✅ Lesson 14: Time-Based Calculations

Prerequisites:

- Disable Auto Date/Time (File > Options > Current File)
- Create a Date Table:

DAX

КопироватьРедактировать

```
Date = ADDCOLUMNS(
    CALENDARAUTO(),
    "Year", YEAR([Date]),
    "Month", FORMAT([Date], "MMMM"),
    "MonthNumber", MONTH([Date]),
    "YearMonth", FORMAT([Date], "YYYY-MM")
)
```

🟩 Basic Level (1–5)

1. Total Sales Amount (All-Time)

DAX

КопироватьРедактировать

```
Total Sales = SUM('Chocolate Sales'[Sales Amount])
```

2. Total Sales – Current Year

DAX

КопироватьРедактировать

```
Total Sales CY = CALCULATE([Total Sales], YEAR('Chocolate Sales'[Date]) =
YEAR(TODAY()))
```

3. Total Sales – Last Year

DAX

КопироватьРедактировать

```
Total Sales LY = CALCULATE([Total Sales], SAMEPERIODLASTYEAR('Date'[Date]))
```

4. Total Sales – Current Month

DAX

КопироватьРедактировать

```
Total Sales CM = CALCULATE([Total Sales],
    MONTH('Chocolate Sales'[Date]) = MONTH(TODAY()) &&
    YEAR('Chocolate Sales'[Date]) = YEAR(TODAY())
)
```

5. Total Sales – Current Quarter

DAX

КопироватьРедактировать

```
Total Sales CQ = CALCULATE([Total Sales],
    QUARTER('Chocolate Sales'[Date]) = QUARTER(TODAY()) &&
    YEAR('Chocolate Sales'[Date]) = YEAR(TODAY())
)
```

🟧 Intermediate (6–10)

6. % Sales Growth YoY

DAX

КопироватьРедактировать

```
YoY Growth % =
VAR CY = [Total Sales CY]
VAR LY = [Total Sales LY]
```

```
RETURN DIVIDE(CY - LY, LY, 0)
```

7. Sales Last Month

DAX

КопироватьРедактировать

```
Sales LM = CALCULATE([Total Sales], PARALLELPERIOD('Date'[Date], -1, MONTH))
```

8. Running Total

DAX

КопироватьРедактировать

```
Running Total = CALCULATE(
    [Total Sales],
    FILTER(ALLSELECTED('Date'), 'Date'[Date] <= MAX('Date'[Date]))
)
```

9. Sales – Last 3 Months

DAX

КопироватьРедактировать

```
Sales Last 3 Months =
CALCULATE([Total Sales], DATESINPERIOD('Date'[Date], MAX('Date'[Date]), -3, MONTH))
```

10. Highest Sales Month – Last 12 Months

DAX

КопироватьРедактировать

```
Max Sales Month =
CALCULATE(MAX([Total Sales]), DATESINPERIOD('Date'[Date], MAX('Date'[Date]), -12, MONTH))
```

🟥 Advanced (11–15)

11. Compare Q1 Sales by Year

DAX

КопироватьРедактировать

```
Q1 Sales =
CALCULATE([Total Sales],
    'Date'[MonthNumber] <= 3
)
```

12. YoY Difference – December Only

DAX

КопироватьРедактировать

```
YoY December =
CALCULATE([YoY Growth %], 'Date'[MonthNumber] = 12)
```

13. Last 12 Months Total

DAX

КопироватьРедактировать

```
Sales Last 12 Months =
CALCULATE([Total Sales], DATESINPERIOD('Date'[Date], MAX('Date'[Date]), -12, MONTH))
```

14. Difference – Current vs Previous Quarter

DAX

КопироватьРедактировать

```
Quarter Difference =
VAR CurrentQ = CALCULATE([Total Sales], DATESINPERIOD('Date'[Date], MAX('Date'[Date]), -0, QUARTER))
```

VAR PrevQ = CALCULATE([Total Sales], DATESINPERIOD('Date'[Date], MAX('Date'[Date]), -1, QUARTER))

RETURN CurrentQ - PrevQ

15. Highlight Months >10% than Previous Year

DAX

КопироватьРедактировать

Sales > 110% LY =

VAR CY = [Total Sales CY]

VAR LY = [Total Sales LY]

RETURN IF(DIVIDE(CY, LY, 0) > 1.1, "Yes", "No")

✅ Lesson 14: DAX Optimization

🟢 (1) % Growth in Sales Compared to LY Using VAR

DAX

КопироватьРедактировать

YoY % Growth =

VAR CY = [Total Sales CY]

VAR LY = [Total Sales LY]

RETURN DIVIDE(CY - LY, LY, 0)

🟢 (2) Difference Between Current and Previous Month

DAX

КопироватьРедактировать

Month Difference =

```
VAR CurrentMonth = [Total Sales CM]
VAR LastMonth = [Sales LM]
RETURN CurrentMonth - LastMonth
```

🟢 (3) Boxes Shipped + Monthly Avg (Same Measure)

DAX

КопироватьРедактировать

```
Boxes and Avg =
VAR TotalBoxes = SUM('Chocolate Sales'[Boxes])
VAR Months = DISTINCTCOUNT('Date'[YearMonth])
VAR AvgBoxes = DIVIDE(TotalBoxes, Months, 0)
RETURN TotalBoxes + AvgBoxes
```

🟢 (4) Return Only Average Boxes

DAX

КопироватьРедактировать

```
Average Boxes =
VAR TotalBoxes = SUM('Chocolate Sales'[Boxes])
VAR Months = DISTINCTCOUNT('Date'[YearMonth])
RETURN DIVIDE(TotalBoxes, Months, 0)
```

🟢 (5) Monthly Growth %

DAX

КопироватьРедактировать

```
MoM Growth % =
```

```
VAR Curr = [Total Sales CM]
VAR Prev = [Sales LM]
RETURN DIVIDE(Curr - Prev, Prev, 0)
```

🟢 (6) Moving Average – 3 Months

DAX

КопироватьРедактировать

```
3 Month Moving Avg =
AVERAGEX(
    DATESINPERIOD('Date'[Date], MAX('Date'[Date]), -3, MONTH),
    [Total Sales]
)
```

🟢 (7) Dynamic Message Based on Sales Rank & YoY

DAX

КопироватьРедактировать

```
Performance Message =
VAR Rank = RANKX(ALL('Chocolate Sales'[Product]), [Total Sales])
VAR Growth = [YoY % Growth]
RETURN
SWITCH(TRUE(),
    Rank <= 3 && Growth > 0.1, "Top Performer - Sales up by " & FORMAT(Growth, "0.0%"),
    Growth > -0.05 && Growth < 0.05, "Consistent Performer",
    TRUE(), "Needs Improvement"
```

)

🟡 (8) Top 5 DAX Optimization Tips

1. Use Variables (VAR) – Reduces repeated calculation.
2. Avoid Row Context in Measures – Stick to filter context.
3. Use SUMX only when necessary – Prefer base measures.
4. Reduce Filters with ALLSELECTED/REMOVEFILTERS – Avoid heavy context.
5. Avoid CALCULATE inside iterators – Impacts performance.

🟡 (9) DAX Optimization Tools Benefits

- DAX Studio – Analyze query performance, measure timings.
- Performance Analyzer – Visual load breakdown in Power BI.
- Tabular Editor – Manage large models, write/debug measures efficiently.

🔵 (10) Flag for Top 5 Products

DAX

КопироватьРедактировать

```
Top 5 Product =
VAR ProductRank = RANKX(ALL('Chocolate Sales'[Product]), [Total Sales])
RETURN IF(ProductRank <= 5, "Yes", "No")
```