DAX (Data Analysis Expressions) Reference Sheet

What is DAX?

DAX stands for **Data Analysis Expressions**. It is a formula language used in: - Power BI - Excel Power Pivot - SQL Server Analysis Services (SSAS)

DAX is used to define custom calculations for: - Calculated columns - Measures - Calculated tables

---

Common Function Categories

Aggregation Functions

| Function | Description | |---|---| | `SUM()` | Adds all numbers in a column | | `AVERAGE()` | Calculates the average of values | | `MIN()` | Returns the smallest number | | `MAX()` | Returns the largest number | | `COUNT()` | Counts the number of values | | `DISTINCTCOUNT()` | Counts distinct values |

Time Intelligence Functions

| Function | Description | |---|---| | `TOTALYTD()` | Year-to-date total | | `SAMEPERIODLASTYEAR()` | Corresponding period in the previous year | | `DATESINPERIOD()` | Dates in a specific period | | `DATESYTD()` | Dates from the beginning of the year to a date | | `PARALLELPERIOD()` | Shift time periods (e.g., months, years) |

Filter Functions

| Function | Description | |---|---| | `FILTER()` | Returns a filtered table | | `ALL()` | Removes filters | | `ALLEXCEPT()` | All filters except specified columns | | `VALUES()` | Returns unique values from a column | | `RELATEDTABLE()` | Gets related table in relationship |

Relationship Functions

| Function | Description | |---|---| | `RELATED()` | Retrieves a value from a related table | | `USERELATIONSHIP()` | Activates an inactive relationship |

Math & Trig Functions

| Function | Description | |---|---| | `ABS()` | Absolute value | | `ROUND()` | Rounds a number | | `MOD()` | Modulus (remainder) | | `DIVIDE()` | Safe division, handles divide-by-zero |

Text Functions

| Function | Description | |---|---| | `CONCATENATE()` | Combines two text strings | | `LEFT()` | Extracts characters from the left | | `RIGHT()` | Extracts characters from the right | | `SEARCH()` | Finds a substring |

⚙ Logical Functions

| Function | Description | |---|---| | `IF()` | Returns values based on a condition | | `SWITCH()` | Evaluates multiple conditions | | `AND()` | Returns TRUE if all conditions TRUE | | `OR()` | Returns TRUE if any condition TRUE |

User & Security Functions

| Function | Description | |---|---| | `USERNAME()` | Returns the user name | | `USERPRINCIPALNAME()` | Returns the user's principal name | | `ISFILTERED()` | Checks if a column is filtered |

Example DAX Measures

```dax -- Total Revenue Total Revenue = SUM(Sales[Revenue])

-- Profit Margin Profit Margin = DIVIDE([Profit], [Revenue])

-- Sales YTD Sales YTD = TOTALYTD(SUM(Sales[Amount]), Dates[Date])

-- Dynamic Ranking Sales Rank = RANKX(ALL(Sales[Product]), [Total Revenue]) ```

---

## Tips

- Use `CALCULATE()` to modify filter context.
- Time intelligence functions require a proper Date table.
- `DIVIDE(x, y)` is safer than `x / y` to avoid errors.
- Always test logic with sample data using a matrix table visual.

---

**Happy DAX-ing!**
```