

---

Introduction to:  
Microsoft Excel  
Part Three – Data Analysis



*Supporting development of your career*

---

Introduction:

This resource looks closely at how you might be expected to work with and analyse various types of data

Please use the accompanying Excel Spreadsheets to allow interactions with these guidelines

**Contents:**

**Chapter 1: Sort Pages 2 - 6**

Sort by Colour  
Reverse List  
Randomise List

Please download the accompanying Excel spreadsheet to support the above

**Chapter 2: Number and Text Filters Pages 7 - 16**

Number filters  
Text Filters  
Date filters  
Advanced filters

Please download the accompanying Excel spreadsheet to support the above

## Chapter 1: **Sorting Data**

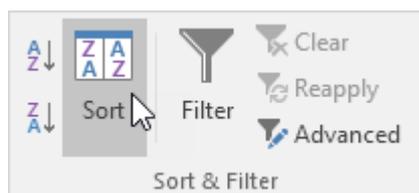
### Sort by Colour

This example teaches you how to sort data by colour in Excel.

	A	B	C	D	E
1	Last Name	Sales	Country	Quarter	
2	Smith	\$16,753.00	UK	Qtr 3	
3	Johnson	\$14,808.00	USA	Qtr 4	
4	Williams	\$10,644.00	UK	Qtr 2	
5	Jones	\$1,390.00	USA	Qtr 3	
6	Brown	\$4,865.00	USA	Qtr 4	
7	Williams	\$12,438.00	UK	Qtr 1	
8	Johnson	\$9,339.00	UK	Qtr 2	
9	Smith	\$18,919.00	USA	Qtr 3	
10	Jones	\$9,213.00	USA	Qtr 4	
11	Jones	\$7,433.00	UK	Qtr 1	
12	Brown	\$3,255.00	USA	Qtr 2	
13	Williams	\$14,867.00	USA	Qtr 3	
14	Williams	\$19,302.00	UK	Qtr 4	
15	Smith	\$9,698.00	USA	Qtr 1	
16					

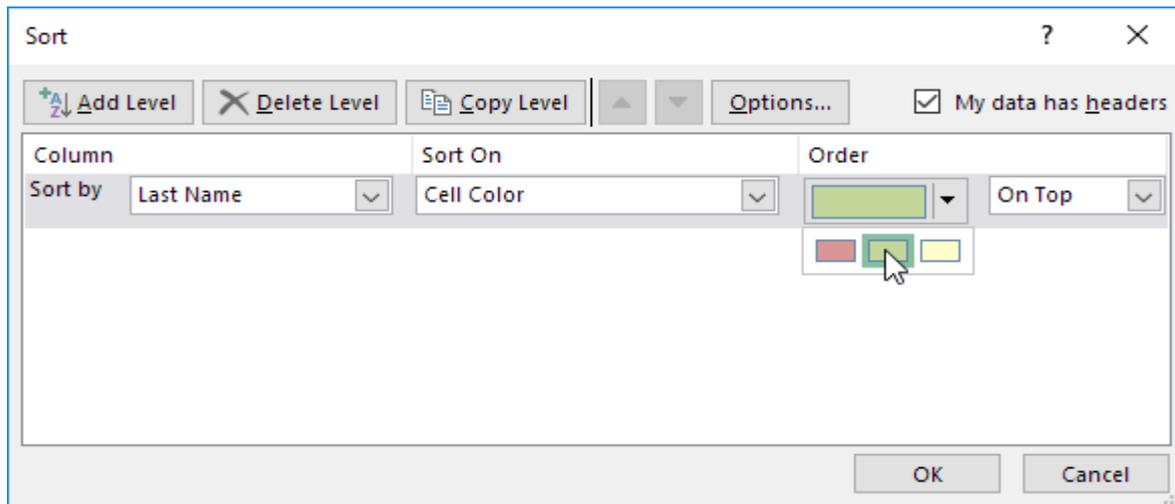
Click any single cell inside a data set.

2. On the Data tab, in the Sort & Filter group, click Sort.



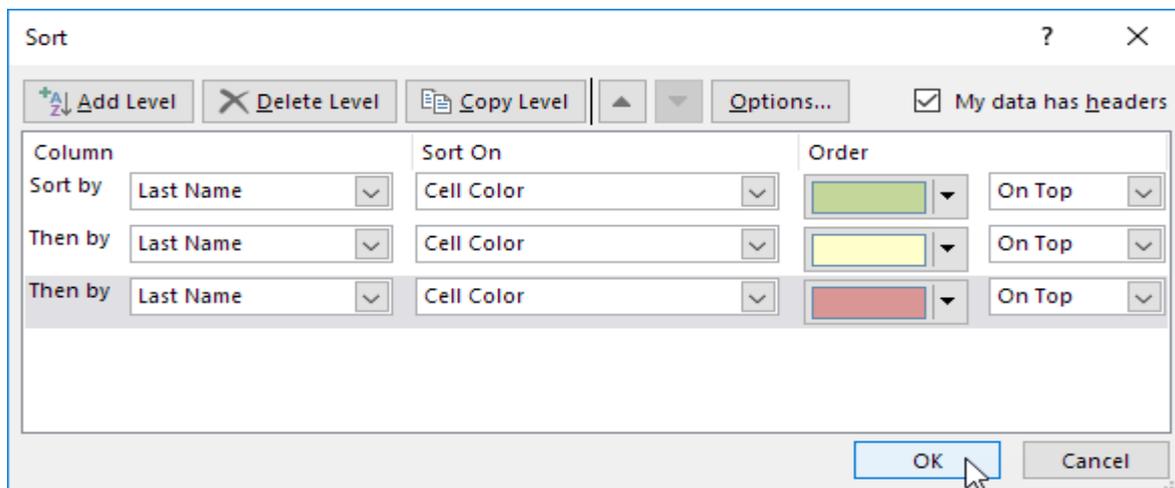
The Sort dialog box appears.

3. Sort by Last Name (or any other column), sort on Cell Colour (you can also sort on Font Colour and Cell Icon), and select the green colour for the first level.



4. Click 'Copy Level' two times and select the other colours.

5. Click OK.



Result.

	A	B	C	D	E
1	<b>Last Name</b>	<b>Sales</b>	<b>Country</b>	<b>Quarter</b>	
2	Johnson	\$14,808.00	USA	Qtr 4	
3	Brown	\$4,865.00	USA	Qtr 4	
4	Smith	\$18,919.00	USA	Qtr 3	
5	Jones	\$9,213.00	USA	Qtr 4	
6	Williams	\$14,867.00	USA	Qtr 3	
7	Williams	\$19,302.00	UK	Qtr 4	
8	Smith	\$16,753.00	UK	Qtr 3	
9	Williams	\$12,438.00	UK	Qtr 1	
10	Jones	\$7,433.00	UK	Qtr 1	
11	Williams	\$10,644.00	UK	Qtr 2	
12	Jones	\$1,390.00	USA	Qtr 3	
13	Johnson	\$9,339.00	UK	Qtr 2	
14	Brown	\$3,255.00	USA	Qtr 2	
15	Smith	\$9,698.00	USA	Qtr 1	
16					

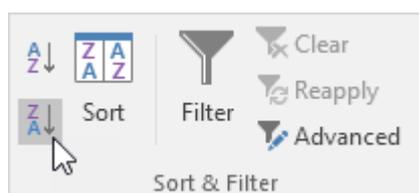
## Reverse List

This teaches you how to reverse a list in Excel. For example, we want to reverse the list in column A below.

1. Enter the value 1 into cell B1 and the value 2 into cell B2.
2. Select the range B1:B2, click the lower right corner of this range, and drag it down to cell B8.

	A	B	C	D	E	F	G	H	I
1	Excel	1							
2	Word	2							
3	Access	3							
4	Outlook	4							
5	PowerPoint	5							
6	OneNote	6							
7	Publisher	7							
8	Lync	8							
9									
10									

3. Click any number in the list in column B.
4. To sort in descending order, on the Data tab, in the Sort & Filter group, click ZA.



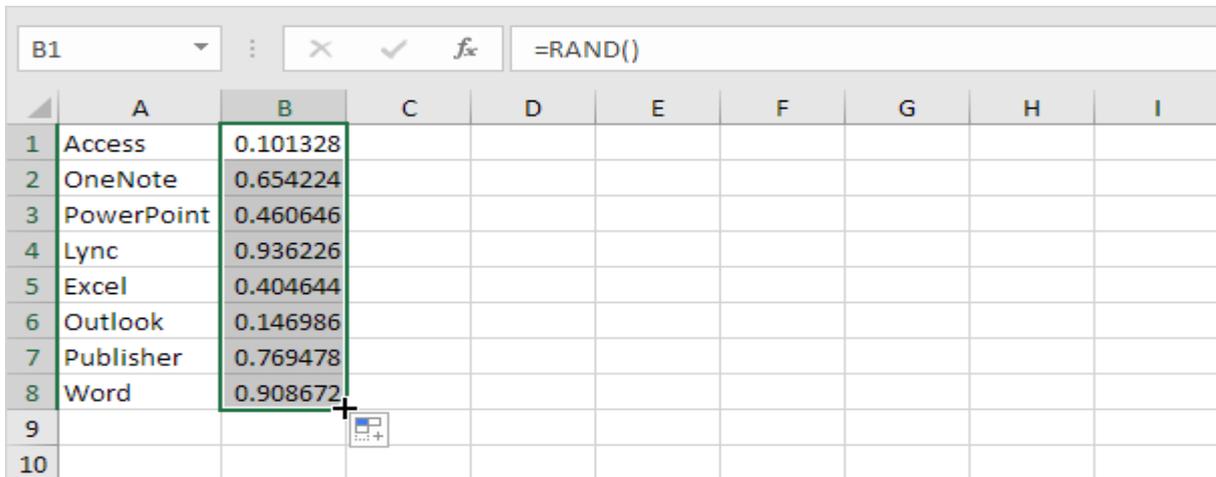
Result. Not only the list in column B, but also the list in column A has been reversed.

	A	B	C	D	E	F	G	H	I
1	Lync	8							
2	Publisher	7							
3	OneNote	6							
4	PowerPoint	5							
5	Outlook	4							
6	Access	3							
7	Word	2							
8	Excel	1							
9									

### Randomise List

This teaches you how to randomise (shuffle) a list in Excel. For example, we want to randomize the list in column A below.

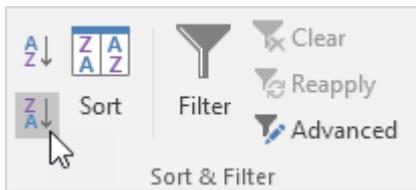
1. Select cell B1 and insert the RAND() function.
2. Click on the lower right corner of cell B1 and drag it down to cell B8.



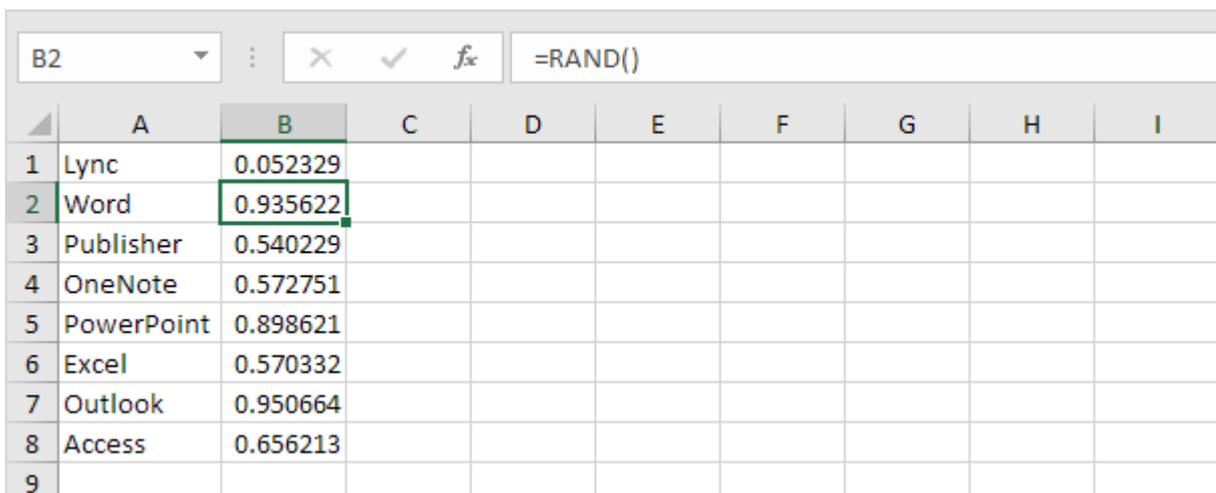
The screenshot shows an Excel spreadsheet with a list of applications in column A and random numbers in column B. The formula bar shows the function =RAND().

	A	B	C	D	E	F	G	H	I
1	Access	0.101328							
2	OneNote	0.654224							
3	PowerPoint	0.460646							
4	Lync	0.936226							
5	Excel	0.404644							
6	Outlook	0.146986							
7	Publisher	0.769478							
8	Word	0.908672							
9									
10									

3. Click any number in the list in column B.
4. To sort in descending order, on the Data tab, in the Sort & Filter group, click ZA.



Result. A random list in column A (sorted on the random numbers above).



The screenshot shows the result of sorting the list in column A based on the random numbers in column B. The list is now sorted in descending order of the random numbers.

	A	B	C	D	E	F	G	H	I
1	Lync	0.052329							
2	Word	0.935622							
3	Publisher	0.540229							
4	OneNote	0.572751							
5	PowerPoint	0.898621							
6	Excel	0.570332							
7	Outlook	0.950664							
8	Access	0.656213							
9									

Note: random numbers change every time a cell on the sheet is calculated. If you don't want this, simply copy the random numbers and paste them as values.

## Chapter 2: Number and Text Filters

### Number Filters

This example teaches you how to apply a number filter and a text filter to only display records that meet certain criteria.

1. Click any single cell inside a data set.
2. On the Data tab, in the Sort & Filter group, click Filter.



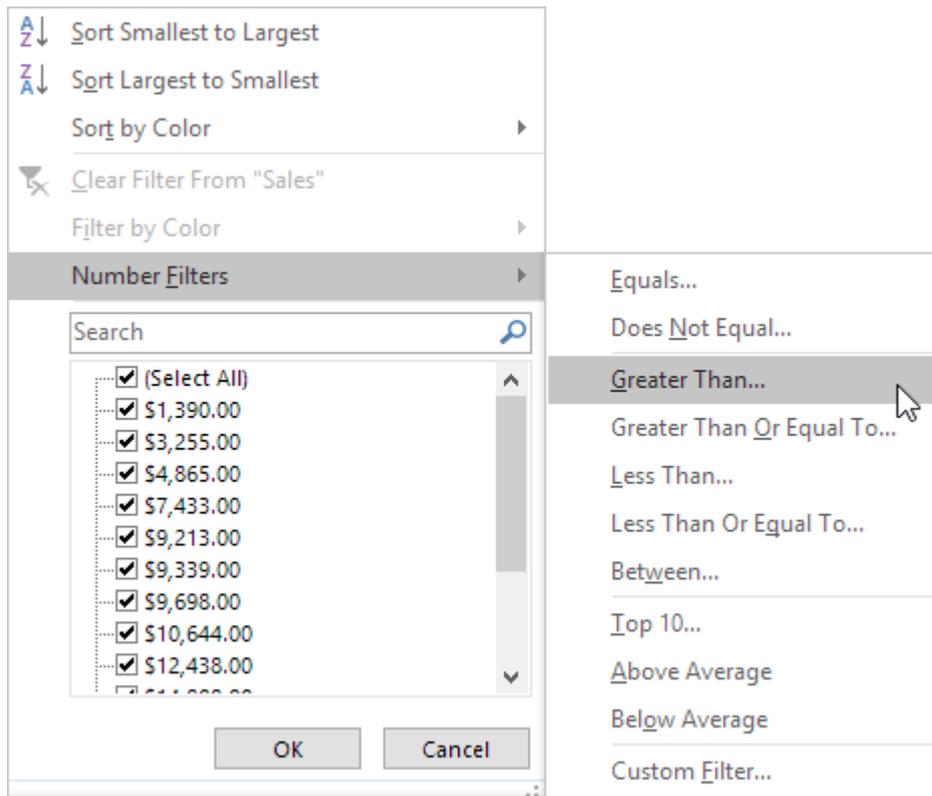
Arrows in the column headers appear.

	A	B	C	D	E
1	Last Nam	Sales	Count	Quart	
2	Smith	\$16,753.00	UK	Qtr 3	
3	Johnson	\$14,808.00	USA	Qtr 4	
4	Williams	\$10,644.00	UK	Qtr 2	
5	Jones	\$1,390.00	USA	Qtr 3	
6	Brown	\$4,865.00	USA	Qtr 4	
7	Williams	\$12,438.00	UK	Qtr 1	
8	Johnson	\$9,339.00	UK	Qtr 2	
9	Smith	\$18,919.00	USA	Qtr 3	
10	Jones	\$9,213.00	USA	Qtr 4	
11	Jones	\$7,433.00	UK	Qtr 1	
12	Brown	\$3,255.00	USA	Qtr 2	
13	Williams	\$14,867.00	USA	Qtr 3	
14	Williams	\$19,302.00	UK	Qtr 4	
15	Smith	\$9,698.00	USA	Qtr 1	
16					

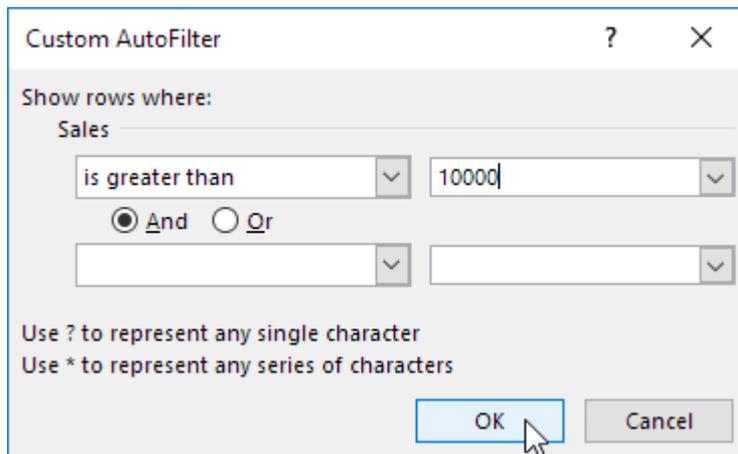
### Number Filter

To apply a number filter, execute the following steps.

3. Click the arrow next to Sales.
4. Click Number Filters (this option is available because the Sales column contains numeric data) and select Greater Than from the list.



5. Enter 10,000 and click OK. OK.



Result. Excel only displays the records where Sales is greater than \$10,000.

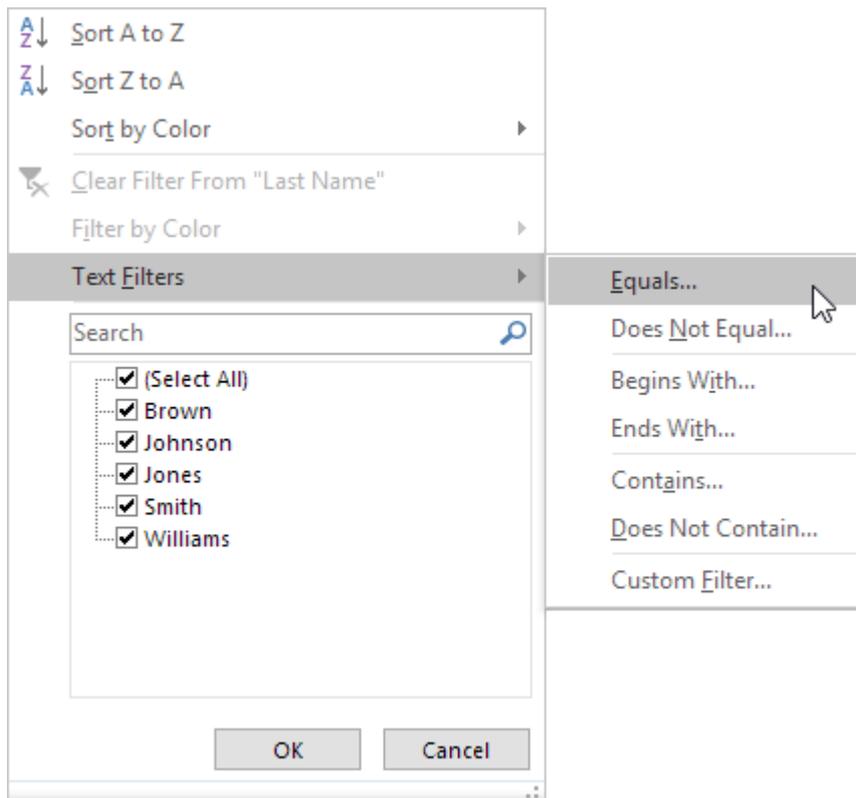
	A	B	C	D	E
1	Last Name	Sales	Count	Quart	
2	Smith	\$16,753.00	UK	Qtr 3	
3	Johnson	\$14,808.00	USA	Qtr 4	
4	Williams	\$10,644.00	UK	Qtr 2	
7	Williams	\$12,438.00	UK	Qtr 1	
9	Smith	\$18,919.00	USA	Qtr 3	
13	Williams	\$14,867.00	USA	Qtr 3	
14	Williams	\$19,302.00	UK	Qtr 4	
16					

Note: you can also display records equal to a value, less than a value, between two values, the top x records, records that are above average, etc. The sky is the limit!

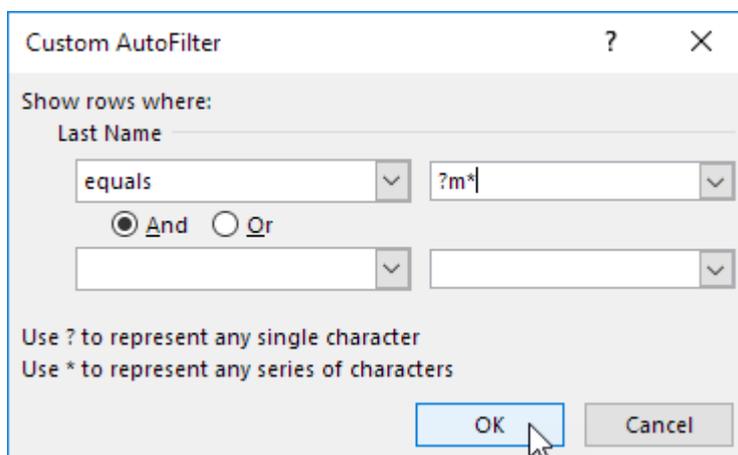
### Text Filter

To apply a text filter, execute the following steps.

3. Click the arrow next to Last Name.
4. Click Text Filters (this option is available because the Last Name column contains text data) and select Equals from the list.



5. Enter ?m\* and click OK.



Note: A question mark (?) matches exactly one character. An asterisk (\*) matches a series of zero or more characters.

Result. Excel only displays the records where the second character of Last Name equals m.

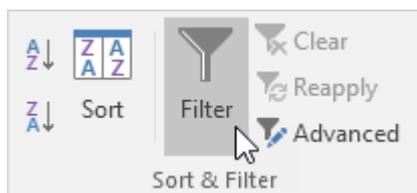
	A	B	C	D	E
1	Last Name	Sales	Count	Quart	
2	Smith	\$16,753.00	UK	Qtr 3	
9	Smith	\$18,919.00	USA	Qtr 3	
15	Smith	\$9,698.00	USA	Qtr 1	
16					

Note: you can also display records that begin with a specific character, end with a specific character, contain or do not contain a specific character, etc. The sky is the limit!

### Date Filters

This example teaches you how to apply a date filter to only display records that meet certain criteria.

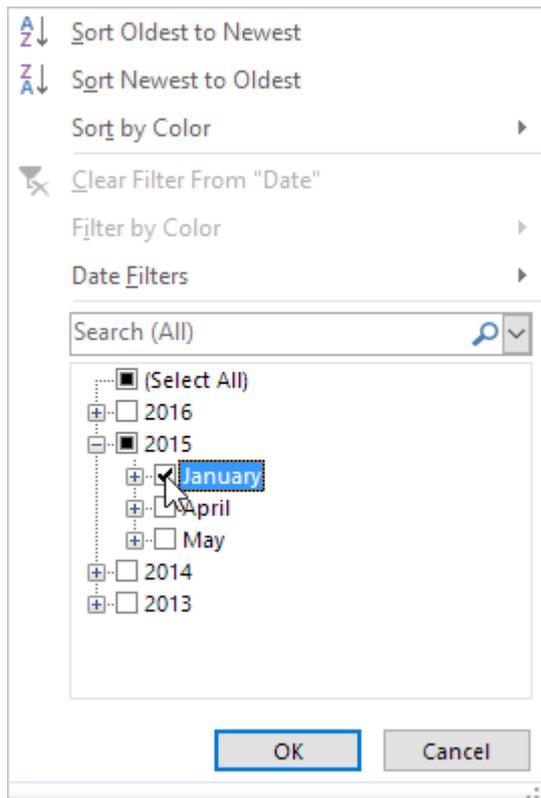
1. Click any single cell inside a data set.
2. On the Data tab, in the Sort & Filter group, click Filter.



Arrows in the column headers appear.

	A	B	C	D	E
1	Last Name	Sales	Count	Date	
2	Smith	\$16,753.00	UK	4/25/2013	
3	Johnson	\$14,808.00	USA	1/5/2016	
4	Williams	\$10,644.00	UK	4/13/2015	
5	Jones	\$1,390.00	USA	9/5/2016	
6	Brown	\$4,865.00	USA	1/21/2013	
7	Williams	\$12,438.00	UK	4/6/2013	
8	Johnson	\$9,339.00	UK	11/14/2016	
9	Smith	\$18,919.00	USA	7/16/2014	
10	Jones	\$9,213.00	USA	1/26/2015	
11	Jones	\$7,433.00	UK	11/1/2013	
12	Brown	\$3,255.00	USA	5/18/2015	
13	Williams	\$14,867.00	USA	1/5/2015	
14	Williams	\$19,302.00	UK	8/23/2016	
15	Smith	\$9,698.00	USA	1/17/2016	
16					

3. Click the arrow next to Date.
4. Click on Select All to clear all the check boxes, click the + sign next to 2015, and click the check box next to January.



5. Click OK.

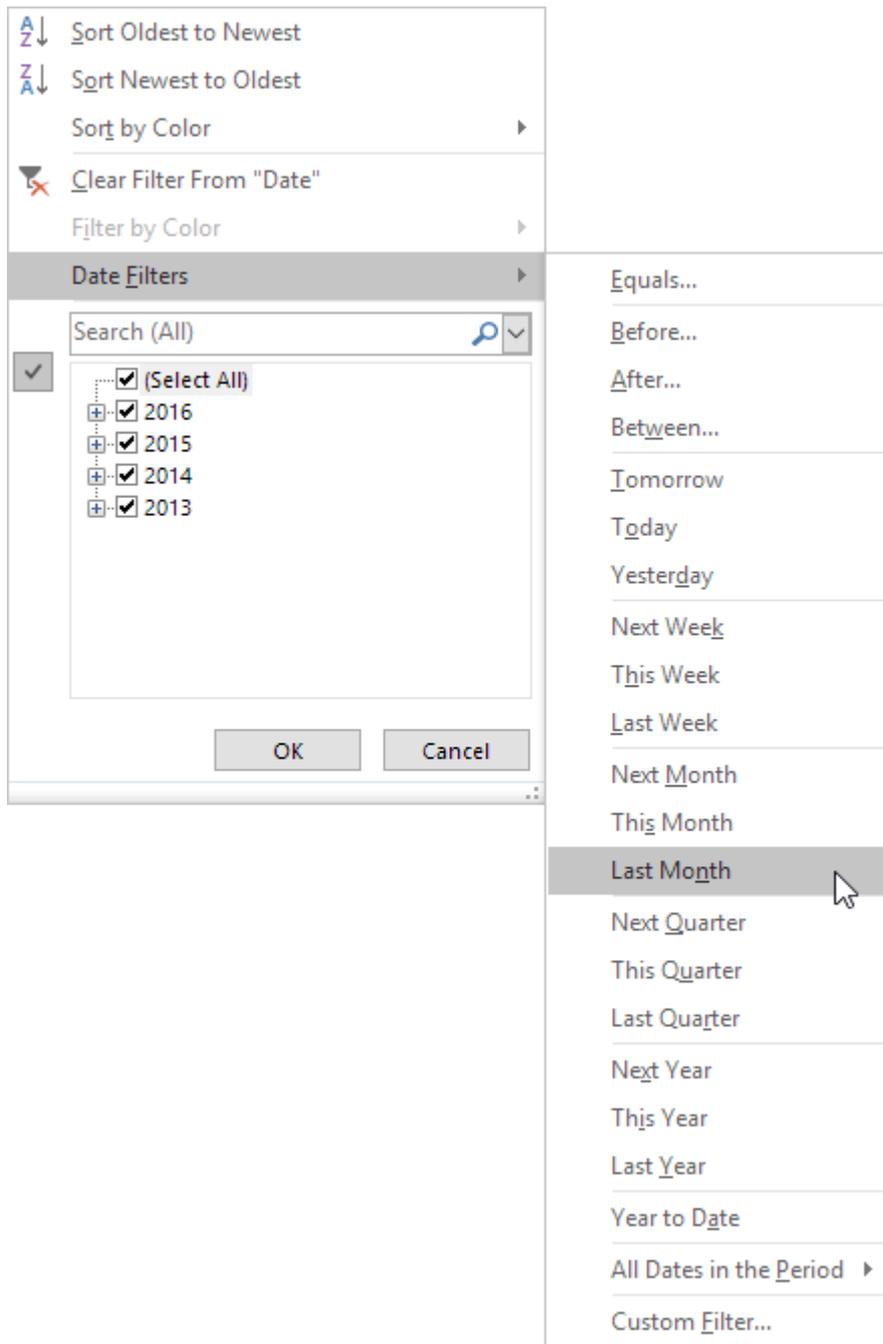
Result. Excel only displays the sales in 2015, in January.

	A	B	C	D	E
1	Last Nam	Sales	Count	Date	
10	Jones	\$9,213.00	USA	1/26/2015	
13	Williams	\$14,867.00	USA	1/5/2015	
16					

6. Click the arrow next to Date.

7. Click on Select All to select all the check boxes.

8. Click Date Filters (this option is available because the Date column contains dates) and select Last Month from the list.



Result. Excel only displays the sales of last month.

	A	B	C	D	E
1	Last Nam	Sales	Count	Date	
8	Johnson	\$9,339.00	UK	11/14/2016	
16					

Note: this date filter and many other date filters depend on today's date

## Advanced Filter

This example teaches you how to apply an advanced filter in Excel to only display records that meet complex criteria.

When you use the Advanced Filter, you need to enter the criteria on the worksheet. Create a Criteria range (blue border below for illustration only) above your data set. Use the same column headers. Be sure there's at least one blank row between your Criteria range and data set.

And Criteria

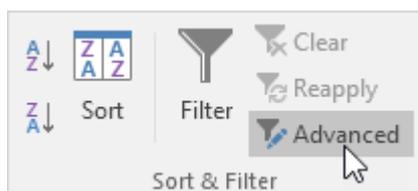
To display the sales in the USA and in Qtr 4, execute the following steps.

1. Enter the criteria shown below on the worksheet.

	A	B	C	D	E
1	Last Name	Sales	Country	Quarter	
2			USA	Qtr 4	
3					
4					
5	Last Name	Sales	Country	Quarter	
6	Smith	\$16,753.00	UK	Qtr 3	
7	Johnson	\$14,808.00	USA	Qtr 4	
8	Williams	\$10,644.00	UK	Qtr 2	
9	Jones	\$1,390.00	USA	Qtr 3	
10	Brown	\$4,865.00	USA	Qtr 4	
11	Williams	\$12,438.00	UK	Qtr 1	
12	Johnson	\$9,339.00	UK	Qtr 2	
13	Smith	\$18,919.00	USA	Qtr 3	
14	Jones	\$9,213.00	USA	Qtr 4	
15	Jones	\$7,433.00	UK	Qtr 1	
16	Brown	\$3,255.00	USA	Qtr 2	
17	Williams	\$14,867.00	USA	Qtr 3	
18	Williams	\$19,302.00	UK	Qtr 4	
19	Smith	\$9,698.00	USA	Qtr 1	
20					

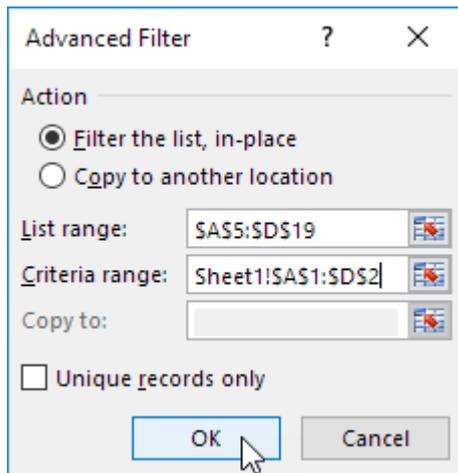
2. Click any single cell inside the data set.

3. On the Data tab, in the Sort & Filter group, click Advanced.



4. Click in the Criteria range box and select the range A1:D2 (blue).

5. Click OK.



Notice the options to copy your filtered data set to another location and display unique records only (if your data set contains duplicates).

Result.

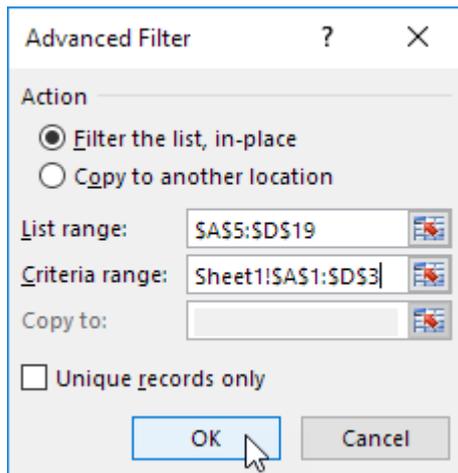
	A	B	C	D	E
1	<b>Last Name</b>	<b>Sales</b>	<b>Country</b>	<b>Quarter</b>	
2			USA	Qtr 4	
3					
4					
5	<b>Last Name</b>	<b>Sales</b>	<b>Country</b>	<b>Quarter</b>	
7	Johnson	\$14,808.00	USA	Qtr 4	
10	Brown	\$4,865.00	USA	Qtr 4	
14	Jones	\$9,213.00	USA	Qtr 4	
20					

No rocket science so far. We can achieve the same result with the normal filter. We need the Advanced Filter for Or criteria.

Or Criteria

To display the sales in the USA in Qtr 4 or in the UK in Qtr 1, execute the following steps.

6. Enter the criteria shown below on the worksheet.
7. On the Data tab, in the Sort & Filter group, click Advanced, and adjust the Criteria range to range A1:D3 (blue).
8. Click OK.



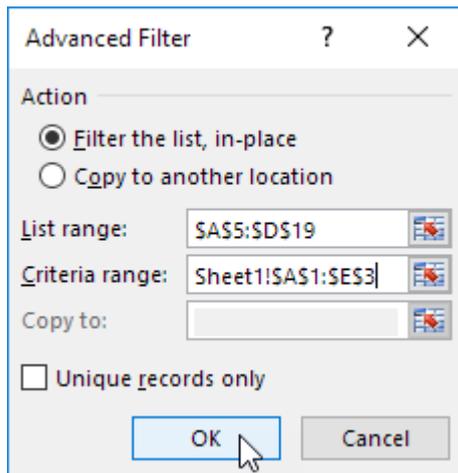
Result.

	A	B	C	D	E
1	Last Name	Sales	Country	Quarter	
2			USA	Qtr 4	
3			UK	Qtr 1	
4					
5	Last Name	Sales	Country	Quarter	
7	Johnson	\$14,808.00	USA	Qtr 4	
10	Brown	\$4,865.00	USA	Qtr 4	
11	Williams	\$12,438.00	UK	Qtr 1	
14	Jones	\$9,213.00	USA	Qtr 4	
15	Jones	\$7,433.00	UK	Qtr 1	
20					

#### Formula as Criteria

To display the sales in the USA in Qtr 4 greater than \$10,000 or in the UK in Qtr 1, execute the following steps.

9. Enter the criteria (+formula) shown below on the worksheet.
10. On the Data tab, in the Sort & Filter group, click Advanced, and adjust the Criteria range to range A1:E3 (blue).
11. Click OK.



Result.

	A	B	C	D	E	F
1	Last Name	Sales	Country	Quarter		
2			USA	Qtr 4	TRUE	
3			UK	Qtr 1		
4						
5	Last Name	Sales	Country	Quarter		
7	Johnson	\$14,808.00	USA	Qtr 4		
11	Williams	\$12,438.00	UK	Qtr 1		
15	Jones	\$7,433.00	UK	Qtr 1		
20						

Note: always place a formula in a new column.

Do not use a column label or use a column label that is not in your data set.

Create a relative reference to the first cell in the column (B6).

The formula must evaluate to TRUE or FALSE.