

# Iterating functions

DAX FUNCTIONS IN POWER BI



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# Iterating functions

- Iterate over each row of a given table to perform an expression

`SUMX(<table>, <expression>)`

`AVERAGEX(<table>, <expression>)`

- X stands for eXpression
- Allow for advanced calculations specified at each row

# Iterating functions: SUMX()

## Calculated column example

```
Cost = Fact_Orders[Sales] - Fact_Orders[Profit]
```

```
Total Costs = SUM(Fact_Orders[Cost])
```

Sales	Profit	Cost
\$77.88	\$3.89	\$73.99
\$22.72	\$10.22	\$12.50
...	...	...
Total Costs		
\$2,569		

# Iterating functions: SUMX()

## Calculated column example

`Cost = Fact_Orders[Sales] - Fact_Orders[Profit]`

`Total Costs = SUM(Fact_Orders[Cost])`

Sales	Profit	Cost
\$77.88	\$3.89	\$73.99
\$22.72	\$10.22	\$12.50
...	...	...
Total Costs		
\$2,569		

## Iterating function example

`Total Costs SUMX =  
SUMX(Fact_Orders,  
Fact_Orders[Sales] - Fact_Orders[Profit])`

Total Costs SUMX
\$2,569

# Filtering iterating functions

- Use filter functions, such as FILTER(), to return a filtered table

```
SUMX(  
  FILTER(  
    <table>,  
    <filter>),  
  <expression>)
```

```
Total Costs East SUMX =  
SUMX(  
  FILTER(  
    Fact_Orders,  
    Fact_Orders[Region] = "East"),  
  Fact_Orders[Sales] - Fact_Orders[Profit])
```

# Filtering iterating functions

- Use filter functions, such as FILTER(), to return a filtered table

```
SUMX(  
  FILTER(  
    <table>,  
    <filter>),  
  <expression>)
```

```
Total Costs East SUMX =  
SUMX(  
  FILTER(  
    Fact_Orders,  
    Fact_Orders[Region] = "East"),  
  Fact_Orders[Sales] - Fact_Orders[Profit])
```

Region	Total Costs	Total Costs East SUMX
Central	\$501,239.89	
East	\$678,781.24	\$678,781.24
South	\$391,721.91	
West	\$725,457.82	
<b>TOTAL</b>	<b>\$2,297,200.86</b>	<b>\$678,781.24</b>

# Iterating functions: RANKX()

```
RANKX(  
    <table>,  
    <expression>)
```

- Rank regions by total costs

```
Total Costs RANKX =  
RANKX(  
    ALL(Dim_Sales[Region]),  
    [Total Costs])
```

- Use `ALL()` to evaluate all rows from the dimension table

# Iterating functions: RANKX()

```
RANKX(  
    <table>,  
    <expression>)
```

- Rank regions by total costs

```
Total Costs RANKX =  
RANKX(  
    ALL(Dim_Sales[Region]),  
    [Total Costs])
```

- Use `ALL()` to evaluate all rows from the dimension table

Region	Total Costs	Total Costs RANKX
Central	\$725,457.82	1
East	\$678,781.24	2
South	\$501,239.89	3
West	\$391,721.91	4



# Operators in DAX

## COMPARISON OPERATORS

Operator	Meaning
=	Equal to
==	Strict equal to
>	Greater than
<	Smaller than
>=	Greater than or equal to
<=	Smaller than or equal to
<>	Not equal to

# Operators in DAX

## COMPARISON OPERATORS

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## TEXT OPERATOR

Operator	Meaning	Example
&	Concatenates text values	[City]&", "& [State]

# Operators in DAX

## COMPARISON OPERATORS

Operator	Meaning
=	Equal to
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## TEXT OPERATOR

Operator	Meaning	Example
&	Concatenates text values	[City]&"", "&[State]

## LOGICAL OPERATORS

Operator	Meaning	Example
&&	AND condition	([City] = "Bru") && ([Return] = "Yes"))
	OR condition	([City] = "Bru")    ([Return] = "Yes"))
IN { }	OR condition for each row	Product[Color] IN {"Red", "Blue", "Gold"}

**Lesson[Knowledge]  
IN {"Poor", "Great",  
"Awesome!"}**

**DAX FUNCTIONS IN POWER BI**

# Iterating functions in Power BI

DAX FUNCTIONS IN POWER BI



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# Let's practice!

DAX FUNCTIONS IN POWER BI

# Congratulations!

DAX FUNCTIONS IN POWER BI



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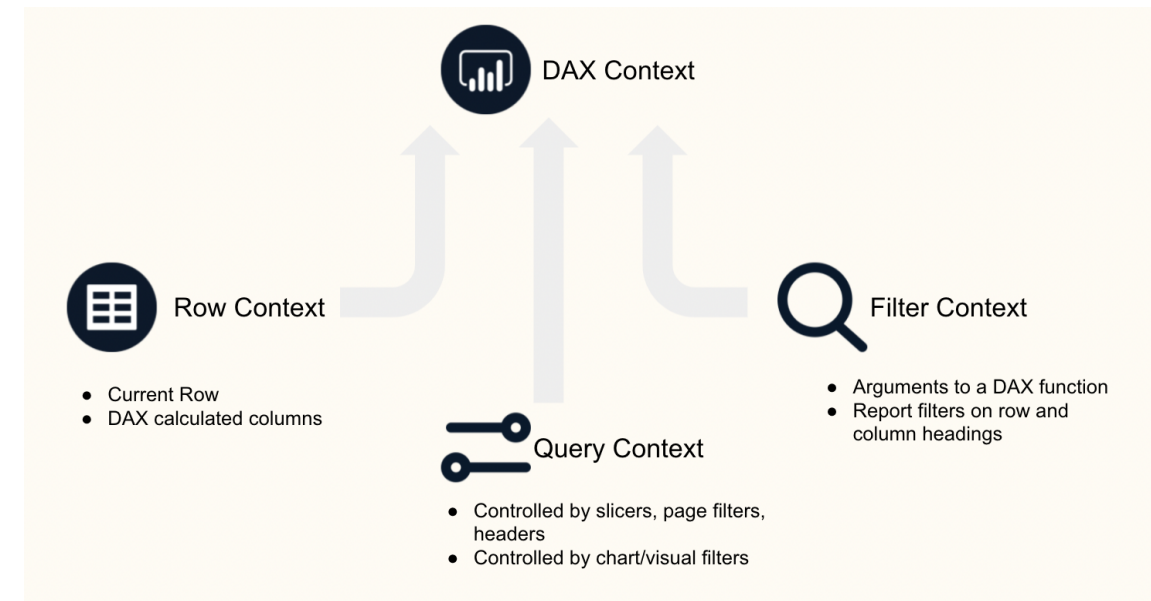
# DAX stands for Data Analysis eXpressions

DAX formulas are used in:

- Measures
- Calculated columns
- Calculated tables

Context in DAX Formulas:

- Row context
- Query context
- Filter context





# DAX Toolbox

## General:

- Implicit vs explicit measures
- Quick measures
- Variables: `VAR`

## Data Modeling:

- `CALENDAR()`
- `CALCULATE()`
- `RELATED()`
- `FILTER()`
- `CROSSFILTER()`

# Enjoy iterating!

DAX FUNCTIONS IN POWER BI