



# Working with Numbers in Excel 2016



## OVERALL AIM:

To teach you techniques and functions for transforming, splitting, combining, filtering, performing calculations, visualizing, and organizing numbers.

## LESSON OBJECTIVES

At the end of the session, the participants will be able to:

- Articulate the function and purpose of Excel 2016
- Transform your numbers using number styles, increase and decrease decimal, and custom number formats
- Split and combine using concatenation, and left functions
- Perform calculations using AVERAGE, AVERAGEIF, AVERAGEIFS, COUNT, COUNTIF, SUM, SUMIF, and SUMIFS functions, and algebraic expressions
- Visualize numbers using cell styles and conditional formatting
- Organize numbers using filters, number filters, sorting, custom sorts, and sort by color

## REFLECTIVE QUESTIONS

- How can I analyze my data faster?
- How can I perform calculations using different functions?

## EXCEL 2016

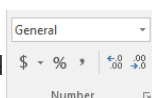
Excel is more than a spreadsheet program. With Excel, you can analyze data, perform calculations, add visualizations, and transform your data to make it more meaningful. Additionally, you can analyze your data faster using builtin functionality.

## TRANSFORMING NUMBERS

You can transform your numbers using number styles, increase and decrease decimal, and custom number form.

### Number Styles

You can use Number styles to apply pre-defined formats.



Before	\$	%	Comma
1000.255	\$1,000.26	100026%	1,000.26

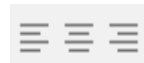
## Cell Alignment Buttons

The Cell Alignment buttons adjust your numbers horizontally and vertically. To begin, click the cell(s)



Vertical Alignment

Aligns the cell contents to the Top, Center, or Bottom of cell

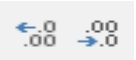


Horizontal Alignment

Aligns the cell contents to the Left, Center, or Right of cell

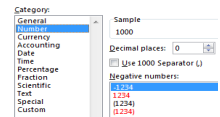
## Increase and Decrease Decimal

The Increase and Decrease Decimal buttons increase or decrease the number of decimal places.



## Custom Number

With the custom number formats, you can select how to handle negative numbers and design your own formats.



## SPLITTING AND COMBINING NUMBERS

You can split and combine numbers using the LEFT and CONCATENATE functions, just like with text.

### Left Function

The Left functions returns the specified number of characters counting from the left of the selected cell.

Formula: =LEFT(cell, number of characters)

Function	C2	After
=LEFT(C2, 2)	10122266	10

## COMBINING NUMBERS

You can combine numbers using the CONCATENATE function and the ampersand (&). You can combine numbers from cells with other characters or numbers enclosed in double quotes ("").

### Concatenate with a Dash

You can combine numbers, text, or both with a dash between them using the CONCATENATE function.

Formula: =CONCATENATE(C2, "-", D2)

C2	D2	After
101	Books	101-Books

### Concatenation using the Ampersand (&)

With ampersand(&), you can combine text, numbers, or both.

Formula: =LEFT(C2,1) & "0"

C2	=LEFT(C2,1)	=LEFT(C2,1) & "0"
101	1	10

## PERFORMING CALCULATIONS

Excel has over 400 functions from which to choose. You can any of these functions or algebraic expressions to perform calcula-

tions. You can even perform calculations based on a condition being met. To see the functions in action, please refer to Table 1 and Table 2.

COUNT

The COUNT function allows you to count cells containing numbers. It will also count any spaces or hidden characters present in a cell.

Formula: =COUNT(Range)

- Range - cells, rows, or columns to count

COUNTIF

The COUNTIF function counts cells containing numbers if they meet the specified criteria.

Formula: =COUNTIF(Range,Criteria)

- Range - the cells, rows, or columns to count
- Criteria - the condition to be met in "" (double quotes)

COUNTIFS

The COUNTIFS function counts cells containing numbers if cells in another column meets the specified criteria.

Formula: =COUNTIFS(Range, Evaluate, Criteria)

- Range - the cells, rows, or columns to add
- Evaluate - the cells, rows, or columns to evaluate
- Criteria - the condition to be met in "" (double quotes)

SUM

The SUM function adds a range of cells

Formula: =SUM(Range)

- Range - the cells, rows, or columns to add

SUMIF

The SUMIF function adds cells containing numbers if they meet the specified criteria.

Formula: =SUMIF(Range, Criteria)

- Range - the cells, rows, or columns to add
- Criteria - the condition to be met in "" (double quotes)

SUMIFS

The SUMIFS function adds cells containing numbers if cells in another column meets the specified criteria.

Formula: =SUMIFS(Range, Evaluate, Criteria)

- Range - the cells, rows, or columns to add
- Evaluate - the cells, rows, or columns to evaluate
- Criteria - the condition to be met in "" (double quotes)

AVERAGE

The AVERAGE function averages a range of cells, rows, or columns.

Formula: =AVERAGE(Range)

- Range - the cells, rows, or columns to count

AVERAGEIF

The AVERAGEIF function averages a range of cells containing numbers if they meet the specified criteria.

Formula: =AVERAGEIF(Range, Criteria)

- Range - the cells, rows, or columns to count
- Criteria - the condition to be met in "" (double quotes)

AVERAGEIFS

The AVERAGEIFS function averages cells containing numbers if the cells in another column meets the specified criteria.

Formula: =AVERAGEIFS(Range, Evaluate, Criteria)

- Range - the cells, rows, or columns to add
- Evaluate - the cells, rows, or columns to evaluate
- Criteria - the condition to be met in "" (double quotes)

Functions in Action

Table 1: Sample Data

	A	B
1	Dept A	100
2	Dept B	200
3	Dept A	300

Table 2: Functions and results

Function	Formula	Results
COUNT	COUNT(B1:B3)	3
COUNTIF	COUNTIF(B1:B3,">150")	2
COUNTIFS	COUNTIFS(A1:A3,"Dept A")	2
SUM	SUM(B1:B3)	600
SUMIF	SUMIF(B1:B3,">150")	500
SUMIFS	SUMIFS(B1:B3,A1:A3,"Dept A")	400
AVERAGE	AVERAGE(B1:B3)	200
AVERAGEIF	AVERAGEIF(B1:B3,">150")	250
AVERAGEIFS	AVERAGEIFS(B1:B3,A1:A3,"Dept A")	200

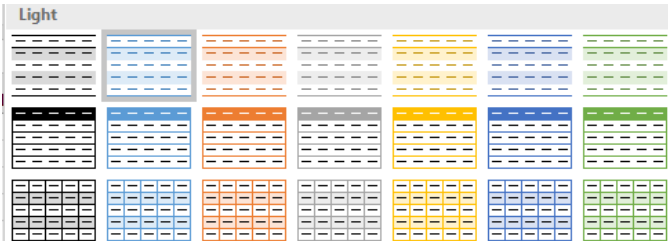
VISUALIZING NUMBERS

Format as Table

The Format as Table allows you to format your table using one of predefined color palettes. To begin,



1. Select your data
2. Click Format as Table
3. Select a color palette

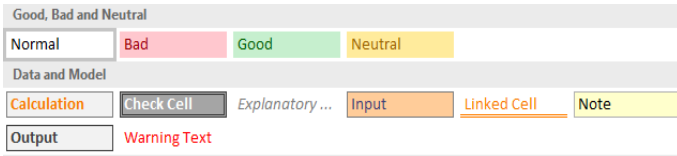


4. Check My Data has Header (optional)
5. Click OK

## Cell Styles

You can apply predefined fonts and colors to a cell, row, or column using Cell Style. To begin,

1. Select the desired range
2. Click the desired Cell Style

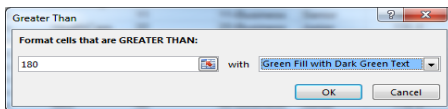


## Conditional formatting

Conditional formatting highlights cells by changing their font color and fill based on rules.

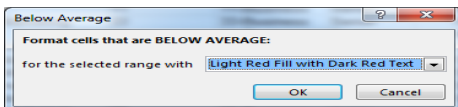
### Highlight Cell Rules

1. Select the desired range or column
2. Click Conditional Formatting
3. Click Highlight Cell Rules
4. Make a selection from the menu.
5. Enter your rule based on your selection



### Top Bottom Rules

1. Select the desired range or column
2. Click Conditional Formatting
3. Click Top Bottom Rules
4. Make a selection from the menu.
5. Enter your rule based on your selection



## ORGANIZING TEXT

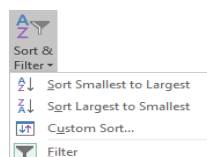
You can organize your text using filters, text filters, sorting, and custom sorting.

## FILTERS

Filters allow you to select the type information you want to see and filter the rest out.

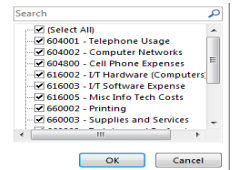
To activate filters,

1. Highlight Row 1  
(This should be the row with your data headers)
2. Click Sort & Filter
3. Click Filter



To use filters

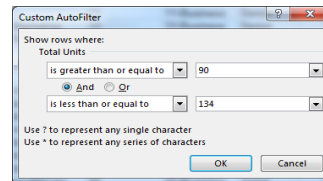
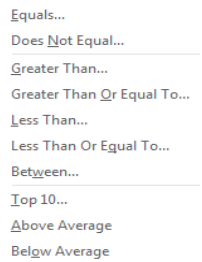
1. Click the down arrow beside the desired column heading
2. Make your selections
3. Click OK



## NUMBER FILTERS

Number Filters allow you to refine your filtering selection. You can choose from several options, such as equals, greater than or equal to, between, above average, etc.

1. Click the down arrow beside the desired column heading
2. Select Number Filter from the pop-up menu
3. Make a selection
4. Enter your criteria based on your selection

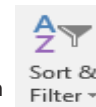


5. Click OK

## SORTING

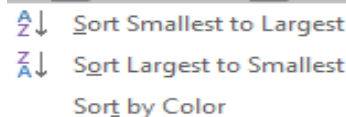
You can sort your information by the first column, a specific column, color, or multiple columns in a specified order. Sort by first column

1. Select your data
2. Click the Sort & Filter button



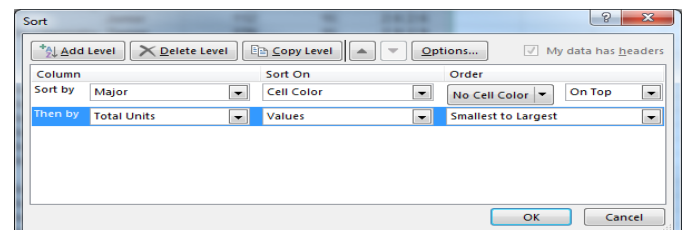
Sort by specific column

1. You can sort any column by clicking the down arrow beside the desired column heading
2. Choose your sort order  
You can sort in ascending, descending, or by color



## CUSTOM SORTING

Custom Sorting allows you to sort multiple columns and to specify the sort order.



1. Select your data
2. Click the Sort & Filter button
3. Click Custom Sort (continued on next page)

On the Custom Sort,

- Check My data has headers
- In the Sort by, select the first column
- In the Order, select the sort order
- Click Add Level to add another column
- Complete the selections as above
- Click OK, when finished.

## WEB RESOURCES

### GCF LearnFree.org

GCF LearnFree.org is a subsidiary of Goodwill Industries. They offer free tutorials on numerous topics. The content includes step-by-step instruction as well as short videos. To learn more about Excel 2016, visit their website at:

<https://www.gcflearnfree.org/excel2016/>

### Google Search

You can find videos and instructions on Excel 2016 and other topics. To find topics on Excel 2016 and numbers, type the following in the Google search box:

How to work with numbers Excel 2016


### Youtube Search

Youtube offers many videos on Excel 2016 among a host of other topics. To find videos on Excel 2016 and numbers, type the following in the Youtube search box:

How to work with numbers Excel 2016

### CSU Learn

CSU Learn is our professional development and training environment. It offers over 10,000 courses on a wide range of topics. These courses are free to all CSU employees. This online computer-based training includes courses on Excel 2016.

1. Navigate to <https://csulearn.csub.edu>
1. Click the 
2. In the search box, enter Excel 2016 and press enter on your keyboard
3. In the left pane, select Skillsoft Course
4. Click Apply (bottom of the left pane)
5. Scroll through the course
6. For the desired course, click Select and Start
7. Follow the instructions on the screen.

*Remember to turn you pop-up blockers off.*

## NOTES



### LEARN MORE AT:

Excel 2016

[www.csub.edu/training/pgms/o2016P/Excel2016/index.html](http://www.csub.edu/training/pgms/o2016P/Excel2016/index.html)



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