How can I use the SUMPRODUCT function in Excel to calculate the sum of products for a range of cells?

Authored by

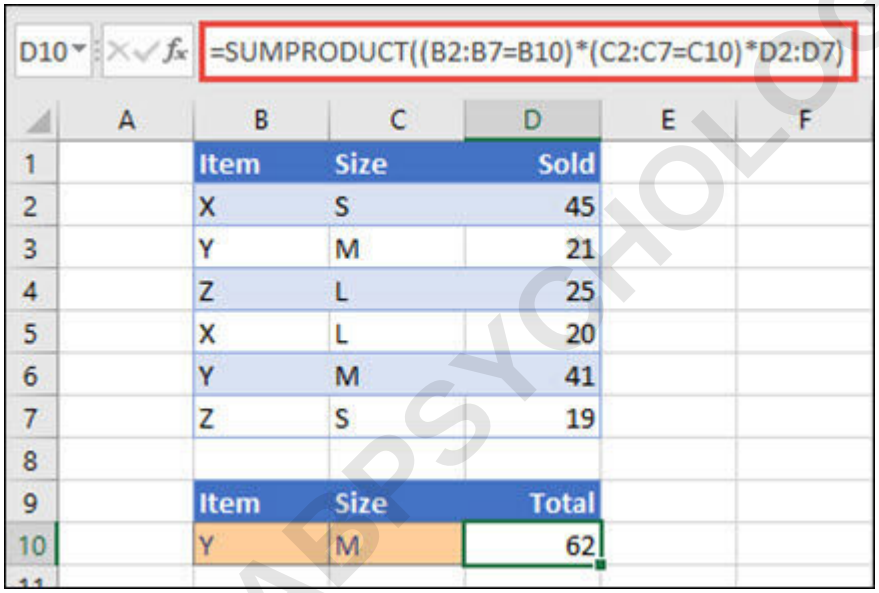
stats writer

July 1, 2024

The SUMPRODUCT function in Excel is a powerful tool that allows users to calculate the sum of products for a range of cells. This function takes two or more arrays of numbers and multiplies each corresponding element, then adds all the products together to give a final result. By using the SUMPRODUCT function, users can perform complex calculations on sets of data without having to manually multiply and add each individual value. This function can be useful for a variety of applications, such as financial analysis, inventory management, and data analysis. Overall, the SUMPRODUCT function offers a convenient and efficient way to calculate the sum of products for a range of cells in Excel.

The **SUMPRODUCT** function returns the sum of the products of corresponding ranges or arrays. The default operation is multiplication, but addition, subtraction, and division are also possible.

In this example, we'll use SUMPRODUCT to return the total sales for a given item and size:



SUMPRODUCT matches all instances of Item Y/Size M and sums them, so for this example 21 plus 41 equals 62.

Syntax

To use the default operation (multiplication):

=SUMPRODUCT(array1, , , ...)

The SUMPRODUCT function syntax has the following arguments:

Argument	Description
array1 Required	The first array argument whose components you want to multiply and then add.
, ,... Optional	Array arguments 2 to 255 whose components you want to multiply and then add.

To perform other arithmetic operations

Use SUMPRODUCT as usual, but replace the commas separating the array arguments with the arithmetic operators you want (*, /, +, -). After all the operations are performed, the results are summed as usual.

Note: If you use arithmetic operators, consider enclosing your array arguments in parentheses, and using parentheses to group the array arguments to control the order of arithmetic operations.

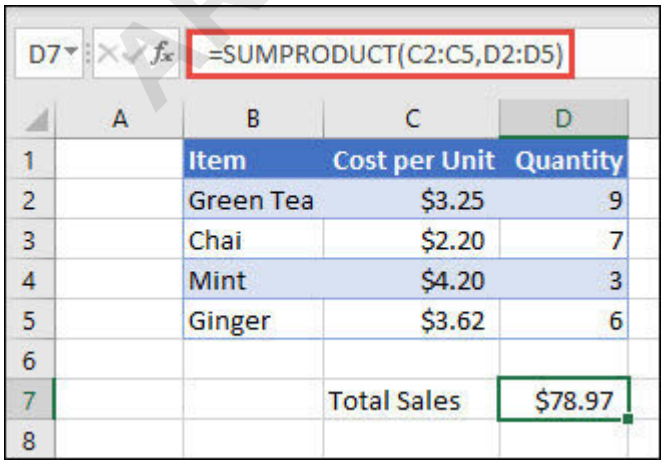
Remarks

The array arguments must have the same dimensions. If they do not, SUMPRODUCT returns the #VALUE! error value. For example, =SUMPRODUCT(C2:C10,D2:D5) will return an error since the ranges aren't the same size.

SUMPRODUCT treats non-numeric array entries as if they were zeros.

For best performance, SUMPRODUCT should not be used with full column references. Consider =SUMPRODUCT(A:A,B:B), here the function will multiply the 1,048,576 cells in column A by the 1,048,576 cells in column B before adding them.

Example 1

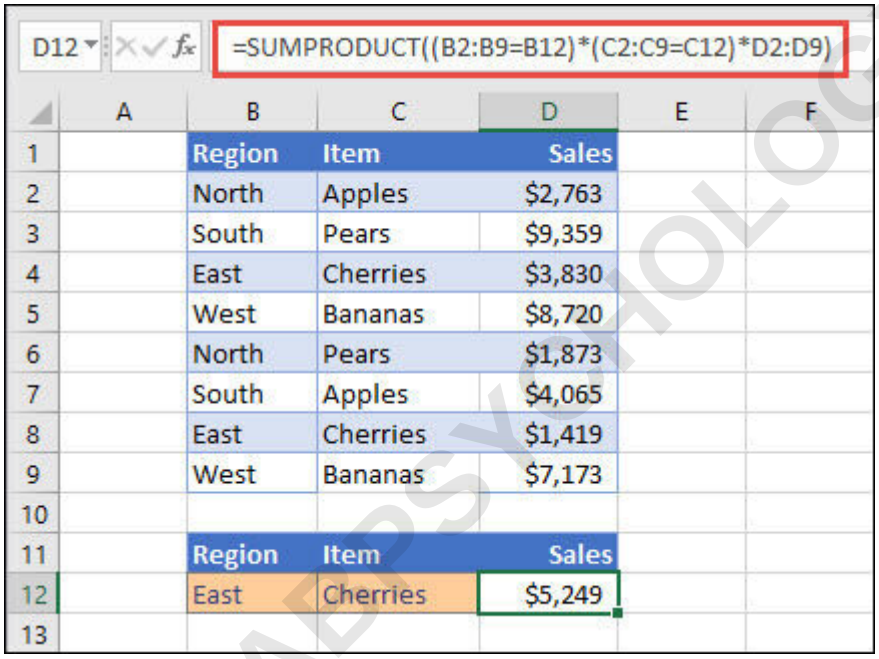


To create the formula using our sample list above, type =SUMPRODUCT(C2:C5,D2:D5) and press **Enter**. Each cell in column C is multiplied by its corresponding cell in the same row in column D, and the results are added up. The total amount for the groceries is $78.97.

To write a longer formula that gives you the same result, type =C2*D2+C3*D3+C4*D4+C5*D5 and press **Enter**. After pressing Enter, the result is the same: $78.97. Cell C2 is multiplied by D2, and its result is added to the result of cell C3 times cell D3 and so on.

Example 3

In this example, we want to return the total of a particular item sold by a given region. In this case, how many cherries did the East region sell?



	A	B	C	D	E	F
1		Region	Item	Sales		
2		North	Apples	$2,763		
3		South	Pears	$9,359		
4		East	Cherries	$3,830		
5		West	Bananas	$8,720		
6		North	Pears	$1,873		
7		South	Apples	$4,065		
8		East	Cherries	$1,419		
9		West	Bananas	$7,173		
10						
11		Region	Item	Sales		
12		East	Cherries	$5,249		
13						

Here, the formula is: =SUMPRODUCT((B2:B9=B12)*(C2:C9=C12)*D2:D9). It first multiplies the number of occurrences of East by the number of matching occurrences of cherries. Finally, it sums the values of the corresponding rows in the Sales column. To see how Excel calculates this, select the formula cell, then go to **Formulas** > **Evaluate Formula** > **Evaluate**.

Need more help?

You can always ask an expert in the Excel Tech Community or get support in Communities.

See Also

Perform conditional calculations on ranges of cells

Sum based on multiple criteria with SUMIFS

Count based on multiple criteria with COUNTIFS

Average based on multiple criteria with AVERAGEIFS