

MAP function in Excel

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How does the MAP function work?

The MAP function and its counterpart, LAMBDA, work together

The screenshot shows the Microsoft Excel interface with a data table. The table has four columns: Product, Amount, Units Sold, and Sales Rep. The data is as follows:

	A	B	C	D
1	Product	Amount	Units Sold	Sales Rep
2	Laptop	\$1,200	15	John Smith
3	Monitor	\$350	23	Sarah Johnson
4	Keyboard	\$75	12	Mike Brown
5	Mouse	\$45	18	Emily Davis
6	Monitor	\$380	31	John Smith
7	Laptop	\$1,350	8	Sarah Johnson
8	Mouse	\$50	25	Mike Brown
9	Keyboard	\$80	14	Emily Davis
10	Laptop	\$1,400	22	Robert Wilson
11	Monitor	\$420	19	Lisa Anderson
12				

The MAP function takes a range of data and applies a custom calculation to the entire data set at once. It uses the following syntax:

`=MAP(array, lambda)`

Let's analyze the parameters:

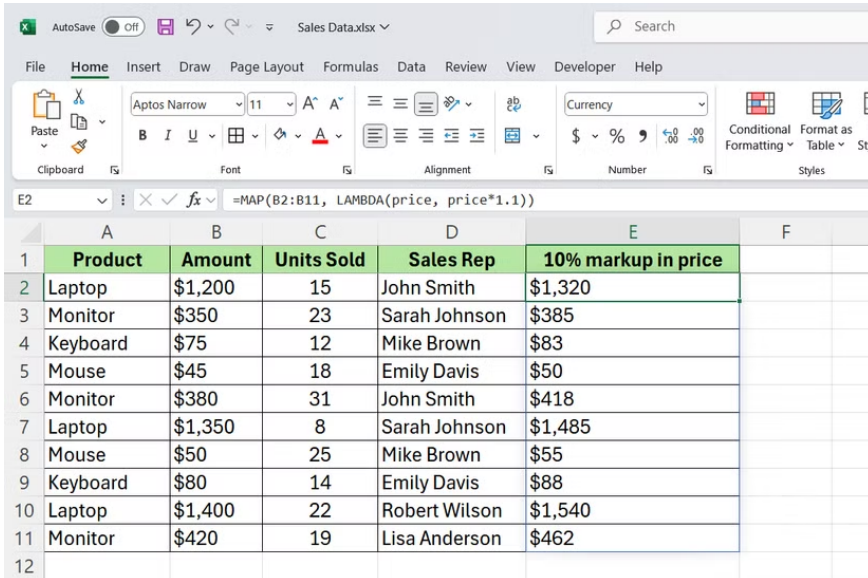
1. **array** : This is the range of cells you want to process. It can be one column, multiple columns, or even an entire table. MAP will iterate through each value in this range.

2. **lambda** : This is where you define the calculation. Think of it as a little formula that tells MAP what to do with each value. You create it using Excel's LAMBDA function, which allows you to write formulas like a human with custom logic without having to repeat the formula.

When you run MAP, it applies your lambda function to every cell in the array and returns a new set of results. The output matches the size and shape of the input, so if you enter 10 rows, you get 10 results.

Start with a simple task to see how MAP works

Let's add markup to product prices with just one formula!



	A	B	C	D	E	F
1	Product	Amount	Units Sold	Sales Rep	10% markup in price	
2	Laptop	\$1,200	15	John Smith	\$1,320	
3	Monitor	\$350	23	Sarah Johnson	\$385	
4	Keyboard	\$75	12	Mike Brown	\$83	
5	Mouse	\$45	18	Emily Davis	\$50	
6	Monitor	\$380	31	John Smith	\$418	
7	Laptop	\$1,350	8	Sarah Johnson	\$1,485	
8	Mouse	\$50	25	Mike Brown	\$55	
9	Keyboard	\$80	14	Emily Davis	\$88	
10	Laptop	\$1,400	22	Robert Wilson	\$1,540	
11	Monitor	\$420	19	Lisa Anderson	\$462	
12						

Let's say you have a list of product prices and need to add a 10% markup to each price. The traditional way would be to write a formula like `=B2*1.1` and drag it down. However, MAP handles this differently.

Instead of writing individual formulas, you create a MAP function that processes the entire price column:

```
=MAP(B2:B11, LAMBDA(price, price*1.1))
```

Here's what happens: MAP takes each value in B2:B11 (your price range) and feeds it into the LAMBDA function. LAMBDA assigns each value to the variable "price", multiplies it by 1.1, and returns the result. All in one step.

Add logic to MAP with IF statements

You can nest other functions within each other.

The screenshot shows an Excel spreadsheet with the following data:

	A	B	C	D	E	F
1	Product	Amount	Units Sold	Sales Rep	Markup price	
2	Laptop	\$1,200	15	John Smith	\$1,320	
3	Monitor	\$350	23	Sarah Johnson	\$385	
4	Keyboard	\$75	12	Mike Brown	\$86	
5	Mouse	\$45	18	Emily Davis	\$52	
6	Monitor	\$380	31	John Smith	\$418	
7	Laptop	\$1,350	8	Sarah Johnson	\$1,485	
8	Mouse	\$50	25	Mike Brown	\$58	
9	Keyboard	\$80	14	Emily Davis	\$92	
10	Laptop	\$1,400	22	Robert Wilson	\$1,540	
11	Monitor	\$420	19	Lisa Anderson	\$462	
12						

The formula bar shows: `=MAP(B2:B11, LAMBDA(price, IF(price>=100, price*1.1, price*1.15)))`

MAP is not limited to simple calculations. You can add Excel conditional functions inside the LAMBDA function to handle different situations based on the data.

Let's say you want to apply different markups depending on price. Products that are \$100 or more get a 10% markup, while products under that get a 15% markup. You might write something like this:

```
=MAP(B2:B11, LAMBDA(price, IF(price>=100, price*1.1, price*1.15)))
```

The IF statement checks each price as MAP processes. If the price is \$100 or more, it will multiply by 1.1. Otherwise, it will multiply by 1.15.

MAP handles multiple columns and messy text data

Standardize your name list with a single formula!

	A	B	C	D	E	F
1	Product	Amount	Units Sold	Sales Rep	Total sales	
2	Laptop	\$1,200	15	John Smith	\$18,000	
3	Monitor	\$350	23	Sarah Johnson	\$8,050	
4	Keyboard	\$75	12	Mike Brown	\$900	
5	Mouse	\$45	18	Emily Davis	\$810	
6	Monitor	\$380	31	John Smith	\$11,780	
7	Laptop	\$1,350	8	Sarah Johnson	\$10,800	
8	Mouse	\$50	25	Mike Brown	\$1,250	
9	Keyboard	\$80	14	Emily Davis	\$1,120	
10	Laptop	\$1,400	22	Robert Wilson	\$30,800	
11	Monitor	\$420	19	Lisa Anderson	\$7,980	
12						

MAP is not limited to single column operations. You can feed multiple arrays into the function and process them together in one function.

Let's say you want to calculate total sales by multiplying price and quantity. Instead of creating a separate formula column, use MAP to handle both:

```
=MAP(B2:B11, C2:C11, LAMBDA(price, qty, price*qty))
```

MAP takes two arrays - **B2:B11** (price) and **C2:C11** (quantity) - and processes them row by row. The LAMBDA function takes both values, multiplies them, and returns the result.

You can also use the MAP function to clean up text data. If your product names are inconsistent—some are all uppercase, some are lowercase, or have extra spaces—you can easily normalize them all at once:

```
=MAP(A2:A11, LAMBDA(text, PROPER(TRIM(text))))
```

This formula trims unnecessary spaces and converts each product name to uppercase. The TRIM function removes leading and trailing spaces, while the PROPER function capitalizes the first letter of each word. The MAP function applies both functions simultaneously to every cell in the range.

The screenshot shows the Microsoft Excel interface with the following data in the spreadsheet:

	A	B	C	D	E	F
1	Product	Amount	Units Sold	Sales Rep	Standardized product names	
2	laptop	\$1,200	15	John Smith	Laptop	
3	Monitor	\$350	23	Sarah Johnson	Monitor	
4	keyboard	\$75	12	Mike Brown	Keyboard	
5	Mouse	\$45	18	Emily Davis	Mouse	
6	Monitor	\$380	31	John Smith	Monitor	
7	Laptop	\$1,350	8	Sarah Johnson	Laptop	
8	MOuse	\$50	25	Mike Brown	Mouse	
9	Keyboard	\$80	14	Emily Davis	Keyboard	
10	Laptop	\$1,400	22	Robert Wilson	Laptop	
11	MONITOR	\$420	19	Lisa Anderson	Monitor	
12						

The formula bar for cell E2 shows: `=MAP(A2:A11, LAMBDA(text, PROPER(TRIM(text))))`

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