SECTION 1

What Is Meant By DAX

DAX

- **Full Form**: Data Analysis Expressions (DAX).
- **Purpose**: DAX is a collection of functions, operators, and constants that can be used in Power BI to create formulas and expressions for calculating and analyzing data.
- **Definition**: DAX is a formula language designed specifically for data modeling and reporting in Power BI, Power Pivot, and Analysis Services
- It is used to perform calculations on data, add calculated columns, create custom measures, and analyze data in a way that is not possible with the raw data alone.

SECTION 2

Why Is DAX Important?

Importance of DAX

- **Powerful Calculations**: DAX allows users to perform complex calculations beyond the default aggregations (like sum or count) available in Power BI.
- **Data Modeling**: You can create relationships between tables and perform advanced calculations on them.
- **Custom Measures**: DAX helps create custom measures to evaluate business metrics, KPIs, and other performance indicators dynamically.
- **Complex Calculations**: DAX allows you to perform complex and advanced calculations that go beyond basic aggregations (like SUM, AVERAGE, etc.). This makes DAX a powerful tool for deriving insights from data that wouldn't be possible with regular calculations.
- **Time Intelligence Functions**: DAX provides a wide range of **time intelligence functions** that make it easy to perform date-related calculations. This is essential for businesses to track trends, compare periods, and analyze performance over time. Example, "**SAMEPERIODLASTYEAR**".

SECTION 3

Syntax Of DAX

Syntax of DAX

- A DAX formula is a combination of functions, operators, and references to columns or tables.
- **Example Syntax:**
- **Measure = SUM('Sales'[Amount])**
- **Explanation**: The above formula creates a measure that sums the values in the 'Amount' column of the 'Sales' table.

SECTION 4

Understanding Calculated Columns, Measures & Tables

Understanding Table

Aspect	Calculated Column	Calculated Measure	Calculated Table
Definition	A column added to a table with a row-by-row calculation.	A dynamic calculation that changes based on filters.	A new table created based on a DAX formula.
Row vs Filter Context	Row Context (calculated for each row individually).	Filter Context (calculation based on filters applied).	Static, created at the time of data refresh.
Storage	Stored in the data model, increases dataset size.	Not stored, calculated dynamically in reports.	Stored in the data model, increases dataset size.
When to use	To create new columns derived from existing ones.	To perform dynamic calculations in reports.	To create new tables based on existing data.

SECTION 5

DAX FUNCTIONS

Maths & Statistical Functions

	Function Name	Function Job	Calculated Column	Calculated Measure
1	SUM(<Column>)	Adds all the numbers in a column	**No**	**Yes**
2	SUMX(<Table>, <expression>)	Returns the sum of an expression evaluated for each row in a table.	**Yes**	**Yes**
3	AVERAGE(<Column>)	Returns the average (arithmetic mean) of all the numbers in a column.	**No**	**Yes**
4	AVERAGEX(<table>, <expression>)	Calculates the average (arithmetic mean) of a set of expressions evaluated over a table.	**Yes**	**Yes**
5	MEDIAN(<column>)	Returns the median of a column.	**No**	**Yes**
6	MEDIANX(<table>, <expression>)	Calculates the median of a set of expressions evaluated over a table.	**Yes**	**Yes**
7	COUNT(<column>)	Returns the number of cells in a column that contains non-blank values.	**No**	**Yes**
8	COUNTX(<table>, <expression>)	Counts the number of rows from an expression that evaluates to a non-blank value.	**Yes**	**Yes**
9	DISTINCTCOUNT(<column>)	Counts the number of distinct values in a column.	**Yes**	**Yes**
10	DIVIDE(<numerator>, <denominator> [,<alternateresult>])	Performs division and returns alternate result or BLANK() on division by 0.	**Yes**	**Yes**

SECTION 5

DAX FUNCTIONS

Maths & Statistical Functions

	Function Name	Function Job	Calculated Column	Calculated Measure
11	MIN(<column>)	Returns a minimum value of a column.	**Yes**	**Yes**
12	MAX(<column>)	Returns a maximum value of a column.	**Yes**	**Yes**
13	COUNTROWS([<table>])	Counts the number of rows in a table.	**Yes**	**Yes**
14	RANKX(<table>, <expression>[, <value>[, <order>[, <ties>]]])	Returns the ranking of a number in a list of numbers for each row in the table argument.	**Yes**	**Yes**

SECTION 5

DAX FUNCTIONS

Time Series Dax

	Function Name	Function Job	Column	Measure	Table
1	CALENDAR (start_date, end_date)	Returns a table with a single column named "Date" that contains a contiguous set of dates.	**Yes**	**No**	**Yes**
2	CALENDARAUTO ([fiscal_year_end_month])	Returns the sum of an expression evaluated for each row in a table.	**Yes**	**No**	**Yes**
3	DATE (year, month, day)	Returns the specified date in datetime format.	**Yes**	**No**	**No**
4	DATEDIFF (start_date, end_date, interval)	Returns the number of interval boundaries (e.g., day, month, year) between two dates.	**Yes**	**No**	**No**
5	DATEVALUE (date_text)	Converts a date in text form to a date in datetime format.	**Yes**	**No**	**No**
6	EDATE (start_date, months)	Returns the date that is the indicated number of months before or after the start date.	**Yes**	**No**	**No**
7	EOMONTH (start_date, months)	Returns the last day of the month after adding a specified number of months to a date.	**Yes**	**No**	**No**
8	NETWORKDAYS (start_date, end_date, [holidays])	Returns the number of whole workdays between two dates.	**Yes**	**No**	**No**

SECTION 5

DAX FUNCTIONS

FILTER DAX

	Function Name	Function Job	Column	Measure	Table
1	ALL(table | column)	Returns all the rows in a table, or all the values in a column, ignoring any filters that might have been applied. This function is useful for clearing filters	**No**	**Yes**	**Yes**
2	ALLEXCEPT(TABLE, COLUMNS*)	Removes all context filters in the table except filters that have been applied to the specified columns.	**No**	**Yes**	**Yes**
3	REMOVEFILTERS(table/column)	Removes filters from the specified columns or tables.	**No**	**Yes**	**Yes**
4	CALCULATE(expression, filter*)	Evaluates an expression in a modified filter context.	**No**	**Yes**	**Yes**
5	CALCULATETABLE(table, filters)	Evaluates a table in a context modified by the specified filters..	**No**	**No**	**Yes**
6	FILTER(TABLE, Expression)	Returns a table that represents a subset of another table based on a given expression.	**No**	**No**	**YES**
7	SELECTEDVALUE(column, [default_value])	Returns the value of a column that is currently being filtered. If no value is selected, it returns the default value (optional).	**Yes**	**Yes**	**No**
8	RELATED(TABLE)	Returns a related value from another table.	**Yes**	**Yes**	**No**

SECTION 6

Best Practices Of Dax

Syntax of DAX

- **Use Measures, Not Calculated Columns**: Whenever possible, use measures instead of calculated columns for efficiency and performance.
- **Minimize Filter Complexity**: Simplify filter context as much as possible to ensure that your DAX formulas are clear and efficient.
- **Time Intelligence**: Make use of time intelligence functions for year-over-year, quarter-to-date, or month-to-date comparisons.
- **Create a MEASURE TABLE to display all the measures at one place.**