## Lesson no. 10: Math and Trig Function in Excel

## PRODUCT function

This article describes the formula syntax and usage of the **PRODUCT** function in Microsoft Excel.

## Description

The **PRODUCT** function multiplies all the numbers given as arguments and returns the product. For example, if cells A1 and A2 contain numbers, you can use the formula **=PRODUCT(A1, A2)** to multiply those two numbers together. You can also perform the same operation by using the multiply (*) mathematical operator; for example, **=A1 * A2**.

The **PRODUCT** function is useful when you need to multiply many cells together. For example, the formula **=PRODUCT(A1:A3, C1:C3)** is equivalent to **=A1 * A2 * A3 * C1 * C2 * C3**.

## Syntax

PRODUCT(number1, [number2], ...)

The PRODUCT function syntax has the following arguments:

- **number1**   Required. The first number or range that you want to multiply.

- **number2, ...** Optional. Additional numbers or ranges that you want to multiply, up to a maximum of 255 arguments.

NOTE   If an argument is an array or reference, only numbers in the array or reference are multiplied. Empty cells, logical values, and text in the array or reference are ignored.
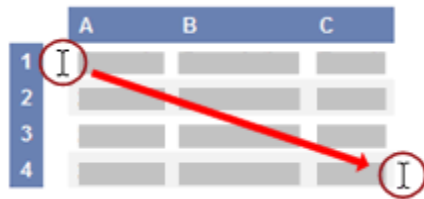
## Example

The example may be easier to understand if you copy it to a blank worksheet.

⊞ How do I copy an example?

1. Select the example in this article.

   IMPORTANT   Do not select the row or column headers.

Selecting an example from Help

2. Press CTRL+C.

3. In Excel, create a blank workbook or worksheet.

4. In the worksheet, select cell A1, and press CTRL+V.

   IMPORTANT  For the example to work properly, you must paste it into cell A1 of the worksheet.

5. To switch between viewing the results and viewing the formulas that return the results, press CTRL+` (grave accent), or on the **Formulas** tab, in the **Formula Auditing** group, click the **Show Formulas** button.

| | A | B | C |
|---|---|---|---|
| 1 | Data | | |
| 2 | 5 | | |
| 3 | 15 | | |
| 4 | 30 | | |
| 5 | Formula | Description | Result |
| 6 | =PRODUCT(A2:A4) | Multiplies the numbers in cells A2 through A4. | 2250 |
| 7 | =PRODUCT(A2:A4, 2) | Multiplies the numbers in cells A2 through A4, and then multiplies that result by 2. | 4500 |
| 8 | =A2*A3*A4 | Multiplies the numbers in cells A2 through A4 by using mathematical operators instead of the **PRODUCT** function. | 2250 |

# SUMPRODUCT function

This article describes the formula syntax and usage of the **SUMPRODUCT** function in Microsoft Excel.

## Description

Multiplies corresponding components in the given arrays, and returns the sum of those products.

## Syntax

SUMPRODUCT(array1, [array2], [array3], ...)

The SUMPRODUCT function syntax has the following arguments:

- **Array1**   Required. The first array argument whose components you want to multiply and then add.

- **Array2, array3,...**   Optional. Array arguments 2 to 255 whose components you want to multiply and then add.

Remarks

- The array arguments must have the same dimensions. If they do not, SUMPRODUCT returns the #VALUE! error value.

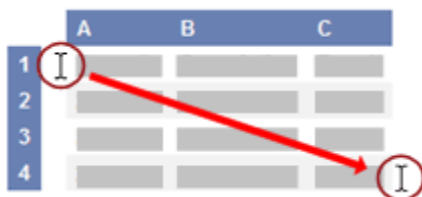- SUMPRODUCT treats array entries that are not numeric as if they were zeros.

## Example

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4. In the worksheet, select cell A1, and press CTRL+V.

   IMPORTANT  For the example to work properly, you must paste it into cell A1 of the worksheet.

5. To switch between viewing the results and viewing the formulas that return the results, press CTRL+` (grave accent), or on the **Formulas** tab, in the **Formula Auditing** group, click the **Show Formulas** button.

| | A | B | C | D |
|---|---|---|---|---|
| **1** | **Array 1** | **Array 1** | **Array 2** | **Array 2** |
| **2** | 3 | 4 | 2 | 7 |
| **3** | 8 | 6 | 6 | 7 |
| **4** | 1 | 9 | 5 | 3 |
| **5** | **Formula** | **Description (Result)** | | |
| **6** | =SUMPRODUCT(A2:B4, C2:D4) | Multiplies all the components of the two arrays and then adds the products — that is, 3*2 + 4*7 + 8*6 + 6*7 + 1*5 + 9*3. (156) | | |

NOTE   The preceding example returns the same result as the formula SUM(A2:B4*C2:D4) entered as an array. Using arrays provides a more general solution for doing operations similar to SUMPRODUCT. For example, you can calculate the sum of the squares of the elements in A2:B4 by using the formula =SUM(A2:B4^2) and pressing CTRL+SHIFT+ENTER.