

# Mandatory Questions for Every Data Analyst Interview Year-over-Year (YoY) & Growth Analysis in Power BI & SQL – A Complete Guide with DAX & LAG()!

Year-over-Year (YoY) analysis is essential for tracking business growth and identifying trends over time. This guide explores various DAX methods in Power BI and SQL queries for calculating YoY values and percentage growth efficiently.

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## YoY Calculation in Power BI using DAX

Below are multiple ways to calculate YoY value (absolute difference) and YoY % growth using DAX.

### 1. Basic YoY Calculation Using SAMEPERIODLASTYEAR()

This method shifts the date context exactly one year back to get last year's value.

DAX Formula:

YoY Sales =

```
VAR PreviousYearSales = CALCULATE(SUM(SalesData[Sales]),  
SAMEPERIODLASTYEAR(SalesData[Date]))  
RETURN SUM(SalesData[Sales]) - PreviousYearSales
```

YoY % Growth =

```
VAR PreviousYearSales = CALCULATE(SUM(SalesData[Sales]),  
SAMEPERIODLASTYEAR(SalesData[Date]))  
RETURN DIVIDE(SUM(SalesData[Sales]) - PreviousYearSales, PreviousYearSales, 0) *  
100
```

### 2. Flexible YoY Using DATEADD()

DATEADD() shifts the time context by a specific period, making it more flexible.

DAX Formula:

YoY Sales =

```
VAR PreviousYearSales = CALCULATE(SUM(SalesData[Sales]),  
DATEADD(SalesData[Date], -1, YEAR))  
RETURN SUM(SalesData[Sales]) - PreviousYearSales
```

YoY % Growth =

```
VAR PreviousYearSales = CALCULATE(SUM(SalesData[Sales]),  
DATEADD(SalesData[Date], -1, YEAR))
```

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RETURN DIVIDE(SUM(SalesData[Sales]) - PreviousYearSales, PreviousYearSales, 0) \* 100

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## 3. Fixed Period YoY Using PARALLELPERIOD()

Similar to DATEADD(), but only works for fixed intervals (year, quarter, month).

DAX Formula:

YoY Sales =

```
VAR PreviousYearSales = CALCULATE(SUM(SalesData[Sales]),  
PARALLELPERIOD(SalesData[Date], -1, YEAR))  
RETURN SUM(SalesData[Sales]) - PreviousYearSales
```

YoY % Growth =

```
VAR PreviousYearSales = CALCULATE(SUM(SalesData[Sales]),  
PARALLELPERIOD(SalesData[Date], -1, YEAR))  
RETURN DIVIDE(SUM(SalesData[Sales]) - PreviousYearSales, PreviousYearSales, 0) *  
100
```

## 4. Year-to-Date (YTD) YoY Using TOTALYTD()

This compares cumulative sales up to the same date in the previous year.

DAX Formula:

YoY Sales YTD =

```
VAR PreviousYearSalesYTD = CALCULATE(TOTALYTD(SUM(SalesData[Sales]),  
SalesData[Date]), SAMEPERIODLASTYEAR(SalesData[Date]))  
RETURN TOTALYTD(SUM(SalesData[Sales]), SalesData[Date]) - PreviousYearSalesYTD
```

YoY % Growth YTD =

```
VAR PreviousYearSalesYTD = CALCULATE(TOTALYTD(SUM(SalesData[Sales]),  
SalesData[Date]), SAMEPERIODLASTYEAR(SalesData[Date]))  
RETURN DIVIDE(TOTALYTD(SUM(SalesData[Sales]), SalesData[Date]) -  
PreviousYearSalesYTD, PreviousYearSalesYTD, 0) * 100
```

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## YoY Calculation in SQL using LAG()

SQL also provides an efficient way to calculate YoY and YoY % growth using LAG() .

### SQL Query for YoY & YoY % Growth Using LAG()

```
SELECT
    YEAR(Date) AS Year,
    SUM(Sales) AS CurrentYearSales,
    LAG(SUM(Sales)) OVER (ORDER BY YEAR(Date)) AS PreviousYearSales,
    SUM(Sales) - LAG(SUM(Sales)) OVER (ORDER BY YEAR(Date)) AS YoY_Change,
    ROUND(((SUM(Sales) - LAG(SUM(Sales)) OVER (ORDER BY YEAR(Date))) /
        NULLIF(LAG(SUM(Sales)) OVER (ORDER BY YEAR(Date)), 0)) * 100, 2) AS
    YoY_Percentage_Growth
FROM SalesTable
GROUP BY YEAR(Date)
ORDER BY Year;
```

Function	Description	Flexibility	Best For
SAMEPERIODLASTYEAR()	Returns the same period (day, month, year) from the previous year.	Not Flexible (Always moves 1 year back).	Simple YoY comparisons (e.g., Sales from the same day last year).
DATEADD()	Shifts the date context forward or backward by any interval (days, months, years).	Highly Flexible (Allows shifting by any period).	Custom YoY comparisons (e.g., Moving YoY by 2 years or comparing quarterly shifts).
PARALLELPERIOD()	Moves the entire period back by a fixed interval year).	Moderate Flexibility (Only works (month, quarter, or with fixed periods).	Fixed period YoY (e.g., Last Year, Last Quarter, Last Month).

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## Final Thoughts

- YoY Value helps measure the absolute difference in sales between two years.
- YoY Percentage Growth helps understand the relative increase or decrease.
- If you simple and quick YoY, use SAMEPERIODLASTYEAR() .
- need If custom time comparisons , use DATEADD()
- you need cumulative YoY , use TOTALYTD()
- If you rolling 12-month analysis , use DATESINPERIOD()  
need If LAG() provides an efficient way to calculate YoY without joins.  
you need In SQL,

Each method has its strengths— choose based on your reporting needs!

Do you use a different approach for YoY analysis? Drop your thoughts in the comments!