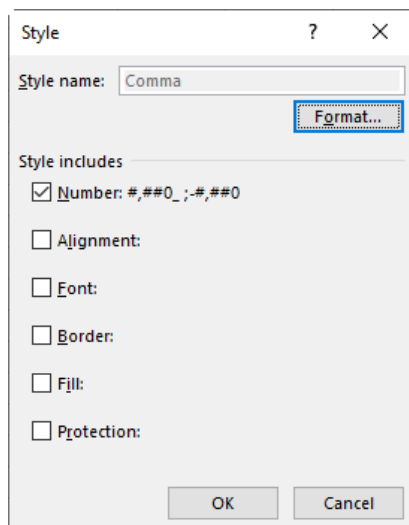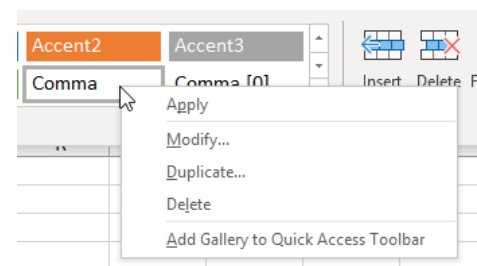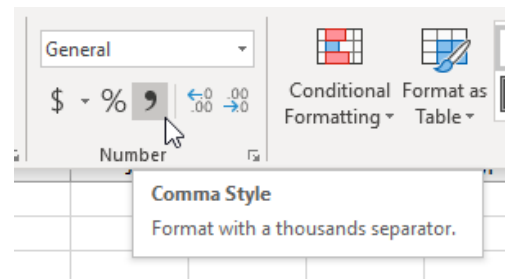
This changes it for the current workbook.

To change it for future workbooks see the Templates section that follows.

You can also use Styles to capture formats you use often. These can also be captured for future workbooks by using the Template instructions that follow.

Templates

Excel allows you to create Templates to capture structures you commonly use. You can set up default templates for a workbook and a worksheet. These are used when you create a new blank workbook or insert a new blank sheet.

Templates can capture

- Custom Number Formats
- Custom Styles
- Amended default Styles (like the Comma format mentioned earlier)
- Print settings - standard Header and Footers
- Number of sheets in a new book

XLSTART folder

Find your XLSTART folder. The folder path of my XLSTART folder is shown below. You may need to use the Find option in File Explorer to track it down.

C:\Users\Neale Blackwood\AppData\Roaming\Microsoft\Excel\XLSTART

Note this is on the Hard Drive and may not be backed up, so it is worthwhile also saving the Templates to a server drive.

This folder is where you need to save your default templates. If you save Excel files or shortcuts to Excel files in this folder, they will automatically open when you open Excel.

Workbook Template

Open a new blank workbook and apply a couple of useful custom number formats to a few cells. This captures the formats in the file. You can also set up things like standard headers and footers and any Styles you want to capture.

1. Press function key F12 to open Save As.

2. Change the File type via the drop down to Excel Template.

3. Navigate to the XLSTART folder.

4. Change the name to **book** and click Save.

Worksheet Template

Open a new workbook – make sure it only has a single sheet in it – make the necessary changes and follow the same steps as above, except use the name **sheet**.

You can go back later and make changes and follow the steps above and save over the top of the existing files.