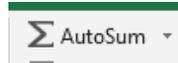# Excel Formulas: SUM, SUMIF, SUMIFS

SUM Function

The most commonly used function in Excel is SUM, which totals the range of cells you select. Because the SUM is such a commonly used function, Excel provides the AutoSum button on the Home tab of the Ribbon, as well as the Formulas tab.

Let's take a look at using the AutoSum button to sum the values in the Subtotal column in the example below:

To total a column of numbers using the SUM function, follow these steps:

1. Click the cell in which you want to place the SUM function.
2. Click the AutoSum button.
   Excel will place the SUM function in the selected cell and will automatically select a range of neighboring cells as an argument for the function.
3. If Excel selected the range you want to total, press Enter to complete the function and compute the sum.

If Excel did not select the range you want to add up, select a new range by dragging the mouse over the range and pressing Enter. To cancel the AutoSum command, press the Esc key before pressing Enter.

You can also type the sum function. In the example above,

1. Click in cell E7
2. Type =SUM(E4:E6
3. Press Enter – Excel will automatically close the parenthesis when you hit enter.

SUMIF

SUMIF extends the capabilities of the basic SUM function. You can tell Excel to only SUM items that meet a certain criteria or condition.

You use the **SUMIF** function to sum the values in a range that meet criteria that you specify.

 The syntax for the SUMIF function is:

= SUMIF (Range, Criteria, Sum Range)

In the example below, Column A contains vegetables or fruits and you want to sum only the values that equal fruits.

You can use the following formula:

=SUMIF(A2:A7,"Fruits",C2:C7)

	A	B	C
1	Category	Food	Sales
2	Vegetables	Tomatoes	2300
3	Vegetables	Celery	5500
4	Fruits	Oranges	800
5		Butter	400
6	Vegetables	Carrots	4200
7	Fruits	Apples	1200
8			
9	Sum of all sales of "Fruits" in the Category column	2000	=SUMIF(A2:A7,"Fruits",C2:C7)

SUMIF looks in the range A2:A7 for "Fruits" then adds the corresponding amounts in D2:C7.

Note: Text in a formula is always in quotation marks.

Limitations of the SUMIF Function

The SUMIF function is really cool, but you are limited to a single condition. Looking at the same example above, what if you wanted to only add Vegetables that are Tomatoes? This would involve two conditions. Let's look at the SUMIFS function below.

SUMIFS

The SUMIFS function adds up the data in selected cells when specific criteria are met in two or more ranges of data.

The SUMIFS function works like the AND function in that it only sums the data if the criterion for each range is true.

 The syntax for the SUMIFS function is:

=SUMIFS (Sum_range, Criteria_range1, Criteria1, Criteria_range2, Criteria2, ...)

In the example below, you want to sum the numbers in the range B1:B17 only if the corresponding data in C2:C17 are Bananas and sold by Salesperson Bob in D2:D17.

You would use this formula:
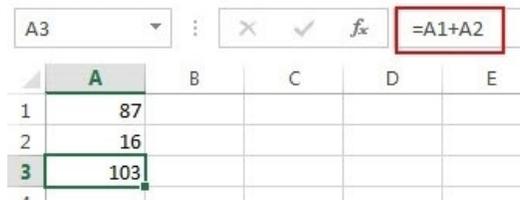
SUMIFS(B2:B17,C2:C17,"Bananas",D2:D17,"Bob")

	A	B	C	D
1	Date Sold	Quantity Sold	Product	Salesperson
2	1/1/2011	5	Apples	Bob
3	1/1/2011	4	Apples	Susan
4	1/1/2011	15	Artichokes	Bob
5	1/2/2011	3	Artichokes	Susan
6	1/2/2011	22	Bananas	Bob
7	1/3/2011	12	Bananas	Susan
8	1/3/2011	10	Carrots	Bob
9	1/4/2011	18	Carrots	Susan
10	1/4/2011	5	Apples	Bob
11	1/5/2011	4	Apples	Susan
12	1/5/2011	33	Artichokes	Bob
13	1/6/2011	3	Artichokes	Susan
14	1/6/2011	12	Bananas	Bob
15	1/7/2011	10	Bananas	Susan
16	1/7/2011	8	Carrots	Bob
17	1/7/2011	24	Carrots	Susan
18				
19	How many Bananas were sold by Salesperson Bob?	34		

=SUMIFS(B2:B17,C2:C17,"Bananas",D2:D17,"Bob")

Note: Pay attention to the arguments for the SUMIF and SUMIFS. The Sum Range in the SUMIF function is last, but comes first in the SUMIFS function.

Simple Formulas

Let's say you wanted the numbers in cell A1 and cell A2 to be added together in cell A3. There is nothing wrong with entering =SUM(A1+A2). But when you are adding just two cells, that is considered a simple formula and can be entered this way: =A1+A2.

Simple calculations can be entered in Excel just as they would be written on paper, just remember that all formulas start with the = sign.

Now say you have a set of numbers that need added in cells A1 through A10, do not do this

A1+A2+A3+A4+A5+A6+A7+A8+A9+A10

The purpose of the SUM function is to add numbers within a range. Let SUM do the work.

With a simple formula, besides addition, you can also perform subtraction, multiplication, or division using the following arithmetic operators:

+ addition
- subtraction
* multiplication
/ (forward slash) division

Understand the ####### Error Value

When you see ######## in a cell, what does that mean?
It simply means the column is not wide enough to display the content.

Region	Total Sales
North	$ 1,234.00
South	$ 2,345.00
East	$ 3,456.00
West	#########

All you need to do is increase the column width. You can also shrink contents to fit the column or apply a different number format.