

# SUMX

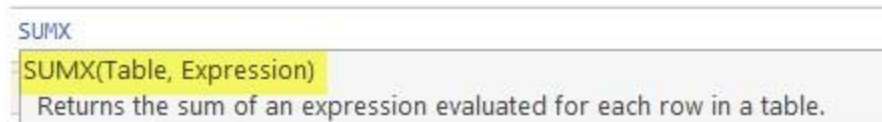
Sumx is a function in power bi which is also an inbuilt function and it is categorized under the mathematical functions, the use of this function is to return the sum of expression from a table and the syntax used for this function is as follows SUMX(<table>,<Expression>).

## What Does SUMX Function Do in Power BI?

---

SUMX is an iteration function in Power BI that works on row by row calculation as per the expression or equation is given. This function takes into consideration each row at a time and applies the calculation. This will not concentrate on the entire column unlike SUM function do but it works like a cell be cell formula in excel. SUM is an aggregate function and SUMX is an expression function. Power BI data manipulation can be done by using "DAX" functions and SUMX is one such function in Power BI. In this article, we will take you through the SUMX in Power BI.

Below is the syntax of the SUMX function in Power BI.



**Table:** First thing we need to do is to supply the table name for which we are supplying SUMX function.

**Expression:** After the table, we need to provide the **Expression** or **Equation** to do row by row.

To supplying Power BI SUMX you need data to work with, so you can download the excel workbook from the course site.

**Power BI in SUMX**

Mumbai	17016	16,165.20	16,165.20
Hyderabad	13318	12,652.10	12,652.10
Delhi	14368	13,649.60	13,649.60
Bangalore	11956	11,358.20	11,358.20
<b>Total</b>	<b>56658</b>	<b>53,825.10</b>	

**Formula**

SUMX  
SUMX(Table, Expression)  
Returns the sum of an expression evaluated for each row in a table.

## Examples of SUMX Function in Power BI

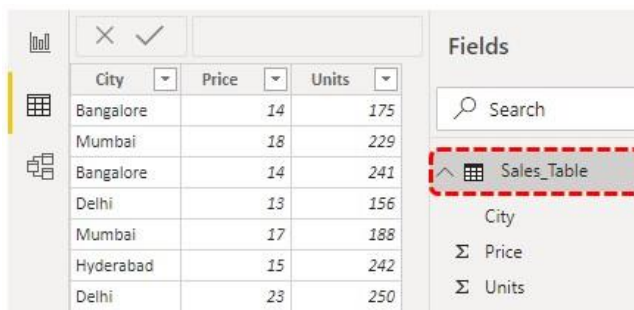
Below are some examples of SUMX function in Power BI.

### *SUMX in Power BI – Example #1*

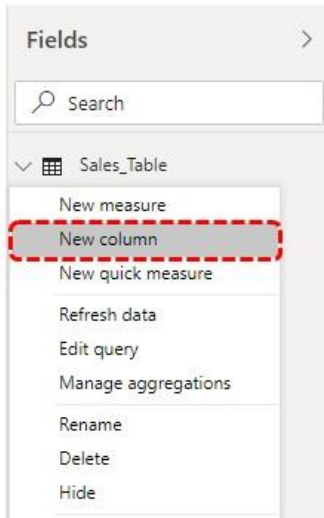
For an example look at the below simple table.

	A	B	C
1	City	Price	Units
2	Bangalore	14	175
3	Mumbai	18	229
4	Bangalore	14	241
5	Delhi	13	156
6	Mumbai	17	188
7	Hyderabad	15	242
8	Delhi	23	250
9	Mumbai	17	246
10	Mumbai	11	187
11	Hyderabad	19	224
12	Delhi	14	110
13	Mumbai	12	157
14	Hyderabad	20	122
15	Hyderabad	17	176
16	Delhi	14	224
17	Bangalore	23	184
18	Mumbai	15	105
19	Bangalore	19	100
20	Delhi	11	174

- In the above table, we have units and price per unit but we don't have Total Sale value. So by using power BI SUMX, we will find out what is the sale value.
- Upload the data table to Power BI and name the table as "Sales Table".



- Now we need to calculate the "Total Sales" column as a new calculated column. Right-click on the table name and choose "New Column".



- Name the new column as "Total Sales".

City	Price	Units	Column
Bangalore	14	175	
Mumbai	18	229	
Bangalore	14	241	
Delhi	13	156	
Mumbai	17	188	

- Open SUMX function now.

City	Price	Units	Total Sales
Bangalore	14	229	
Mumbai	18	241	
Bangalore	14	156	
Delhi	13	188	
Mumbai	17	242	
Hyderabad	15	242	

- First, we need to supply the table name so since our table name is "Sales Table" supply the same only.

City	Price	Units
Bangalore	14	175
Mumbai	18	229
Bangalore	14	241
Delhi	13	156
Mumbai	17	188

- **The expression** is nothing that is equation we need to do??
- So we need to find the "Total Sales" value by multiplying Units with Price.

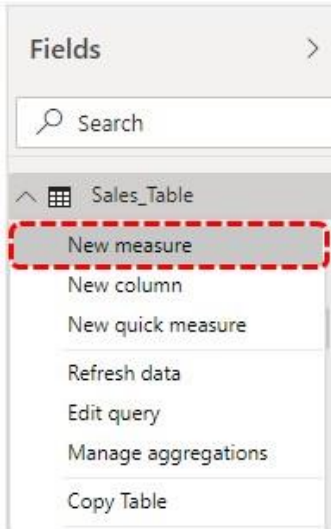
City	Price	Units	Column
Bangalore	14	175	
Mumbai	18	229	
Bangalore	14	241	
Delhi	13	156	

- Close the bracket and hit enter key to get the result in the new column.

City	Price	Units	Total Sales
Bangalore	14	175	56658
Mumbai	18	229	56658
Bangalore	14	241	56658
Delhi	13	156	56658

Wow!!! It says total sales as 56658 for all the rows this is because since we have used SUMX to arrive the new column it has given us the overall total amount for all the rows. So to arrive each row calculation we need to apply the Power BI SUMX function in "New Measure" not in "New Column".

- Right-click on the table and choose "New Measure".



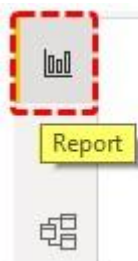
- Give measure a name as "Sale Value".

City	Price	Units	Total Sales
Bangalore	14	175	56658
Mumbai	18	229	56658
Bangalore	14	241	56658
Delhi	13	156	56658

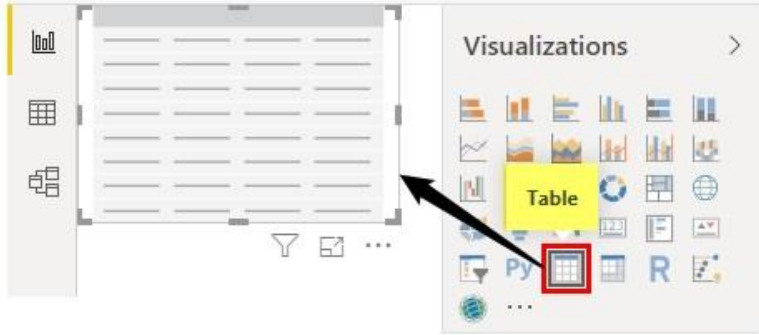
- Now apply the SUMX function in power BI.

City	Price	Units	Total Sales
Bangalore	14	175	56658
Mumbai	18	229	56658
Bangalore	14	241	56658
Delhi	13	156	56658

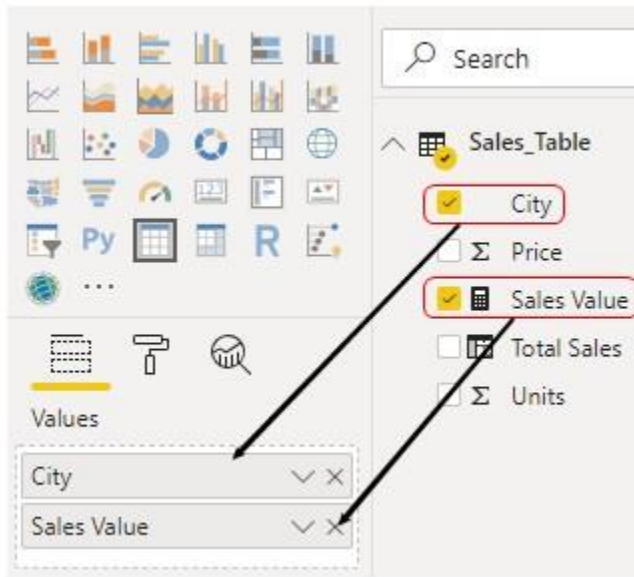
- Now come back to "Report Tab".



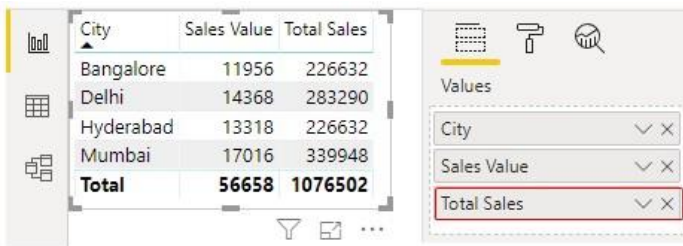
- Insert "**Table**" visual from the visualization list.



- Drag and drop City and "Sale Value" to get the summary table.



- This is giving us the exact result but drag and drop first calculated column i.e. "Total Sales" to see the city-wise result.

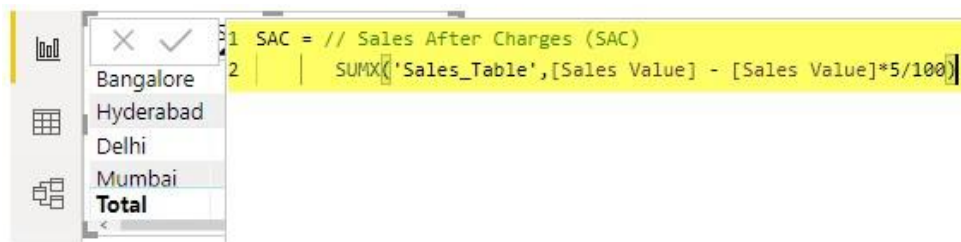


This is absolutely giving us blunder results because it is adding overall value for all the cities in each row so this is the wrong way of applying SUMX function in Power BI.

## SUMX in Power BI – Example #2

For the same table, we will do additional calculations. For example assume for every transaction we are going to deduct 5% as the handling charges.

- Right-click on the table and choose “New Measure” and give the name as “Sales after Charges”.
- Enter the below formula now.



- Click on Enter key we will have the new measure.
- Drag and drop the measure to the table to see the difference.

City	Sale Value	SAC
Mumbai	17016	16,165.20
Delhi	14368	13,649.60
Hyderabad	13318	12,652.10
Bangalore	11956	11,358.20
<b>Total</b>	<b>56658</b>	<b>53,825.10</b>

As you can see now we have Sale Value before deducting charges and “Sale after Charges” (SAC). For example for Mumbai “Sale Vale” was 17016 after deducting 5% charges it is 16165. i.e. Mumbai =  $17016 - (17016 * 5/100) = 16165$ .

## SUMX in Power BI – Example #3

Now we will see nested calculations. For example assume wherever the city name is “Bangalore” we are going to give an additional 500 rupees discount, if not Bangalore discount will be zero.

- So now we need to find out what is the “Sale After Discount” (SDA).
- Apply below measure to find the SAD.



1 SAD = SUMX('Sales\_Table',IF('Sales\_Table'[City]="Bangalore",[SAC]-500,[SAC]))

Mumbai	17016	16,165.20
Delhi	14368	13,649.60
Hyderabad	13318	12,652.10
Bangalore	11956	11,358.20
<b>Total</b>	<b>56658</b>	<b>53,825.10</b>

Let me explain you the formula in detail.

- In the "Sales Table", If the City is "Bangalore" then we need to deduct 500 from Sales After Charges (SAC) or else we need the result as same as Sale After Charge (SAC) only.
- Now drag and drop the new measure to the existing table to see the difference.

City	Sale Value	SAC	SAD
Mumbai	17016	16,165.20	16,165.20
Hyderabad	13318	12,652.10	12,652.10
Delhi	14368	13,649.60	13,649.60
Bangalore	11956	11,358.20	9,358.20
<b>Total</b>	<b>56658</b>	<b>53,825.10</b>	<b>51,825.10</b>

Values

- City
- Sale Value
- SAC
- SAD

- As you can see above only for "Bangalore" city sales amount has been changed and for other cities, it remains the same as then left column i.e. SAC Value.

## Things to Remember

- SUMX function in power BI is used to calculate row by row calculations.
- SUMX do the calculation as per the equation provided for Expression.
- Each row will be affected by the SUMX function.