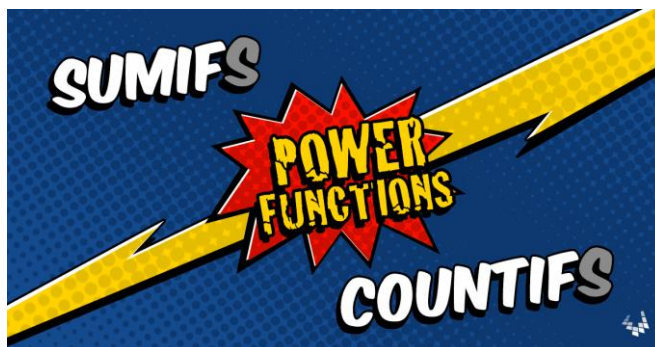# SUMIF and COUNTIF in Excel

SUMIF, SUMIFS, COUNTIF, and COUNTIFS are extremely useful and powerful for data analysis. If there was an Excel Function Hall of Fame, this family of functions ought to be included. In this article, I'll demonstrate a bunch of different ways to use these functions, focusing mainly on all the different criteria types.

The **SUMIF** and **COUNTIF** functions allow you to conditionally sum or count cells based on a **single condition**, and are compatible with almost all versions of Excel:

```
=SUMIF(criteria_range, criteria, sum_range)

=COUNTIF(criteria_range, criteria)
```

The **SUMIFS** and **COUNTIFS** functions allow you to use **multiple criteria**, but are only available beginning with Excel 2007:

```
=SUMIFS(sum_range, criteria_range1, criteria1, criteria_range2,

criteria2,...)

=COUNTIFS(criteria_range1, criteria1, criteria_range2, criteria2,...)
```

AVERAGEIF and AVERAGEIFS are also part of this family of functions and have the same syntax as SUMIF and SUMIFS.

This Article (bookmarks):

1) SUMIF and COUNTIF Examples

We'll start off by using a product sales table to demonstrate a few different SUMIF and COUNTIF formulas. I've listed a few of these examples below. To see these formulas in action and try them out yourself, you can download the example file below:

Download the Example File (SumIf-CountIf.xlsx)

	A	B	C	D	E
1	Product Sales Table				
2	Category	Model	Price	Sales	On Sale
3	Student	A	$25	100	y
4	Student	B	$35	200	
5	Student	C	$45	400	
6	Home	A	$39	1000	
7	Home	B	$49	2000	
8	Home	C	$59	4000	y
9	Business	A	$50	10	
10	Business	B	$70	20	y
11	Business	C	$90	40	

Criteria are Text Values

Example: Sum of Sales where Category equals "student"

```
=SUMIF(category_range,"student",sales_range)
```

NOTE This formula will also match "Student" because the SUMIF family of functions are **not case-sensitive**. You can use **wildcard characters** within the text string, such as **"?s*"** to match values where the second letter is s.

Not Equal To (<>)

Example: Sum of Sales where Model is NOT equal to "B"

```
=SUMIF(model_range,"<>B",sales_range)
```

Example: Sum of Sales where Category does NOT contain the letter "u"

```
=SUMIF(category_range,"<>*u*",sales_range)
```

Criteria is an Alphabetical Text Comparison

Example: Sum of Sales where Model is less than "C"

```
=SUMIF(model_range,"<C",sales_range)
```

Criteria is a Numeric Comparison

Example: Number of products priced over $40

```
=COUNTIF(price_range,">40")
```

NOTE When using numeric criteria, COUNTIF and SUMIF ignore text values. Numeric date values can be an exception to that (see below for date comparisons).

Criteria matches Blank Cells or Empty Cells

Example: Count of products where On Sale is blank

```
=COUNTIF(on_sale_range,"")
```

Criteria matches Non-Blank Cells

Example: Number of products on sale (where On Sale is not blank)

```
=COUNTIF(on_sale_range,"<>")
```

Criteria includes a Cell Reference

Example: Sum of Sales where Price is greater than the value in cell H3

```
=SUMIF(price_range,">"&H3,sales_range)
```

Criteria is In Another Cell

Example: Sum of Sales using the criteria defined in cell K9

```
=SUMIF(criteria_range,K9,sales_range)
```

NOTE This technique is useful when you want to allow the user to choose or enter different criteria or search strings.
The cell K9 could contain a value like "student" or "40" or a criteria string such as ">40" or "<>student"

Multiple Criteria

Example: Sum of Sales where Category = "student" AND Price > 30

```
=SUMIFS(sales_range,category_range,"student",price_range,">30")
```

Example: SUMIFS between two dates

```
=SUMIFS(sum_range,date_range,">=1/1/2017",date_range,"<1/31/2017")
```

NOTE The SUMIFS, COUNTIFS, and AVERAGEIFS functions are used for multiple AND conditions. Formulas for OR conditions are a bit more tricky (see below).

2) Using Dates as Criteria

When using dates as criteria for the COUNTIF and SUMIF functions, Excel does some interesting things, depending on whether you are using "=" or "<" as the criteria and whether the dates in the criteria range are stored as numeric date values or text values.

Remember: Date values are stored in Excel as sequential numbers starting with 1 for 1/1/1900. The cell formatting may display the date in different ways, but COUNTIF and SUMIF comparisons are based on the value stored in the cell, not the way a cell is formatted. That is a good, because we normally want to compare dates and numbers without having to worry about how they are formatted.

Criteria is a Date

```
=COUNTIF(criteria_range,"=3/1/17")
```

When using criteria such as "=3/1/17" or "Mar 1, 2017", Excel will recognize the criteria as a date and will count all *date values* in the *criteria_range* matching that date. Excel will ALSO count recognized dates stored as *text values* in the *criteria_range*, such as "March 1, 2017" and "3/1/2017" (but not "March 1st, 2017" because Excel doesn't recognize it as a date).

Criteria is Greater or Less than a Date

```
=COUNTIF(criteria_range,">3/1/17")
```

When using <, >, <=, or >=, Excel still recognizes the criteria as a date, but it does **not** convert text values in the *criteria_range* to date values.

Comparison to TODAY

You can use the TODAY function to make comparisons based on the current date, like this:

```
=SUMIF(date_range,"<"&TODAY(),sum_range)
```

3) SUMIFS Example: Income and Expense Report

SUMIFS is very useful in account registers, budgeting, and money management spreadsheets for summarizing expenses by category and between two dates.
The SUMIFS example below sums the Amount column with 3 criteria: (1) the Category matches "Fuel", (2) the Date is greater than or equal to the start date, and (3) the Date is less than or equal to the end date.

```
=SUMIFS(amount_range, category_range, "Fuel", date_range, ">=1/1/2018",
date_range, "<=1/31/2018")
```

The following screenshot shows an example from the download file:

Formula bar: `=SUMIFS($D$2:$D$12,$C$2:$C$12,$G7,$A$2:$A$12,">="&H2,$A$2:$A$12,"<="&H3)`

Check Register

	Date	Payee	Category	Amount	Balance
1					
2	Date	Payee	Category	Amount	Balance
3	1/1/18	Carry-Over		3,000.00	3,000.00
4	1/2/18	Auto Stop	Fuel	(35.42)	2,964.58
5	1/5/18	Smith's	Groceries	(15.32)	2,949.26
6	1/15/18	Albertsons	Groceries	(67.98)	2,881.28
7	1/31/18	Paycheck	Wages	2,354.00	5,235.28
8	2/5/18	A Express	Debt	(156.23)	5,079.05
9	2/9/18	ABC Insure	Insurance	(576.23)	4,502.82
10	2/15/18	Auto Stop	Fuel	(24.12)	4,478.70
11	2/18/18	Albertsons	Groceries	(76.12)	4,402.58
12	2/28/18	Paycheck	Wages	2,354.00	6,756.58

Income and Expense Report

Period Start	1/1/2018	2/1/2018
Period End	1/31/2018	2/28/2018
INCOME Categories		
Wages	2,354.00	2,354.00
EXPENSE Categories		
Fuel	:="&H$3)	(24.12)
Groceries	(83.30)	(76.12)
Insurance	-	(576.23)
Debt	-	(156.23)

4) SUMIF and COUNTIF Between Two Numbers (1 < x < 4)

COUNTIFS and SUMIFS can easily handle a condition such as 1 < x < 4 (which means x > 1 AND x < 4). However, if you are trying to make a spreadsheet compatible with older versions of Excel, you can use COUNTIF or SUMIF by subtracting the results of the condition x <= 1 from the results of the condition x < 4.

Condition	Formula using COUNTIFS
1 < x < 4	=COUNTIFS(*range*,">1",*range*,"<4")
Condition	**Formula using only COUNTIF**
1 < x < 4	=COUNTIF(*range*,"<4") - COUNTIF(*range*,"<=1")
1 <= x < 4	=COUNTIF(*range*,"<4") - COUNTIF(*range*,"<1")
1 < x <= 4	=COUNTIF(*range*,"<=4") - COUNTIF(*range*,"<=1")
1 <= x <= 4	=COUNTIF(*range*,"<=4") - COUNTIF(*range*,"<1")

A common need for these formulas is to sum values between two dates. Remember that date values are stored as numbers.

Example: SUMIF between two dates (1/1/2017 <= date <= 1/31/2017)

```
=SUMIF(sum_range,date_range,"<=1/31/2017")-
SUMIF(sum_range,date_range,"<1/1/2017")
```

5) SUMIF and COUNTIF with OR Conditions

COUNTIFS and SUMIFS handle multiple AND conditions, but OR conditions such as X<2 OR X>3 are usually easier to handle by evaluating each condition separately and then adding the results. The two formulas below do essentially the same thing.

Condition	Formula
x < 2 or 3 < x	=COUNTIF(*range*,"<2") + COUNTIF(*range*,">3")
x < 2 or 3 < x	=SUM(COUNTIF(*range*,{"<2",">3"}))

To avoid double-counting cells, the conditions must not overlap. For example, the condition "=*e*" would overlap with the condition "=yes". The condition "<40" would overlap with the condition ">20". If the conditions overlap, you may end up counting or adding a value twice. If there is a possibility of conditions overlapping, then you may need to use a SUMPRODUCT formula as explained below.

Use SUMPRODUCT for overlapping OR conditions

The key to avoid double-counting is to recognize that FALSE+FALSE=0 and TRUE+FALSE=1 and TRUE+TRUE=2. This means that for a logical OR condition to be true, we can check whether the sum of two or more conditions is > 0.

Sum of Sales where Model is equal to A or B.

```
=SUMPRODUCT(sales,1*( ((model="A")+(model="B"))>0 ))
```

Sum of Sales where Model = "A" or Price > 45

```
=SUMPRODUCT(sales,1*( ((model="A")+(price>45))>0 ))
```

6) Case-Sensitive SUMIF and COUNTIF

The SUMIF family does not have a case-sensitive option, so we need to resort back to using array formulas or SUMPRODUCT. The FIND and EXACT functions both provide a way to do case-sensitive matches.

Sum of Sales where Category exactly matches "student" (case-sensitive)

```
=SUMPRODUCT(sales,1*EXACT(category,"student"))
```

Sum of Sales where Category contains "Stu" (case-sensitive)

```
=SUMPRODUCT(sales,1*ISNUMBER(FIND("Stu",category)))
```

7) MAXIF or MINIF Formula

MAXIFS and **MINIFS** are new Excel functions available in the latest releases (Excel for Microsoft 365, Excel 2019). Their syntax is similar to SUMIFS, allowing you to use multiple criteria.
Older versions of Excel do not have the MAXIFS or MINIFS functions, but you can use an array formula like this (remember to press Ctrl+Shift+Enter):

Example: Find the maximum Price where Model = "A"

```
(array formula) =MAX(IF(model_range="A",price_range,""))
```

8) Summary of Different Criteria Types

CRITERIA TYPE	EXAMPLE	MATCHES ...
Text Value	"yes" or "=yes"	"yes" or "Yes" (not case-sensitive), the equal sign is optional

Text Value with Wildcards	"=?s*"	text values where the second letter is "s" or "S"
Alphabetical Text Comparison	"<C"	text values alphabetically less than "C"
Equal to a Numeric Value	20 or "=20"	numeric values equal to 20
Less than or Equal to	"<=20"	numeric values less than or equal to 20
Greater than or Equal to	">=20"	numeric values greater than or equal to 20
Not Equal to	"<>0"	values not equal to the value 0
Non-Blank	"<>"	values that are not blank (formulas returning "" are not blank)
Blank or Empty	""	values that are blank and formulas that return ""
Equal to a Cell Value	A42 or "="&A42	values equal to the value in cell A42
Comparison to a Cell Value	">"&A42	values greater than the value in cell A42
Equal to a Date	"=3/1/17"	date values equal to 3/1/17 as well as text values such as "3/1/17" or "Mar 1, 2017"
< or > a Date	">1/1/2017"	date values greater than 1/1/2017 (text values are ignored)

Some criteria, such as case-sensitive matches, may only be possible with array formulas or SUMPRODUCT.

You don't use the functions AND, NOT, OR, ISBLANK, ISNUMBER, ISERROR, or other similar functions as criteria for SUMIF and COUNTIF. However, you *can* use these functions within a SUMPRODUCT formula (but that isn't within the scope of this article).

9) Other Notes

- Comparisons are based on the value stored in the cell, not on how the cell is formatted.

- Error values in both the *sum_range* and *criteria_range* are ignored.

- SUMIFS and COUNTIFS formulas are generally faster than their SUMPRODUCT or array formula counterparts.

- The *sum_range* and *criteria_range* arguments can be references (e.g. A2:A42), named ranges or formulas that return a range (such as INDEX, OFFSET, or INDIRECT).
- Normally, you'll want the *sum_range* and *criteria_range* to be the same length. See the documentation on the Microsoft sites (referenced below) for information about what happens when the *sum_range* and *criteria_range* are not the same length.
- The COUNTIF and SUMIF criteria can be a range (e.g. A2:A3) if you enter the formula as an array formula using Ctrl+Shift+Enter.

- The COUNTIF and SUMIF criteria can be a list such as {">1","<4"}, but functions return an array containing results for the separate conditions, not a sum of both conditions (it is not the same as COUNTIFS or SUMIFS).