# Common Function Categories

- Maths and Stats
  - Basic aggregation functions as well as iterators evaluated at row-levl
- Logical
  - Used for checking conditions
- Text
  - Used to manipulate text strings or control formats of dates, time and numbers
- Filter
- Date and Time

# Maths and Stats

- Common examples:
  - SUM
  - AVERAGE
  - MAX/MIN
  - DIVIDE
  - COUNT/COUNTA
  - COUNTROWS
  - DISTINCTCOUNT
- Iterator
  - SUMX
  - AVERAGEX
  - MAXX/MINX
  - RANKX
  - COUNTX

# Logical Functions #1

- Common Examples:
  - IF
  - IFERROR
  - AND
  - OR
  - NOT
  - SWITCH
  - TRUE
  - FALSE

# Logical Functions #2

- IF –
  - Checks if condition is met, returns one value if condition is True and another is condition is False
  - =IF(LogicalTest, ResultIfTrue, [ResultIfFalse])
- IFERROR –
  - Evaluates an expression and returns specified value if expression returns an error otherwise returns expression itself
  - =IFERROR(Value, ValueIfError) → Sales/Qty → Qty =0
  - Iferror(sales/qty,"No Qty Sold")
- AND –
  - Checks whether both arguments are True, Returns True is both are True Otherwise False
  - For more than 2 conditions && is used
  - =AND (Logical1, Logical2)
- OR –
  - Check whether one of the argument if True. Returns true is either one is True and Returns False if both arguments are False
  - For more than 2 conditons || is used
  - =OR (Logical1, Logical2)

# Exercise

- In Customer Table
  - Create ‘Target Customer‘ Column
    - Target  if the Annual Income >=100000 or Children >1
- In Calendar Table
  - Create a new column of day of the week (1 to 7, Monday should be trested as first day of the week)
  - Then using DAX create a column of Weekday or Weekend

# Text Function #1

- Common examples:
  - CONCATENATE - &
  - FORMAT
  - LEFT/RIGHT/MID
  - UPPER/LOWER
  - PROPER
  - LEN
  - SEARCH/FIND
  - REPLACE
  - REPT
  - SUBSTITUTE
  - TRIM

# Text Function #2

- LEN –
  - Returns number of characters in a string
  - =LEN(Text)
- CONCATENATE –
  - Join two text strings into one
  - =CONCATENATE(Text1, Text2) → Text1 & Text2 & Text3
  - Use & to join more than 2 text string
- LEFT/MID/RIGHT –
  - Returns a number of characters from the Start/Middle/End of text string
  - =LEFT/RIGHT(Text, [Num of Char])
  - =MID(Text, Start Position, Num of Char)
- UPPER/LOWER –
  - Converts letter in a string to UPPER/lower
  - =UPPER/LOWER(Text)

# Text Function #3

- SUBSTITUTE –
  - Replaces an instance of existing text with new text in a string
  - =SUBSTITUTE(Text, OldText, NewText, [InstanceNum] )
- SEARCH /FIND–
  - Returns the position where a specified string or character is found, reading left to right
  - =SEARCH(FindText, WithInText, [StartPosition], [NotFoundValue])

# Exercise

- In Customer Table
  - Using Calculated Column create a column with Full name
  - Create a new column with only the username from the Email ID column

# Date and Time Functions #1

- Common examples:
  - DATEDIFF
  - YEARFRAC
  - YEAR/MONTH/DAY
  - HOUR/MINUTE/SECOND
  - TODAY/NOW
  - WEEKDAY/WEEKNUM
- Time Intelligence Functions
  - DATESYTD
  - DATESQTD
  - DATESMTD
  - DATEADD
  - DATESINPERIOD

# Date and Time Function #2

- DAY/MONTH/YEAR –
  - Returns day of the month (1-31), Month of the year (1-12), Year of a date
  - =DAY/MONTH/YEAR(Date)
- HOUR/MINUTE/SECOND –
  - Returns the hour (0-23), minute (0-59), second (0-59) of datetime value
  - =HOUR/MINUTE/SECOND(Datetime)
- TODAY/NOW –
  - Returns current date or exact time
  - =TODAY/NOW()
- WEEKDAY/WEEKNUM –
  - Returns weekday number  from 1 (Sunday) to 7 (Saturday) or week # of year
  - =WEEKDAY/WEEKNUM (Date,[ReturnType])

# Date and Time Function #3

- EOMONTH –
  - Returns date of the last day of the month, +/- a specified number of months
  - =EOMONTH(StartDate, Months)
- DATEDIFF –
  - Returns the difference between two dates, based on selected intervals
  - =DATEDIFF(Date1, Date2, Interval)

# Exercise

- In Customer Table
  - Find the age of the customer
    - Datediff
    - Age = DATEDIFF(AW_Customers_Fact[BirthDate],today(),YEAR)
- In Sales Table
  - Create a column of Weekday/Weekend
    - IF, OR, Weekday
    - Weekday/Weekend = IF(wEEKDAY(AW_Sales_Data[OrderDate],2)>5,"Weekend","Weekday")

# Filter Functions

- Common examples:
  - CALCULATE
  - FILTER
  - ALL
  - RELATED
  - RELATEDTABLE
  - DISTINCT

# Relate Function

- Returns related values in each row of a table based on relationships with other tables.
- It works like vlookup of excel. However, we just need to mention the column from where we want the value. The reason we don't have to give the lookup value and table array as we have already defined the relationship between the tables in data relationships.
- Since this function requires a row context it can be used in
  - Calculated Column
  - Or, Iterator function that cycles through all the rows of the table (FILTER, SUMX, MAXX etc)
- We should avoid using Related as it make redundant columns just like merging queries and increase the files size.
- We should use it within a measure like FILTER or SUMX.