Lab 4 Create Model Calculations using DAX.

Objectives

Time: 20-35 Minutes

1. Create a calculated column for Total Sales retrieving the product unit price from the products table using the related tables DAX function.

2. Create a generated calendar date dimension table and connect it to the existing data model.

3. Create two iterator measures.
    - SUMX
    - AVERAGEX

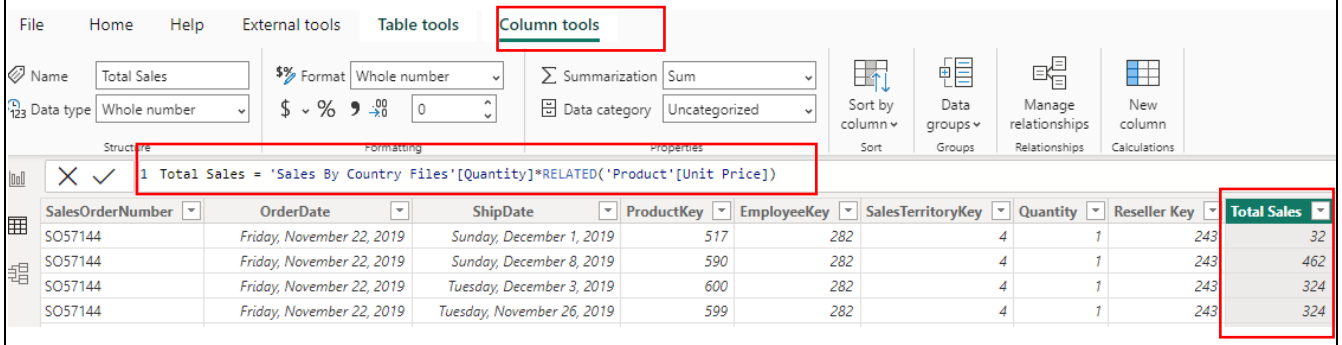
4. Create Explicit measures for
    - Quantity
    - Variance between Sales and Sales Target
    - Variance % using the DIVIDE Function

5. Create a measures table and organize measures into a folder structure.

Lab steps

1) Create a calculated column based on related tables

- Using RELATED DAX function, create a new calculated column that appends [UNIT PRICE] to the Sales By Country Files.
- Develop a Total Sales calculated column by taking the product of Quantity and unit price.



SalesOrderNumber	OrderDate	ShipDate	ProductKey	EmployeeKey	SalesTerritoryKey	Quantity	Reseller Key	Total Sales
SO57144	Friday, November 22, 2019	Sunday, December 1, 2019	517	282	4	1	243	32
SO57144	Friday, November 22, 2019	Sunday, December 8, 2019	590	282	4	1	243	462
SO57144	Friday, November 22, 2019	Tuesday, December 3, 2019	600	282	4	1	243	324
SO57144	Friday, November 22, 2019	Tuesday, November 26, 2019	599	282	4	1	243	324

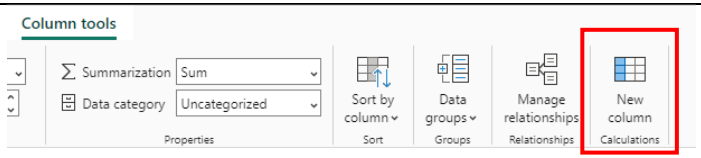
Formula	Format
`Total Sales = 'Sales By Country Files'[Quantity]*RELATED('Product'[Unit Price])`	Whole Number

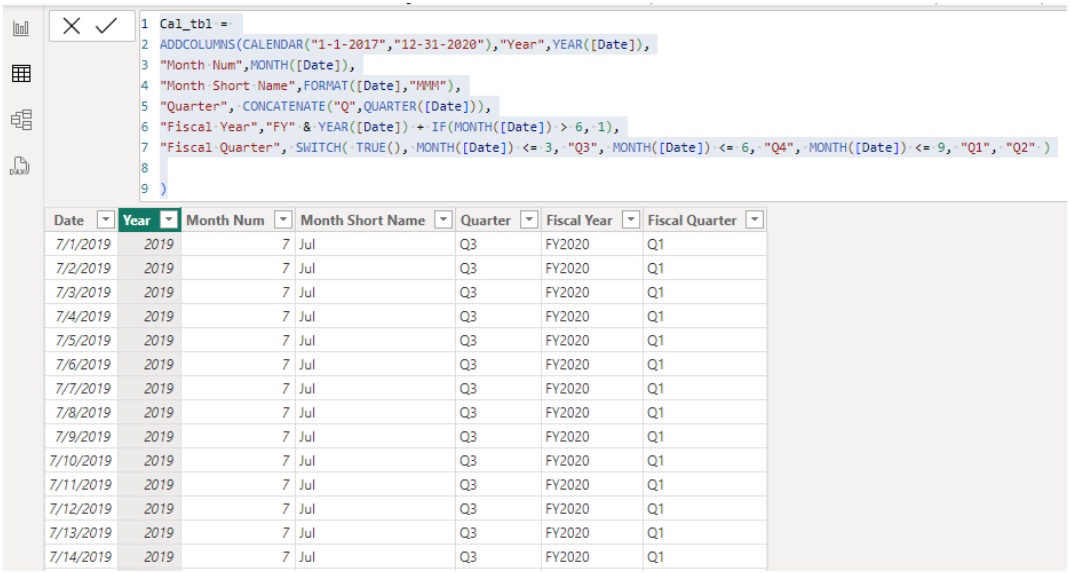
2) Create a generated calendar dimension table

- Navigate to the Table View and from the Home tab select new table.
- Create a calculated calendar dimension table with the following fields using DAX.

  Year
  Month Number
  Month Short Name
  Quarter
  Fiscal Year
  Fiscal Quarter

- Format the Date column to date only.
- You will need to use the sort-by-column option to sort the month in proper order.
- Select the **Month Short Name** column in the table view and from the column tools select the sort by **Month Num** option. This will allow for the Month name to be sorted in the correct Month order and not alphabetically when placed in a visual.



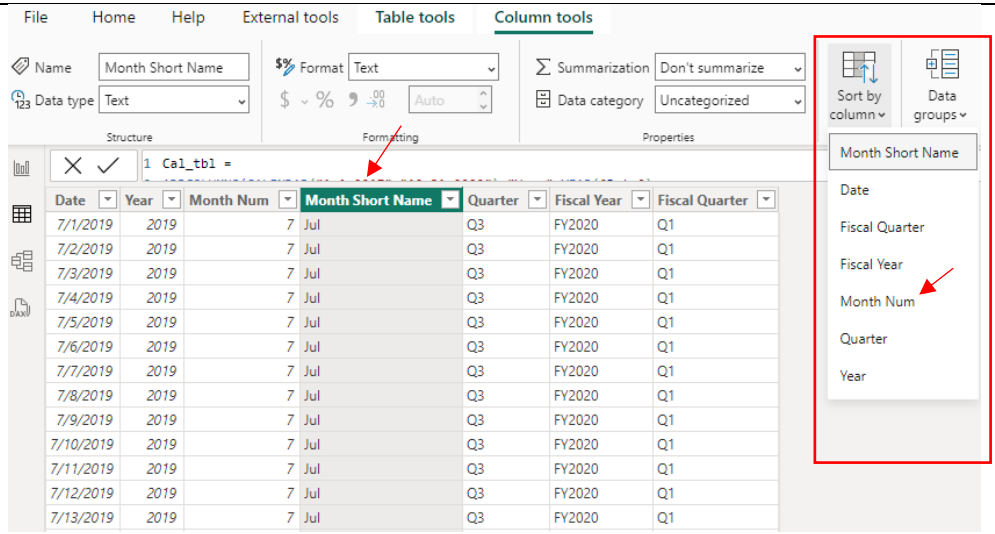


```
Cal_tbl =
ADDCOLUMNS(CALENDAR("1-1-2017","12-31-2020"),"Year",YEAR([Date]),
"Month Num",MONTH([Date]),
"Month Short Name",FORMAT([Date],"MMM"),
"Quarter", CONCATENATE("Q",QUARTER([Date])),
"Fiscal Year","FY" & YEAR([Date]) + IF(MONTH([Date]) > 6, 1),
"Fiscal Quarter", SWITCH( TRUE(), MONTH([Date]) <= 3, "Q3", MONTH([Date]) <= 6, "Q4",
MONTH([Date]) <= 9, "Q1", "Q2" )


)
```

Date	Year	Month Num	Month Short Name	Quarter	Fiscal Year	Fiscal Quarter
7/1/2019	2019	7	Jul	Q3	FY2020	Q1
7/2/2019	2019	7	Jul	Q3	FY2020	Q1
7/3/2019	2019	7	Jul	Q3	FY2020	Q1
7/4/2019	2019	7	Jul	Q3	FY2020	Q1
7/5/2019	2019	7	Jul	Q3	FY2020	Q1
7/6/2019	2019	7	Jul	Q3	FY2020	Q1
7/7/2019	2019	7	Jul	Q3	FY2020	Q1
7/8/2019	2019	7	Jul	Q3	FY2020	Q1
7/9/2019	2019	7	Jul	Q3	FY2020	Q1
7/10/2019	2019	7	Jul	Q3	FY2020	Q1
7/11/2019	2019	7	Jul	Q3	FY2020	Q1
7/12/2019	2019	7	Jul	Q3	FY2020	Q1
7/13/2019	2019	7	Jul	Q3	FY2020	Q1
7/14/2019	2019	7	Jul	Q3	FY2020	Q1

Formula

```
Cal_tbl =
ADDCOLUMNS(CALENDAR("1-1-2017","12-31-2020"),"Year",YEAR([Date]),
"Month Num",MONTH([Date]),
"Month Short Name",FORMAT([Date],"MMM"),
"Quarter", CONCATENATE("Q",QUARTER([Date])),
"Fiscal Year","FY" & YEAR([Date]) + IF(MONTH([Date]) > 6, 1),
"Fiscal Quarter", SWITCH( TRUE(), MONTH([Date]) <= 3, "Q3", MONTH([Date]) <= 6, "Q4",
MONTH([Date]) <= 9, "Q1", "Q2" )


)
```


File
Home
Help
External tools
Table tools
Column tools
Name
Month Short Name
Data type
Text
Structure
Format
Text
Auto
Formatting
Summarization
Don't summarize
Data category
Uncategorized
Properties
Sort by column
Data groups
1 Cal_tbl =
Date
Year
Month Num
Month Short Name
Quarter
Fiscal Year
Fiscal Quarter
7/1/2019 2019 7 Jul Q3 FY2020 Q1
7/2/2019 2019 7 Jul Q3 FY2020 Q1
7/3/2019 2019 7 Jul Q3 FY2020 Q1
7/4/2019 2019 7 Jul Q3 FY2020 Q1
7/5/2019 2019 7 Jul Q3 FY2020 Q1
7/6/2019 2019 7 Jul Q3 FY2020 Q1
7/7/2019 2019 7 Jul Q3 FY2020 Q1
7/8/2019 2019 7 Jul Q3 FY2020 Q1
7/9/2019 2019 7 Jul Q3 FY2020 Q1
7/10/2019 2019 7 Jul Q3 FY2020 Q1
7/11/2019 2019 7 Jul Q3 FY2020 Q1
7/12/2019 2019 7 Jul Q3 FY2020 Q1
7/13/2019 2019 7 Jul Q3 FY2020 Q1
Month Short Name
Date
Fiscal Quarter
Fiscal Year
Month Num
Quarter
Year

- Connect the Cal_tbl to the data model note that the connection between the ShipDate and the Cal_tbl will be inactive as indicated by the dashed line.

From	
Cal_tbl	
PK	Date

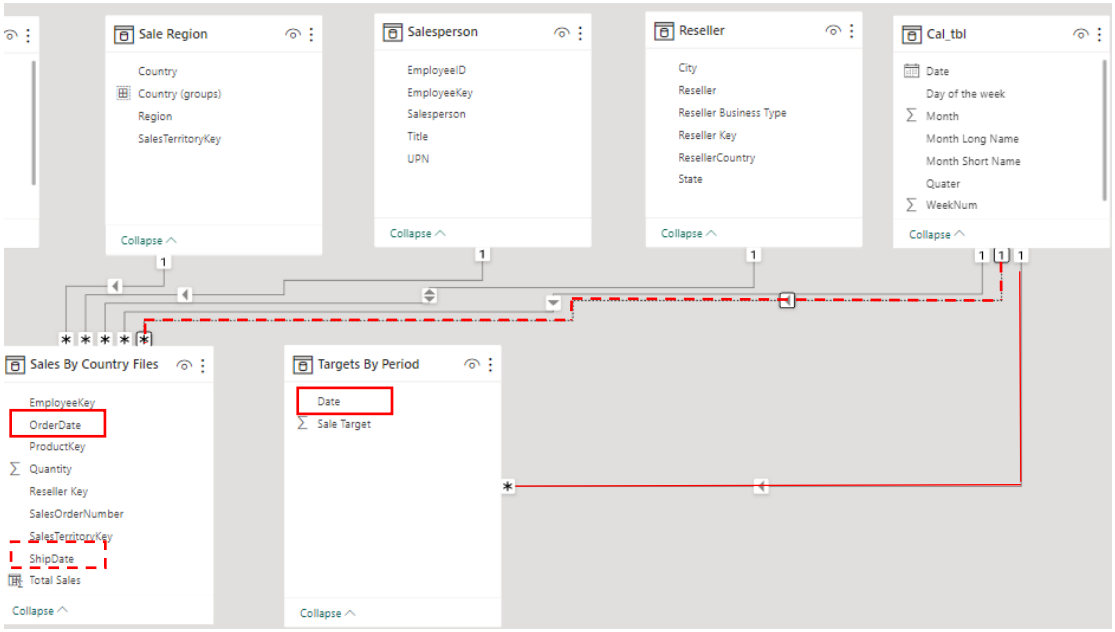
To	
Target By Period	
FK	Date

From	
Cal_tbl	
PK	Date

To	
Sales By Country Files	
FK	Order Date

From	
Cal_tbl	
PK	Date (Inactive)

To	
Sales By Country Files	
FK	Ship Date (Inactive)



3) Create iterator measures

- Create the following iterator measures and place them into a table visual with the year from the calendar table.

Formula	Format
`Average Sales = AVERAGEX('Sales By Country Files','Sales By Country Files'[Quantity]*RELATED('Product'[Unit Price]))`	Currency
`Total Sales = SUMX('Sales By Country Files','Sales By Country Files'[Quantity]*RELATED('Product'[Unit Price]))`	Currency

Year	Total Sales	AVGX Sales
2017	$8,080,177	$1,950.79
2018	$25,020,677	$1,489.50
2019	$32,507,704	$1,206.27
2020	$12,352,455	$1,193.01
Total	**$77,961,013**	**$1,338.55**

4) Create supporting measures

Create the following measures

- Sales Target
- Variance of Sales to Target
- Target Variance %
- Quantity

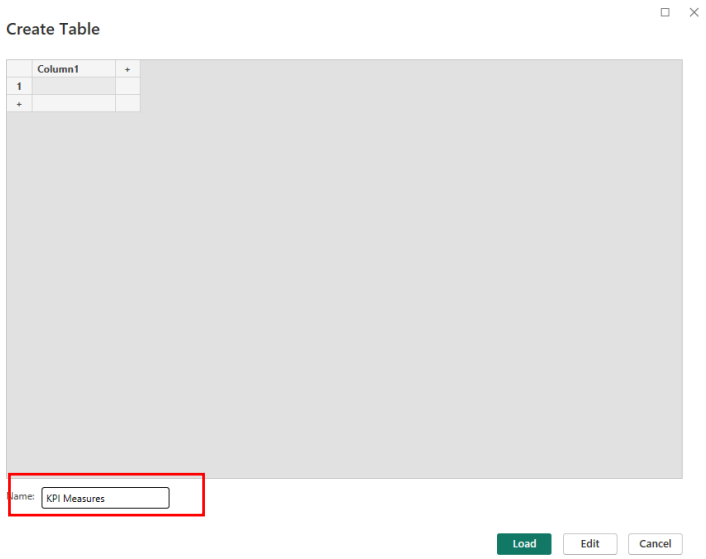
Add all four measures to the table visual including the Year from the calendar table

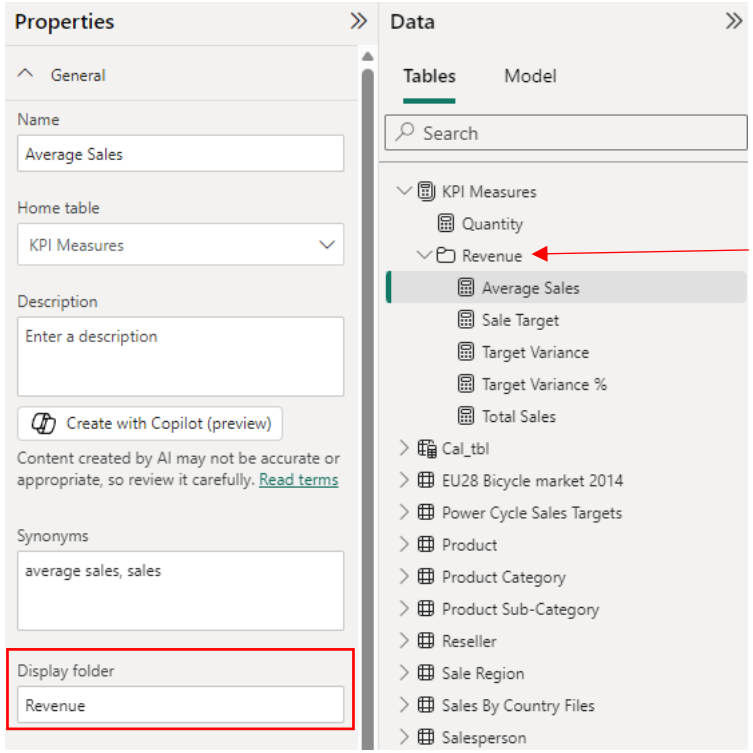
Formula	Format
`Sale Target = SUM('Power Cycle Sales Targets'[Target])`	Currency
`Target Variance = [Total Sales]-[Sale Target]`	Currency
`Target Variance % = DIVIDE([Variance],[Sale Target])`	Percent
`Quantity = SUM('Sales By Country Files'[Quantity])`	Whole Number

Year	Total Sales	Average Sales	Quantity	Sale Target	Target Variance	Target Variance %
2017	$8,080,177	$1,950.79	10,842	$8,012,797.4	67,380	0.84%
2018	$25,020,677	$1,489.50	58,721	$24,784,911.84	235,765	0.95%
2019	$32,507,704	$1,206.27	101,049	$33,413,592.36	-905,888	-2.71%
2020	$12,352,455	$1,193.01	35,246	$13,709,283.04	-1,356,828	-9.90%
Total	**$77,961,013**	**$1,338.55**	**205,858**	**$79,920,584.64**	**-1,959,572**	**-2.45%**

5) Create a measures table and organize measures into a folder structure

- From the home tab navigate to the Enter data option. At the bottom of the screen label the table **KPI Measures**
- By selecting the measures, you can now go to the Measures tools tab and change the home table location to the new KPI Measures table.
- You can also navigate to the model view where you can drag and drop the measures.



▪ Once you have measures in the table you can delete column1 ▪ From the properties tab you can create sub-folders to place your measures ▪ In the Display folder choose a folder name to organize your measures and make them easy to find. ▪ ****Note that you will only be able to move measures into the subfolders from the model view**	
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