DAX (Data Analysis Expressions) Cheat Sheet

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1) Basic aggregation

SUM(<Column>)

SUMX(<Table>, <Expression>)

AVERAGE(<Column>)

AVERAGEX(<Table>, <Expression>)

COUNT(<Column>)

COUNTROWS(<Table>)

DISTINCTCOUNT(<Column>)

Example:

Total Sales = SUM(Sales[SalesAmount])

Avg Sales per Order = AVERAGEX(Orders, Orders[TotalAmount])

2) CALCULATE & FILTER (Core)

CALCULATE(<Expression>, <Filter1>, <Filter2>, ...)

CALCULATETABLE(<TableExpression>, <Filter1>, ...)

FILTER(<Table>, <BooleanExpression>)

Example:

Sales 2024 = CALCULATE([Total Sales], YEAR(Sales[Date]) = 2024)

Top Products = CALCULATETABLE(VALUES(Product[ProductName]), Sales[SalesAmount] > 10000)

3) Context modification

ALL(<TableOrColumn>)

ALLEXCEPT(<Table>, <Column1>, ...)

REMOVEFILTERS([<ColumnOrTable>])

ALLSELECTED(<ColumnOrTable>)

Example:

Market Share = DIVIDE([Total Sales], CALCULATE([Total Sales], ALL(Product)))

4) Time intelligence

SAMEPERIODLASTYEAR(<DatesColumn>)

DATEADD(<DatesColumn>, -1, YEAR)

PARALLELPERIOD(<DatesColumn>, -1, YEAR)

TOTALYTD(<Expression>, <DatesColumn>, [YearEndDate])

PREVIOUSMONTH, NEXTDAY, etc.

Example:

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

5) Row/context functions

EARLIER(<Column>, <N>) - older pattern; prefer variables

RELATED(<Column>)   - gets column from related table (many-to-one)

RELATEDTABLE(<Table>)   - returns rows from related table (one-to-many)

LOOKUPVALUE(<ResultColumn>, <SearchColumn1>, <Value1>[, ...])

Example:

ProductCategory = RELATED(ProductCategory[CategoryName])

6) Variables and logic

VAR <name> = <expression>

RETURN <expression>

IF(<condition>, <then>, <else>)

SWITCH(<expression>, <value1>, <result1>, ..., <else>)

DIVIDE(<numerator>, <denominator>[, <alternateResult>]) - safer division

Example:

Profit Margin % =

VAR Profit = [Total Sales] - [Total Cost]

RETURN DIVIDE(Profit, [Total Sales])

7) Ranking and top N

RANKX(<Table>, <Expression>[, <Value>[, <Order>[, <Ties>]]])

TOPN(<N>, <Table>, <Expression>[, <SortOrder>])

Example:

Top 5 Products = TOPN(5, VALUES(Product[ProductName]), [Total Sales], DESC)

8) Text & concatenation

CONCATENATEX(<Table>, <Expression>, <Delimiter>[, <OrderByExpression>, ...])

FORMAT(<Value>, <FormatString>)

Example:

CustomersList = CONCATENATEX(VALUES(Customer[Name]), Customer[Name], ", ")

9) Tables & set operations

UNION(<Table1>, <Table2>)

INTERSECT(<Table1>, <Table2>)

EXCEPT(<Table1>, <Table2>)

NATURALINNERJOIN, NATURALLEFTOUTERJOIN

10) Relationship & filter direction

USERELATIONSHIP(<Dates1>, <Dates2>) - use inside CALCULATE to activate inactive relationship

CROSSFILTER(Table1[Col], Table2[Col], Both/None/Single)

Example:

Sales by Ship Date =

CALCULATE([Total Sales], USERELATIONSHIP(Sales[ShipDate], Date[Date]))

11) Advanced patterns

- Measure branching (reuse measures)

- Table variables for performance: VAR t = FILTER(ALL(Sales), Sales[Amount] > 1000)

- Avoid iterators on large tables when possible; prefer summarization

12) Common useful measures

Total Sales = SUM(Sales[SalesAmount])

Total Cost = SUM(Sales[CostAmount])

Total Units = SUM(Sales[Quantity])

Avg Unit Price = DIVIDE([Total Sales], [Total Units])

Sales YTD = TOTALYTD([Total Sales], Date[Date])

Sales Growth % =

VAR Prev = CALCULATE([Total Sales], SAMEPERIODLASTYEAR(Date[Date]))

RETURN DIVIDE([Total Sales] - Prev, Prev)

13) Debugging & testing

- Use EVALUATE in DAX Studio to check table expressions

- Use temporary measures with RETURN for stepwise check

- ISBLANK, ISNUMBER, ISTEXT to guard functions

14) Performance tips

- Use SUMX on summarized tables (SUMMARIZE) rather than raw row iteration

- Replace complex FILTER with CALCULATE + simple filter arguments where possible

- Use variables (VAR) to avoid recomputation

- Avoid EARLIER in favor of variables with iterators

15) Helpful snippets

Distinct Customers = DISTINCTCOUNT(Sales[CustomerID])

Orders This Month = CALCULATE(COUNTROWS(Orders), MONTH(Date[Date]) = MONTH(TODAY()), YEAR(Date[Date]) = YEAR(TODAY()))

Running Total =
CALCULATE([Total Sales], FILTER(ALL(Date), Date[Date] <= MAX(Date[Date])))

16) Example: Cumulative Sales by Product

Cumulative Sales =
VAR CurrentDate = MAX(Date[Date])
RETURN
CALCULATE(
    [Total Sales],
    FILTER(
        ALL(Date),
        Date[Date] <= CurrentDate
)
)

17) Example: % of Category Sales

% of Category Sales =
DIVIDE([Total Sales], CALCULATE([Total Sales], ALL(Product[SubCategory])))

18) Example: Dynamic Top N parameter (using disconnected table)

Top N Selected = SELECTEDVALUE(Parameters[TopN], 5)

Top N Sales =
VAR N = [Top N Selected]
RETURN
TOPN(N, SUMMARIZE(Product, Product[ProductName], "Sales", [Total Sales]), [Sales], DESC)

Notes:

- Replace table/column names with your model names.

- Use DAX Studio for advanced profiling and query optimization.

- This sheet is a compact reference - ask if you want a longer file with more examples.