Calculated Columns
And
Measures in Power BI

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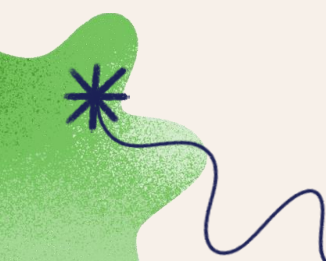
calculated column VS Measure

What is a calculated column?

A calculated column is a static value added to a table, calculated row by row when you load the data.
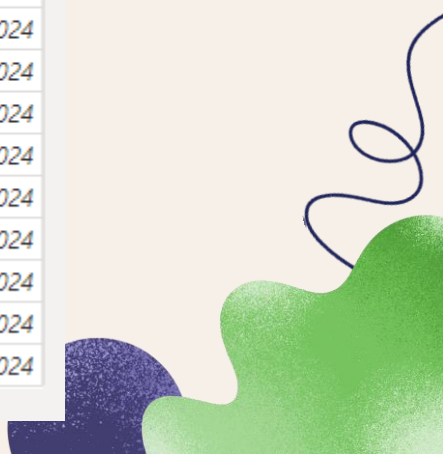
What is a measure?

A measure is a dynamic value that changes based on what you're looking at in a report, calculated dynamically within the filter context of a visual

We will use a Gross Profit Example

We start by loading some sample sales data

Product	Units Sold	Sale Price	Sales Value	Cost per Unit	Cost of Sales	Date
A	1	20	20	10	10	01 January 2024
B	2	30	60	20	20	01 January 2024
C	5	50	250	30	100	01 January 2024
A	2	20	40	10	20	01 January 2024
B	3	30	90	20	30	01 January 2024
C	6	50	300	30	120	01 January 2024
A	3	20	60	10	30	01 January 2024
B	4	30	120	20	40	01 January 2024
C	7	50	350	30	140	01 January 2024
A	1	20	20	10	10	01 January 2024
B	10	30	300	20	100	01 January 2024
C	10	50	500	30	200	01 January 2024

How to create a calculated column

The first thing we will do is to calculate the Gross Profit for each row in this table In the table view, select New Column from the Ribbon

Product	Units Sold	Sale Price	Sales Value	Cost per Unit	Cost of Sales	Date
A	1	20	20	10	10	01 January 2024
B	2	30	60	20	20	01 January 2024
C	5	50	250	30	100	01 January 2024
A	2	20	40	10	20	01 January 2024
B	3	30	90	20	30	01 January 2024
C	6	50	300	30	120	01 January 2024
A	3	20	60	10	30	01 January 2024
B	4	30	120	20	40	01 January 2024
C	7	50	350	30	140	01 January 2024
A	1	20	20	10	10	01 January 2024
B	10	30	300	20	100	01 January 2024
C	10	50	500	30	200	01 January 2024

Name Sheet1

Mark as date table

Manage relationships

New measure

Quick measure

New column

New table

Structure

Calendars

Write a DAX expression that creates a new column in the selected table and calculates values for each row.

How to create a calculated column

In the formula bar we type
  Gross Profit = [Sales Value]-[Cost of Sales]

When we press enter the column is added to the table, and it is calculated
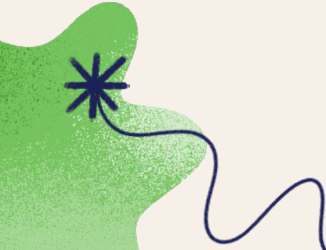 for each row of data in that table

| | 1 | Gross Profit Margin (Measure) = sum(Sheet1[Gross Profit]) / sum(Sheet1[Sales Value]) |

Product	Units Sold	Sale Price	Sales Value	Cost per Unit	Cost of Sales	Date	Gross Profit	Gross Profit Margin
A	1	20	20	10	10	01 January 2024	10	50.00%
B	2	30	60	20	20	01 January 2024	40	66.67%
C	5	50	250	30	100	01 January 2024	150	60.00%
A	2	20	40	10	20	01 January 2024	20	50.00%
B	3	30	90	20	30	01 January 2024	60	66.67%
C	6	50	300	30	120	01 January 2024	180	60.00%
A	3	20	60	10	30	01 January 2024	30	50.00%
B	4	30	120	20	40	01 January 2024	80	66.67%
C	7	50	350	30	140	01 January 2024	210	60.00%
A	1	20	20	10	10	01 January 2024	10	50.00%
B	10	30	300	20	100	01 January 2024	200	66.67%
C	10	50	500	30	200	01 January 2024	300	60.00%

Benefits & Limitations of Calculated Columns

Benefits

- A calculated column is easily visible and can be quickly understood.

- It is calculated once the data refreshes and is not affected by any other filters, effectively it is a static column

Limits

- Must be calculated in full before the data table can be used.

- If you import a very large data table, then have complex calculations running down a number of columns you will see a performance impact

How to create a calculated Measure

In the formula bar we type
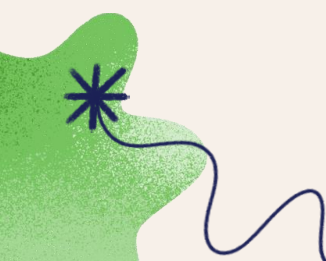*Gross Profit Margin (Measure) = sum(Sheet1[Gross Profit]) / sum(Sheet1[Sales Value])*

When we press enter the column is added to the table, and it is calculated for each row of data in that table

| | | 1 Gross Profit Margin (Measure) = sum(Sheet1[Gross Profit]) / sum(Sheet1[Sales Value]) |

Product	Units Sold	Sale Price	Sales Value	Cost per Unit	Cost of Sales	Date	Gross Profit	Gross Profit Margin
A	1	20	20	10	10	01 January 2024	10	50.00%
B	2	30	60	20	20	01 January 2024	40	66.67%
C	5	50	250	30	100	01 January 2024	150	60.00%
A	2	20	40	10	20	01 January 2024	20	50.00%
B	3	30	90	20	30	01 January 2024	60	66.67%
C	6	50	300	30	120	01 January 2024	180	60.00%
A	3	20	60	10	30	01 January 2024	30	50.00%
B	4	30	120	20	40	01 January 2024	80	66.67%
C	7	50	350	30	140	01 January 2024	210	60.00%
A	1	20	20	10	10	01 January 2024	10	50.00%
B	10	30	300	20	100	01 January 2024	200	66.67%
C	10	50	500	30	200	01 January 2024	300	60.00%

Benefits & Limitations of Measures

Benefits

- Only calculated where used and are only calculated in the context of the face value of the report.

Limits

- Measures can be more difficult to debug as they are more difficult to understand than a calculated column.

- If you import a very large data table, then have complex calculations running down a number of columns you will see a performance impact

Using calculated columns and measures in reports

- On the report view, drag a table to the canvas

- Then add product, Sales Value, Cost of Sales and the calculated column for Gross Profit to the table

Product	Sum of Sales Value	Sum of Cost of Sales	Sum of Gross Profit	Sum of Gross Profit Margin
A	140	70	70	200.00%
B	570	190	380	266.67%
C	1400	560	840	240.00%
Total	**2110**	**820**	**1290**	**706.67%**

Use the Calculated Column values if you need to filter

- We can use the calculated column values to filter the data for rows with a lower margin

- Please note you cannot use a measure value in a slicer because you need to see the individual rows

Gross Profit Margin

| 55.00% | 70.00% |

Product	Units Sold	Sum of Sales Value	Sum of Cost of Sales	Sum of Gross Profit	Average of Gross Profit Margin	Gross Profit Margin (Measure)
B	2	60	20	40	66.67%	66.67%
B	3	90	30	60	66.67%	66.67%
B	4	120	40	80	66.67%	66.67%
B	10	300	100	200	66.67%	66.67%
C	5	250	100	150	60.00%	60.00%
C	6	300	120	180	60.00%	60.00%
C	7	350	140	210	60.00%	60.00%
C	10	500	200	300	60.00%	60.00%
Total		**1970**	**750**	**1220**	**63.33%**	**61.93%**

Thanks