**1. Profit Margin Calculation (Basic Calculated Column)**

**Data Representation**

| **SalesID** | **SalesAmount** | **CostAmount** |
| --- | --- | --- |
| 1 | 500 | 300 |
| 2 | 300 | 200 |
| 3 | 700 | 400 |

**Problematic**

You need to calculate the **profit margin percentage** for each sales transaction.

**Explanation**

Create a **calculated column** in Power BI that calculates profit margin using the formula:

**Profit Margin** = ((**Sales Amount** - **Cost Amount**) / **Sales Amount**) × 100

**Solution**

1. In the Power BI Fields pane, select the FactSales table.
2. Add a new calculated column:

Profit Margin (%) =

DIVIDE(

    FactSales[SalesAmount] - FactSales[CostAmount],

    FactSales[SalesAmount],

    0

) \* 100

* + **DIVIDE** is used for safe division to handle zero sales amounts.

**Expected Result**

| **SalesID** | **SalesAmount** | **CostAmount** | **Profit Margin (%)** |
| --- | --- | --- | --- |
| 1 | 500 | 300 | 40 |
| 2 | 300 | 200 | 33.33 |
| 3 | 700 | 400 | 42.86 |

**2. Total Sales (Basic Measure)**

**Data Representation**

| **SalesID** | **SalesAmount** | **Region** |
| --- | --- | --- |
| 1 | 500 | North |
| 2 | 300 | South |
| 3 | 700 | East |

**Problematic**

You need a measure to calculate the **total sales across all regions**.

**Explanation**

Create a **measure** to sum up the SalesAmount.

**Solution**

In the Fields pane, select the FactSales table.

Add a new measure:

Total Sales = SUM(FactSales[SalesAmount])

**Expected Result**

| **Total Sales** |
| --- |
| 1500 |

**3. Sales by Region (Basic Measure with Filter)**

**Data Representation**

| **SalesID** | **SalesAmount** | **Region** |
| --- | --- | --- |
| **1** | **500** | **North** |
| **2** | **300** | **North** |
| **3** | **300** | **South** |
| **4** | **600** | **South** |
| **5** | **700** | **East** |
|  |  |  |

**Problematic**

You want to calculate **total sales for a specific region (e.g., North)**.

**Explanation**

Use the **CALCULATE** function to apply a filter to the measure.

**Solution**

Add a new measure:

Sales for North =

CALCULATE(

    SUM(FactSales[SalesAmount]),

    FactSales[Region] = "North"

)

**Expected Result**

| **Sales for North** |
| --- |
| 800 |

**4. Running Total (Cumulative Measure)**

**Data Representation**

| **Date** | **SalesAmount** |
| --- | --- |
| 2025-01-01 | 100 |
| 2025-01-02 | 200 |
| 2025-01-03 | 150 |
| 2025-01-04 | 250 |

**Problematic**

You want to calculate a **running total of sales by date**.

**Explanation**

Use the **CALCULATE** and **FILTER** functions to create a new column for cumulative sales.

**Solution**

Add a new measure:

Running Total Sales =

CALCULATE(

    SUM(FactSales[SalesAmount]),

    FILTER(

        FactSales,

        FactSales[Date] <= EARLIER(FactSales[Date])

    )

)

**Expected Result**

| **Date** | **SalesAmount** | **Running Total Sales** |
| --- | --- | --- |
| 2025-01-01 | 100 | 100 |
| 2025-01-02 | 200 | 300 |
| 2025-01-03 | 150 | 450 |
| 2025-01-04 | 250 | 700 |

**5. Average Sales per Region (Basic Measure with Grouping)**

**Data Representation**

| **Region** | **SalesAmount** |
| --- | --- |
| North | 500 |
| North | 700 |
| South | 300 |
| South | 400 |
| East | 600 |

**Problematic**

You want to calculate the **average sales amount per region**.

**Explanation**

Use the **AVERAGEX** function to calculate an average across grouped values.

**Solution**

Add a new measure:

Average Sales per Region =

AVERAGEX(

    VALUES(FactSales[Region]),

    CALCULATE(SUM(FactSales[SalesAmount]))

)

**Expected Result**

| **Region** | **Average Sales per Region** |
| --- | --- |
| North | 1200 |
| South | 700 |
| East | 600 |

**6. Sales Contribution by Product (Percentage Measure)**

**Data Representation**

| **ProductID** | **SalesAmount** |
| --- | --- |
| 101 | 500 |
| 102 | 300 |
| 103 | 200 |

**Problematic**

You need to calculate each product's contribution to total sales as a percentage.

**Explanation**

Use a **measure** to divide a product’s sales by total sales and format it as a percentage.

**Solution**

Add a new measure:

Sales Contribution (%) =

DIVIDE(

    SUM(FactSales[SalesAmount]),

    CALCULATE(SUM(FactSales[SalesAmount]), ALL(FactSales)),

    0

) \* 100

For a better representation

Sales Contribution (%) =

FORMAT(DIVIDE(

    SUM(FactSales[SalesAmount]),

    CALCULATE(SUM(FactSales[SalesAmount]), ALL(FactSales)),

    0

), "Percent")

Or  
  
Sales Contribution (%) =

FORMAT(DIVIDE(

    SUM(FactSales[SalesAmount]),

    CALCULATE(SUM(FactSales[SalesAmount]), ALL(FactSales)),

    0

), "0%")

**Expected Result**

| **ProductID** | **SalesAmount** | **Sales Contribution (%)** |
| --- | --- | --- |
| 101 | 500 | 50% |
| 102 | 300 | 30% |
| 103 | 200 | 20% |

**7. Year-to-Date (YTD) Sales**

**Data Representation**

| **Date** | **SalesAmount** |
| --- | --- |
| 2025-01-01 | 100 |
| 2025-01-02 | 200 |
| 2025-02-01 | 300 |
| 2025-02-15 | 400 |

**Problematic**

You need to calculate cumulative sales from the beginning of the year up to the current date.

**Explanation**

Use the **TOTALYTD** function to calculate year-to-date sales.

**Solution**

Add a new measure:

YTD Sales =

TOTALYTD(

    SUM(FactSales[SalesAmount]),

    FactSales[Date]

)

**Expected Result**

| **Date** | **SalesAmount** | **YTD Sales** |
| --- | --- | --- |
| 2025-01-01 | 100 | 100 |
| 2025-01-02 | 200 | 300 |
| 2025-02-01 | 300 | 600 |
| 2025-02-15 | 400 | 1000 |

**8. Product with Highest Sales (Ranking)**

**Data Representation**

| **ProductID** | **SalesAmount** |
| --- | --- |
| 101 | 500 |
| 102 | 700 |
| 103 | 300 |

**Problematic**

You want to determine which product has the highest sales.

**Explanation**

Use the **RANKX** function to assign ranks based on sales.

**Solution**

Add a new measure:

Product Rank =

RANKX(

    ALL(FactSales[ProductID]),

    CALCULATE(SUM(FactSales[SalesAmount])),

    ,

    DESC

)

**Expected Result**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| |  |  |  | | --- | --- | --- | | **ProductID** | **SalesAmount** | **Product Rank** | | 101 | 500 | 2 | | 102 | 700 | 1 | | 103 | 300 | 3 | |  |  |
|  |  |  |

**9. Sales Growth Percentage**

**Data Representation**

| **Date** | **SalesAmount** |
| --- | --- |
| 1/1/2024 | 1000 |
| 1/1/2025 | 1500 |

**Problematic**

You want to calculate the percentage growth in sales from one year to the next.

**Explanation**

Use the **CALCULATE** and **PREVIOUSYEAR** functions to compare current and previous year sales.

**Solution**

Add a new measure:

Sales Growth (%) =

FORMAT(DIVIDE(

    SUM(FactSales[SalesAmount]) -

    CALCULATE(SUM(FactSales[SalesAmount]), PREVIOUSYEAR(FactSales[Date])),

    CALCULATE(SUM(FactSales[SalesAmount]), PREVIOUSYEAR(FactSales[Date])),

    0

) ,"0%"

)

**Expected Result**

| **Year** | **SalesAmount** | **Sales Growth (%)** |
| --- | --- | --- |
| 2024 | 1000 | 0% |
| 2025 | 1500 | 50% |

**10. Sales Variance**

**Data Representation**

| **Month** | **BudgetedSales** | **ActualSales** |
| --- | --- | --- |
| January | 500 | 600 |
| February | 700 | 800 |
| March | 400 | 350 |

**Problematic**

You need to calculate the variance between budgeted and actual sales.

**Explanation**

Use a calculated column to subtract budgeted sales from actual sales.

**Solution**

Add a new calculated column:

Sales Variance =

FactSales[ActualSales] - FactSales[BudgetedSales]

Add another column for variance percentage:

Sales Variance (%) =

FORMAT(

    ROUND(

        DIVIDE(

            FactSales[ActualSales] - FactSales[BudgetedSales],

            FactSales[BudgetedSales],

            0

        ),

        4  // Round to 4 decimal places to preserve precision

    ),

    "0.00%"  // Format as percentage with two decimal places

)

**Expected Result**

| **Month** | **BudgetedSales** | **ActualSales** | **Sales Variance** | **Sales Variance (%)** |
| --- | --- | --- | --- | --- |
| January | 500 | 600 | 100 | 20% |
| February | 700 | 800 | 100 | 14.29% |
| March | 400 | 350 | -50 | -12.5% |

**11. Cumulative Sales per Region**

**Data Representation**

| **Region** | **Date** | **SalesAmount** |
| --- | --- | --- |
| North | 2025-01-01 | 100 |
| North | 2025-01-02 | 200 |
| South | 2025-01-01 | 150 |
| South | 2025-01-02 | 250 |

**Problematic**

You need to calculate cumulative sales for each region over time.

**Explanation**

Use **CALCULATE** and **FILTER** with grouping by region.

**Solution**

Add a new measure:

Cumulative Sales =

CALCULATE(

    SUM(FactSales[SalesAmount]),

    FILTER(

        ALL(FactSales),

        FactSales[Date] <= MAX(FactSales[Date]) &&

        FactSales[Region] = MAX(FactSales[Region])

    )

)

**Expected Result**

| **Region** | **Date** | **SalesAmount** | **Cumulative Sales** |
| --- | --- | --- | --- |
| North | 2025-01-01 | 100 | 100 |
| North | 2025-01-02 | 200 | 300 |
| South | 2025-01-01 | 150 | 150 |
| South | 2025-01-02 | 250 | 400 |

**12. Dynamic Ranking of Products by Sales**

**Data Representation**

| **ProductID** | **SalesAmount** |
| --- | --- |
| 101 | 500 |
| 102 | 700 |
| 103 | 300 |

**Problematic**

You want to dynamically rank products based on their sales in a report visual.

**Explanation**

Use **RANKX** to dynamically calculate the ranking based on the current report filter.

**Solution**

Add a new measure:

Dynamic Product Rank =

RANKX(

    ALLSELECTED(FactSales[ProductID]),

    CALCULATE(SUM(FactSales[SalesAmount])),

    ,

    DESC

)

**Expected Result**

| **ProductID** | **SalesAmount** | **Dynamic Product Rank** |
| --- | --- | --- |
| 102 | 700 | 1 |
| 101 | 500 | 2 |
| 103 | 300 | 3 |

**13. Identify First Purchase Date**

**Data Representation**

| **CustomerID** | **Date** | **PurchaseAmount** |
| --- | --- | --- |
| 1 | 2025-01-01 | 100 |
| 1 | 2025-01-05 | 200 |
| 2 | 2025-01-03 | 300 |

**Problematic**

You need to find the first purchase date for each customer.

**Explanation**

Use **CALCULATE** and **MIN** to find the earliest date.

**Solution**

Add a new measure:

First Purchase Date =

CALCULATE(

    MIN(FactSales[Date]),

    ALLEXCEPT(FactSales, FactSales[CustomerID])

)

**Expected Result**

| **CustomerID** | **First Purchase Date** |
| --- | --- |
| 1 | 2025-01-01 |
| 2 | 2025-01-03 |

**14. Filtered Total Sales**

**Data Representation**

| **ProductID** | **Region** | **SalesAmount** |
| --- | --- | --- |
| 101 | North | 500 |
| 102 | South | 300 |
| 103 | East | 700 |

**Problematic**

You want to calculate total sales for the "North" and "South" regions only.

**Explanation**

Use **CALCULATE** and **FILTER** to conditionally sum sales amounts.

**Solution**

Add a new measure:

Filtered Total Sales =

CALCULATE(

    SUM(FactSales[SalesAmount]),

    FactSales[Region] IN {"North", "South"}

)

**Expected Result**

|  |  |  |  |
| --- | --- | --- | --- |
| **Product ID** | **Region** | **Sales Amount** | **Filtered Total Sales** |
| 101 | North | 500 | 500 |
| 102 | South | 300 | 300 |
| 103 | North | 700 |  |

**15. Count of Unique Products Sold**

**Data Representation**

| **SalesID** | **ProductID** |
| --- | --- |
| 1 | 101 |
| 2 | 102 |
| 3 | 101 |
| 4 | 103 |

**Problematic**

You want to count the unique products sold.

**Explanation**

Use the **DISTINCTCOUNT** function to count unique values in a column.

**Solution**

Add a new measure:

Unique Products Sold =

DISTINCTCOUNT(FactSales[ProductID])

**Expected Result**

| **Unique Products Sold** |
| --- |
| 3 |

**16. Identify Top N Customers by Sales**

**Data Representation**

| **CustomerID** | **SalesAmount** |
| --- | --- |
| 1 | 500 |
| 2 | 300 |
| 3 | 700 |

**Problematic**

You want to display only the top 2 customers based on sales in a visual.

**Explanation**

Use **TOPN** to filter the dataset for the top N customers.

**Solution**

Add a calculated table:

Top Customers =

TOPN(

2,

FactSales,

FactSales[SalesAmount],

DESC

)

**Expected Result**

| **CustomerID** | **SalesAmount** |
| --- | --- |
| 3 | 700 |
| 1 | 500 |

**17. Year-over-Year Growth**

**Data Representation**

| **Date** | **SalesAmount** |
| --- | --- |
| 1/1/2024 | 1000 |
| 1/1/2025 | 1500 |

**Problematic**

You want to calculate the year-over-year sales growth percentage.

**Explanation**

Use **CALCULATE** and **SAMEPERIODLASTYEAR**.

**Solution**

Add a new measure:

YoY Growth (%) = FORMAT(

DIVIDE(

    SUM(FactSales[SalesAmount]) -

    CALCULATE(SUM(FactSales[SalesAmount]), SAMEPERIODLASTYEAR(FactSales[Date])),

    CALCULATE(SUM(FactSales[SalesAmount]), SAMEPERIODLASTYEAR(FactSales[Date])),

    0

),"0%")

**Expected Result**

| **Year** | **YoY Growth (%)** |
| --- | --- |
| 2025 | 50% |

**18. Average Sales Per Day**

**Data Representation**

| **Date** | **SalesAmount** |
| --- | --- |
| 2025-01-01 | 100 |
| 2025-01-02 | 200 |
| 2025-01-03 | 150 |

**Problematic**

You want to calculate the average sales per day.

**Explanation**

Divide total sales by the number of distinct dates.

**Solution**

Add a new measure:

Avg Sales Per Day =

DIVIDE(

    SUM(FactSales[SalesAmount]),

    DISTINCTCOUNT(FactSales[Date]),

    0

)

**Expected Result**

| **Average Sales Per Day** |
| --- |
| 150 |

**19. Percentage of Total by Region**

**Data Representation**

| **Region** | **SalesAmount** |
| --- | --- |
| North | 500 |
| South | 300 |
| East | 700 |

**Problematic**

You want to calculate each region’s percentage contribution to total sales.

**Explanation**

Use **DIVIDE** to calculate the percentage.

**Solution**

Add a new measure:

Region Sales (%) =

FORMAT(DIVIDE(

    SUM(FactSales[SalesAmount]),

    CALCULATE(SUM(FactSales[SalesAmount]), ALL(FactSales)),

    0

), "Percent")

**Expected Result**

| **Region** | **Region Sales (%)** |
| --- | --- |
| North | 46.67% |
| South | 33.33% |
| East | 20.00% |

**20. Sales Rank Per Region**

**Data Representation**

|  |  |  |
| --- | --- | --- |
| **Date** | **ProductID** | **SalesAmount** |
| 10/01/2024 | 101 | 200 |
| 15/02/2024 | 101 | 300 |
| 20/03/2024 | 102 | 400 |
| 05/04/2024 | 103 | 100 |

**Problematic**

You want to computes **Year-to-Date Sales (YTD)** dynamically by date

**Explanation**

* Add the **Sales YTD** measure.
* It will automatically accumulate sales from the start of the year up to each date.

**Solution**

Add a new measure:

Sales YTD =

CALCULATE(

SUM(FactSales[SalesAmount]),

DATESYTD(DimDate[Date])

)

**Expected Result**

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| |  |  | | --- | --- | | ProductID,Sum of SalesAmount,Sales YTD | | | 101,500,500 |  | | 102,400,400 |  | | 103,100,100 |  | |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

**21. Calculate Sales Per Quarter**

**Data Representation**

| **Date** | **SalesAmount** |
| --- | --- |
| 2025-01-01 | 100 |
| 2025-02-15 | 200 |
| 2025-04-10 | 150 |
| 2025-06-20 | 250 |

**Problematic**

You need to calculate total sales for each quarter.

**Explanation**

Use the **QUARTER** function to group data into quarters and sum sales.

**Solution**

Add a new calculated column:

Quarter = "Q" & QUARTER(FactSales[Date])

Add a measure:

Sales Per Quarter =

SUM(FactSales[SalesAmount])

**Expected Result**

| **Quarter** | **Sales Per Quarter** |
| --- | --- |
| Q1 | 300 |
| Q2 | 400 |