Power BI - lesson 8

1. What does DAX stand for?

DAX stands for **Data Analysis Expressions** – it's a formula language used in Power BI to do calculations.

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2. Write a DAX formula to sum the Sales column.

```
DAX
CopyEdit
Total Sales = SUM(Data[Sales])
```

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3. What is the difference between a calculated column and a measure?

- **Calculated column** works **row by row** in your table and is stored in memory.
- **Measure** is calculated **on the fly**, depending on filters and visuals.

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4. Use the DIVIDE function to calculate Profit Margin (Profit/Sales).

```
DAX
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Profit Margin = DIVIDE(Data[Sales] - Data[Cost], Data[Sales])
```

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5. What does COUNTROWS() do in DAX?

It **counts the number of rows** in a table or filtered table.

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6. Create a measure: Total Profit that subtracts total cost from total sales

```
DAX
CopyEdit
```

```
Total Profit = SUM(Data[Sales]) - SUM(Data[Cost])
```

7. Write a measure to calculate Average Sales per Product.

```
DAX
CopyEdit
Avg Sales per Product = AVERAGE(Data[Sales])
```

8. Use IF() to tag products as "High Profit" if Profit > 1000.

As a calculated column:

```
DAX
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Profit Tag = IF(Data[Sales] - Data[Cost] > 1000, "High Profit", "Low Profit")
```

9. What is a circular dependency error in a calculated column?

It happens when a column depends on itself **directly or indirectly** in its calculation. This creates a **loop**.

10. Explain row context vs. filter context.

- **Row context**: Each row is calculated individually (like in calculated columns).
- **Filter context**: Depends on filters from visuals, slicers, or CALCULATE (used in measures).

11. Write a measure to calculate YTD Sales using TOTALYTD().

```
DAX
CopyEdit
YTD Sales = TOTALYTD(SUM(Data[Sales]), Data[Date])
```

12. Create a dynamic measure that switches between Sales, Profit, and Margin.

(Using a slicer and SWITCH)

```
DAX
CopyEdit
Dynamic Measure =
SWITCH(
    SELECTEDVALUE(Metric[Name]),
    "Sales", SUM(Data[Sales]),
    "Profit", SUM(Data[Sales]) - SUM(Data[Cost]),
    "Margin", DIVIDE(SUM(Data[Sales]) - SUM(Data[Cost]), SUM(Data[Sales]))
)
```

13. Optimize a slow DAX measure using variables (VAR).

```
DAX
CopyEdit
Total Profit =
VAR TotalSales = SUM(Data[Sales])
VAR TotalCost = SUM(Data[Cost])
RETURN
TotalSales - TotalCost
```

14. Use CALCULATE() to override a filter

```
DAX
CopyEdit
Sales 2023 = CALCULATE(SUM(Data[Sales]), YEAR(Data[Date]) = 2023)
```

15. Write a measure that returns the highest sales amount

```
DAX
CopyEdit
Max Sales = MAX(Data[Sales])
```