



Microsoft Excel 2013 Part 3: Advanced Excel

Spring 2015, Version 1.0

Table of Contents

Introduction	2
Sorting Data	2
Sorting Data by a Single Column.....	2
Sorting Data by Multiple Columns	2
Filtering Data	3
Enabling AutoFilter.....	4
Applying Filters	4
Clearing Filters.....	6
Disabling AutoFilter	7
Entering Data Using AutoFill	7
Working with Charts	8
Creating Charts.....	9
Selecting Chart Elements	11
Changing the Chart Type	11
Changing the Chart Data.....	12
Changing the Chart Layout	13
Formatting Charts	15
Moving Charts.....	17
Deleting Charts.....	17
Using Formulas and Functions	18
Using Operators in Formulas	18
Using Cell References in Formulas	18
Entering Formulas	19
Displaying Formulas	20
Using Functions in Formulas	20
Using the AutoSum Button	21
Inserting Functions	21
Using Formula AutoComplete	23
Password-protecting Workbooks	24

Introduction

Microsoft Excel 2013 is a spreadsheet program that is used to manage, analyze, and present data. It includes many powerful tools that can be used to organize and manipulate large amounts of data, perform complex calculations, create professional-looking charts, enhance the appearance of worksheets, and more. This handout covers sorting and filtering data, filling cell, creating and modifying charts, using formulas and functions, and protecting workbooks.

Sorting Data

Sorting makes it easier to read or analyze the data in a worksheet. When you sort data, you rearrange the rows based on the contents of a particular column or a set of columns. Rows with duplicate data in the sort column remain in their original order. Rows with blank cells in the sort column are placed last in the sorted list.



You can sort data alphabetically, numerically, or by date in ascending or descending order. *Ascending order* arranges text from A to Z, numbers from smallest to largest, and dates from oldest to newest. *Descending order* arranges text from Z to A, numbers from largest to smallest, and dates from newest to oldest.

Sorting Data by a Single Column

You can sort the data in a worksheet by a single column. For example, you may want to sort a list of employees by last name. Data in adjacent columns will be sorted based on the column that you sort by.

To sort data by a single column:

1. Select a cell in the column that you want to sort by.
2. On the **Data** tab, in the **Sort & Filter** group, do one of the following:

- To sort in ascending order, click the **Sort Ascending** button .
- To sort in descending order, click the **Sort Descending** button .

NOTE: The names of the sort buttons change to reflect the type of data in the column. If the column contains text, the buttons are named **Sort A to Z** and **Sort Z to A**; for numbers, the buttons are named **Sort Smallest to Largest** and **Sort Largest to Smallest**; and for dates, the buttons are named **Sort Oldest to Newest** and **Sort Newest to Oldest**.

Sorting Data by Multiple Columns

You can sort the data in a worksheet by several columns by adding levels of sorting criteria. For example, you can sort a list of employees first by department (to group all the employees in the same department together), and then by last name (to list the names in alphabetical order within each department). You can sort by up to 64 columns.

To sort data by multiple columns:

1. Select a cell in one of the columns that you want to sort by.
2. On the **Data** tab, in the **Sort & Filter** group, click the **Sort** button (see Figure 1). The **Sort** dialog box opens (see Figure 2).

NOTE: Each sort level is represented by a single row in the **Sort** dialog box.



Figure 1 – Sort & Filter Group on the Data Tab



3. If the data has a header row, make sure that the **My data has headers** check box is selected.

NOTE: When the **My data has headers** check box is selected, the first row of data is excluded from the sort and the column headers appear in the **Sort by** list.

4. Under **Column**, click the arrow and select the first column that you want to sort by.
5. Under **Sort On**, click the arrow and select **Values**.
6. Under **Order**, click the arrow and select the desired sort order (e.g., **A to Z**).

NOTE: The options that appear in the **Order** list change to reflect the data to be sorted.

7. To add another column to sort by, click the **Add Level** button, and then repeat steps 4 through 6.

NOTE: You can delete a sort level by selecting it, and then clicking the **Delete Level** button. You can copy a sort level by selecting it, and then clicking the **Copy Level** button. You can change a sort level's position in the order by selecting it, and then clicking the **Move Up** button  or **Move Down** button . Columns higher in the list are sorted before columns lower in the list.

8. When finished, click the **OK** button.

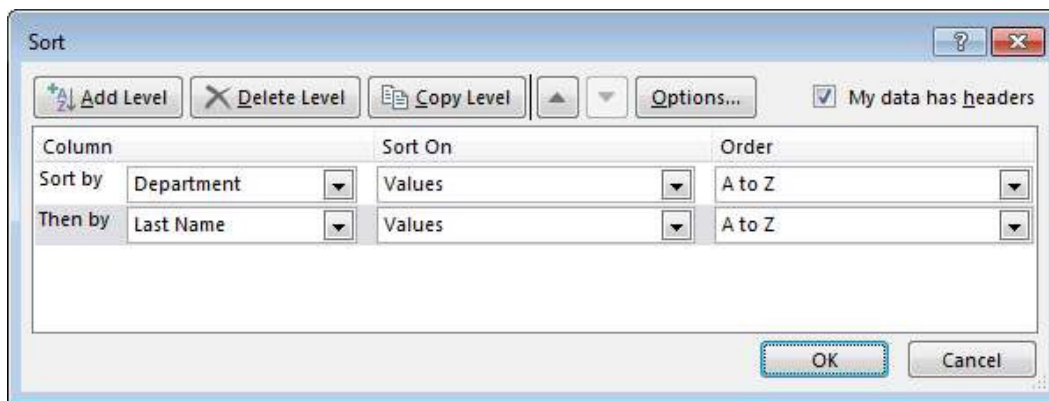


Figure 2 – Sort Dialog Box

Filtering Data

Filtering allows you to view or analyze a subset of the data in a large worksheet. When you filter data, Excel displays only those rows that meet the criteria you specify. The rows that do not meet the criteria are hidden, not deleted. You can filter by one or more columns. Each filter limits the data to which you can apply the next filter, helping you narrow down the results. For best results, do not mix data types (such as text and numbers) in the same column because only one type of filter command is available for each column. Excel includes an *AutoFilter* feature that can be used to quickly filter data.

Enabling AutoFilter

In order to use the AutoFilter feature, you must first enable it. When AutoFilter is enabled, Filter arrows appear to the right of the column headings. Before enabling AutoFilter, make sure that the top row of each column has a heading that describes the contents of the column.

To enable AutoFilter:


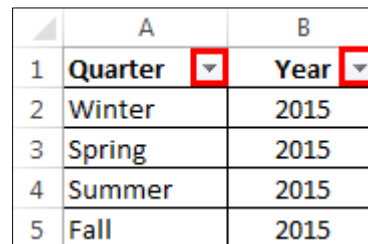
1. Select a cell within the range that you want to filter.
2. On the **Data** tab, in the **Sort & Filter** group, click the **Filter** button (see Figure 3). **Filter** arrows  appear next to each column heading (see Figure 4).



Figure 3 – Sort & Filter Group on the Data Tab






	A	B
1	Quarter 	Year 
2	Winter	2015
3	Spring	2015
4	Summer	2015
5	Fall	2015

Figure 4 – Filter Arrows

Applying Filters

Clicking the Filter arrow of a column displays the Sort and Filter menu which includes sorting and filtering commands as well as a list of the unique values in that column. You can filter data by selecting values from the list, by searching for values, or by specifying conditions.

To filter data by selecting values:

1. Click the **Filter** arrow  of the column that you want to filter. The **Sort and Filter** menu appears, displaying a list of the unique values in that column (see Figure 5).
2. Deselect the **(Select All)** check box at the top of the list, and then select the check box next to the values by which you want to filter (see Figure 6).
3. Click the **OK** button. Excel displays only those rows that contain the selected values.

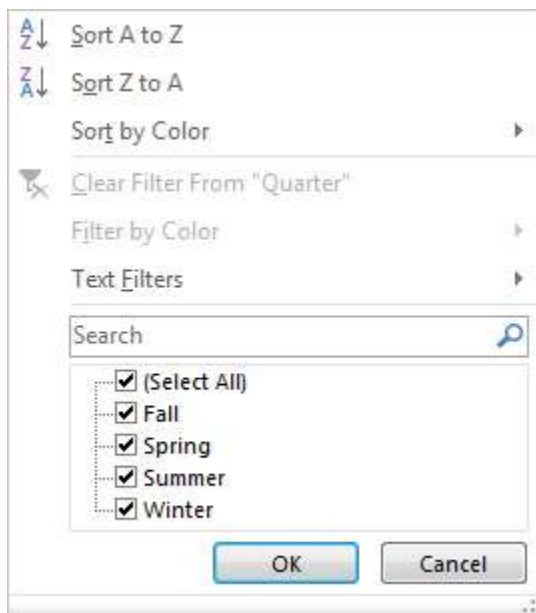


Figure 5 – Sort and Filter Menu

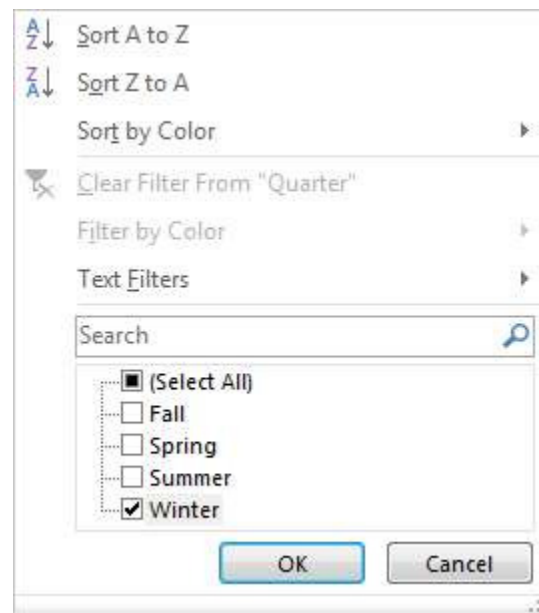


Figure 6 – Sort and Filter Menu After Selecting Values

NOTE: When a column is filtered, the **Filter** arrow that appears to the right of the column heading includes a filter icon (see Figure 7).




	A	B
1	Quarter 	Year 
2	Winter	2015
6	Winter	2016
10	Winter	2017

Figure 7 – Filter Arrow of a Filtered Column

To filter data by specifying conditions:

1. Click the **Filter** arrow  of the column that you want to filter. The **Sort and Filter** menu appears.
2. Point to **Number Filters**, **Text Filters**, or **Date Filters**, and then click **Custom Filter** on the submenu (see Figure 8).

NOTE: The special filters (**Number Filters**, **Text Filters**, or **Date Filters**) that appear on the **Sort and Filter** menu depend on the type of data in the column (numbers, text, or dates). Most of the special filters open the **Custom AutoFilter** dialog box, allowing you to specify conditions.

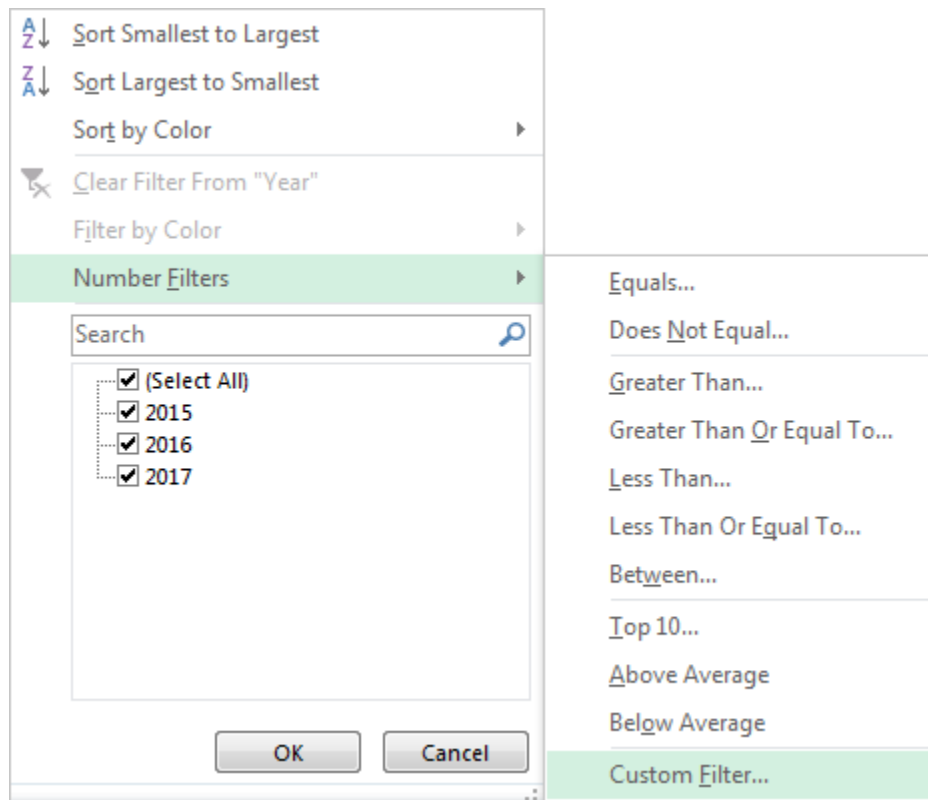


Figure 8 – Sort and Filter Menu with Number Filters Submenu

3. In the **Custom AutoFilter** dialog box, enter one or two filtering conditions by selecting a comparison operator (such as **equals**) from the box on the left and entering a value in the box on the right (see Figure 9).

NOTE: When filtering by two conditions, select the **And** option if both conditions must be met, or the **Or** option if either condition can be met.

4. Click the **OK** button. Excel displays only those rows that meet the specified conditions.

[Click here to download full PDF material](#)