

- me
- sic Excel
- ilt-In Excel Functions ▾
- cel 2019 New Functions
- cel 2016 New Functions
- cel Vlookup Tutorial
- ot Table Tutorial
- cel Formulas
- ay Formulas
- counting in Excel
- s & Tricks
- mmon Excel Errors
- cel Templates
- cel Macros
- cel VBA Tutorial
- ilt-In VBA Functions
- cel 2003 vs 2007
- ONSORED SEARCHES
- excel formulas

excel templates

excel software

excel learning

excel tutorials

Excel Dates and Times

Understanding Excel Dates and Times

If you want to work with Excel dates and times, it is useful to understand the way that Excel stores dates and times.

Dates and times are actually stored as simple numbers within Excel. It is only the [Formatting](#) of a spreadsheet's cells, that causes its contents to be displayed as a date, time, or date & time.



The following table shows how dates and times are coded within Excel:

Dates	<p>Dates in Excel are stored as positive integers.</p> <p>For example, on most computer systems:</p> <div><div>1 = January 1, 1900</div><div>2 = January 2, 1900</div><div>42736 = January 1, 2017</div></div> <p>Therefore, when entered into a spreadsheet, the integer values, 1, 2 and 42736 are displayed as follows (depending on the cell formatting):</p> <div><div><div>With 'General' Formatting:</div><table><tr><td></td><td>A</td></tr><tr><td>1</td><td>1</td></tr><tr><td>2</td><td>2</td></tr><tr><td>3</td><td>42736</td></tr></table></div><div><div>With Date Format "mm/dd/yyyy":</div><table><tr><td></td><td>A</td></tr><tr><td>1</td><td>01/01/1900</td></tr><tr><td>2</td><td>01/02/1900</td></tr><tr><td>3</td><td>01/01/2017</td></tr></table></div></div>		A	1	1	2	2	3	42736		A	1	01/01/1900	2	01/02/1900	3	01/01/2017
	A																
1	1																
2	2																
3	42736																
	A																
1	01/01/1900																
2	01/02/1900																
3	01/01/2017																

2	0.25	2	06:00
3	0.5	3	12:00

Dates & Times

Date & Time values in Excel are stored as decimals, comprised of:

- an integer (representing the date)
- and
- a fraction between 0 and 1 (representing the time).

For example, on most computer systems:

1.5 = 12:00 hrs on January 1, 1900
 2.25 = 06:00 hrs on January 2, 1900
 42736.5 = 12:00 hrs on January 1, 2017

Therefore, when entered into a spreadsheet, the above values are displayed as follows (depending on the cell formatting):

With 'General' Formatting:

	A
1	1.5
2	2.25
3	42736.5

With Date & Time Format "mm/dd/yyyy hh:mm":

	A
1	01/01/1900 12:00
2	01/02/1900 06:00
3	01/01/2017 12:00

Adding and Subtracting Dates and Times in Excel

Because Excel stores dates & times as numbers you can add, subtract and compare dates and times in Excel in the same way that you would add or subtract any other numbers.

Examples are provided below:

Example 1 - Calculate the Number of Days Between Two Dates

Cell B1 of the spreadsheet on the right uses the formula **=A2-A1** to calculate the number of days between the dates 08/20/2017 & 08/31/2017 (stored in cells A1 and A2).

This gives the result **11**.

	A	B
1	08/20/2017	=A2-A1
2	08/31/2017	

Example 2 - Calculate the Difference Between Two Times

Cell B1 of the spreadsheet on the right uses the formula **=A2-A1** to calculate the number of hours and minutes between the times 13:00 & 17:15 (stored in cells A1 and A2).

This gives the result **04:15**.

(Note that, in order to display this result, cell B1 should be formatted to have the time format "hh:mm").

	A	B
1	13:00	=A2-A1
2	17:15	

Example 3 - Calculate the Difference Between Two Dates and Times

Cell B1 of the spreadsheet on the right uses the formula **=A2-A1** to calculate the number of hours and minutes between the two dates & times stored in cells A1 and A2.

	A	B
1	08/30/2017 17:00	=A2-A1
2	08/31/2017 09:00	

This gives the result **16:00**.

(Note that, in order to display this result, cell B1 should be formatted to have the time format "hh:mm").

Example 4 - Add a Time to a Date and Time

Cell B1 of the spreadsheet on the right uses the formula **=A1+A2** to calculate the date and time that is 23 hours after the date & time 08/30/2017 17:00.

	A	B
1	08/30/2017 17:00	=A1+A2
2	23:00	

This gives the result **08/31/2016 16:00**.

(Note that, in order to display this result, cell B1 should be formatted to have the date and time format "mm/dd/yyyy hh:mm").

Common Problem**Formatting Dates and Times in Excel**

The results in of the above Excel date and time formulas may not have the required formatting when they are first entered into your spreadsheet. This may give the initial impression that the formula has not worked - however, this is not the case.

The cells can be made to show the correct result by formatting into a 'General', 'Date', 'Time', or 'Date & Time' format, depending on the required result type.

The easiest way to change the formatting of one or more Excel cells is to select the cell(s) to be formatted and then select the required formatting type from the drop-down menu in the ribbon. This is generally found in the 'Number' group on the **Home** tab (see below):



If you don't see the formatting style that you require, select the option **More Number Formats ...** from the drop-down format menu. This opens up the 'Format Cells' dialog box, which provides several additional pre-programmed formats or allows you to define your own **Custom** format.

[Click here for more details on Excel formatting](#)

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