# Difference between Calculated Columns and Measures in Power BI

1. What are Calculated Columns in Power BI?

Definition:

A Calculated Column is a new column added to an existing table using a DAX expression, and it is calculated row-by-row during data loading or refresh.

How It Works:

- Created in row context; DAX evaluates the expression for each row.

- The result becomes part of the table and is stored physically.

- Can be used for filtering, sorting, relationships, slicers, or visuals.

Example:

Revenue = Sales[Quantity] * Sales[UnitPrice]

Use Cases:

- Flags, e.g., High Value Order = IF Revenue > 1,00,000

- Extracting Year from Date

- Grouping categories

- Used in slicers and relationships

Limitations:

- Consumes storage

- Not dynamic in visuals

2. What are Measures in Power BI?

Definition:

A Measure is a DAX formula used to calculate values dynamically based on the current filter or context in a report.

How It Works:

- Measures work in filter context and change based on user filters.

# Difference between Calculated Columns and Measures in Power BI

- Calculated at runtime when the visual renders.

- Not stored in the model, so memory efficient.


Example:

Total Revenue = SUMX(Sales, Sales[Quantity] * Sales[UnitPrice])


Use Cases:

- Aggregated values (SUM, AVERAGE)

- KPIs (Profit Margin, Sales Growth %)

- Dynamic dashboards

- Used in visuals (cards, charts)


Limitations:

- Cannot be used in slicers or relationships


Key Differences:

| Feature | Calculated Column | Measure |
|------------------------|-------------------------------|-----------------------------|
| Evaluation Context | Row Context | Filter Context |
| When Calculated | Data refresh / model load | Visual render (runtime) |
| Storage | Stored in the model | Not stored |
| Performance | Memory-intensive | Optimized |
| Use in Relationships | Yes | No |
| Use in Visuals | Slicers, filters, legends | Visuals only |
| Examples | YEAR(Sales[OrderDate]) | SUM(Sales[Revenue]) |


Real-World Scenario:

You need to slice data by Year -> Use a Calculated Column.

You want Total Sales to change by Region -> Use a Measure.

# Difference between Calculated Columns and Measures in Power BI

Final Summary:

| Use When...              | Calculated Column | Measure |
|--------------------------|-------------------|---------|
| Row-wise computation     | Yes               | No      |
| Dynamic aggregation      | No                | Yes     |
| Used in slicers/filters  | Yes               | No      |
| Optimal performance      | No                | Yes     |
| Dynamic with filters     | No                | Yes     |