

Introduction

In this lesson, you've explored the significance of a common-date table in a data model. You've also reviewed the process for creating a common-date table in your models using both DAX and M language in Power BI.

In this exercise, you must apply your knowledge of DAX and Power Query to generate a date dimension table within a data model.

- You'll walk through the steps to create a date dimension table using DAX in Power BI.
- The goal is understanding how Power BI allows you to control your data model according to your analytical needs.

Case study

Adventure Works collects data from a range of different sources and collates this data in a data model that contains the following tables:

- **Sales**
- **Salesperson**
- **Products**
- **Reseller**
- And **Region**

However, there's no date dimension table in these datasets. This makes it difficult to perform time intelligence analysis. Help Adventure Works to create a common-date table in its data model using DAX.

Step 1: Download and launch the Power BI project file **AdventureWorks.pbix**.

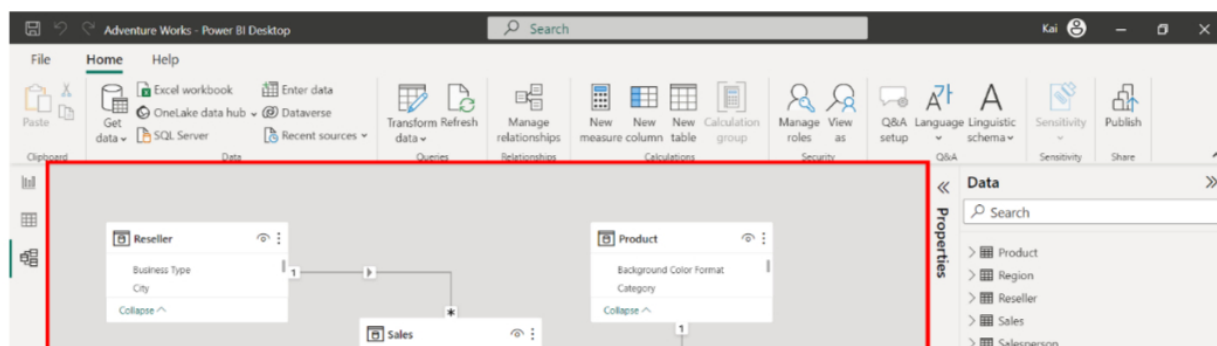
- Adventure Works provides a Power BI project file called **AdventureWorks.pbix**, that contains the required data model. You must download this dataset and load it into Power BI.

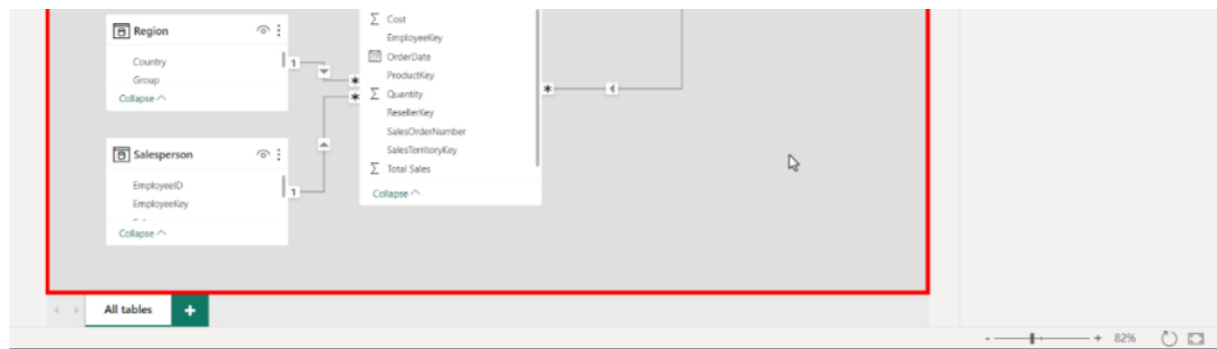


Adventure Works
PBIX File

Step 2: Observe the data model and create a date dimension table using DAX.

1. Access the **Model** tab in Power BI to view the data model's tables. Note that there is no date dimension table present.

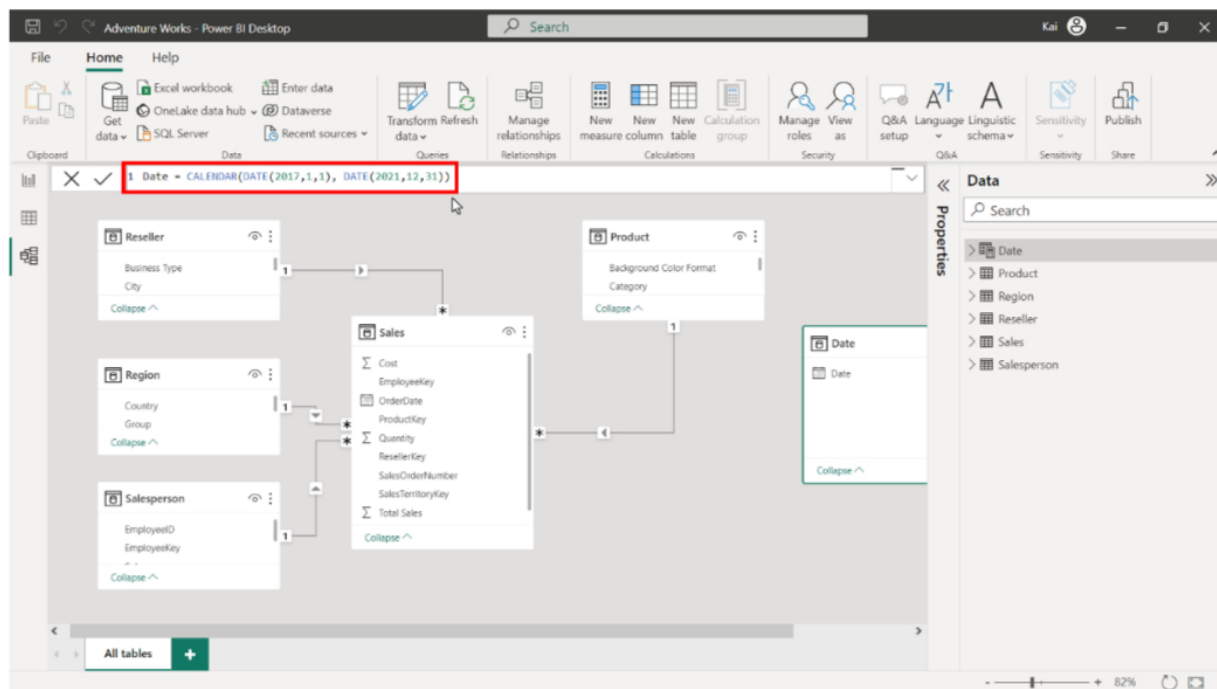




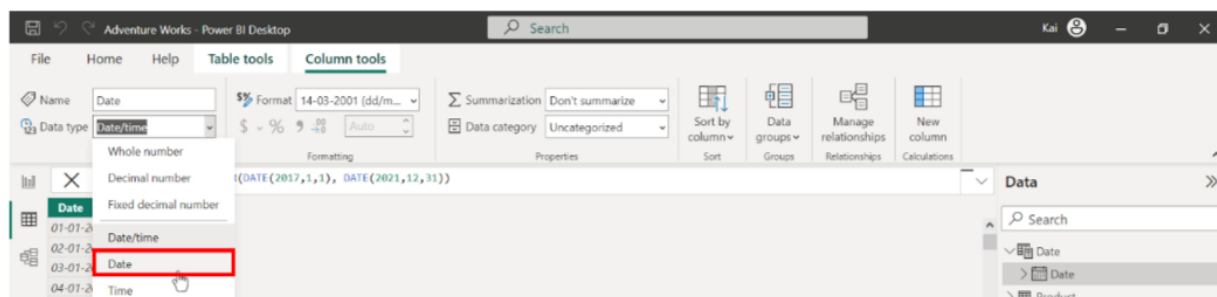
2. Navigate to the **Home** tab and select **Newtable** from the calculations group. In the formula bar, input the following DAX code using the **CALENDAR** function to create a table with a single column containing dates.

```
1 Date = CALENDAR ( DATE( 2017, 1, 1 ), DATE ( 2021, 12, 31 ) )
```

In the **CALENDAR** function, you need to specify the start and end dates. The Adventure Works sales data starts in 2017 and ends in 2020. The start date must occur on or before the date column of the dataset. The end date must be on or after the end date of the dataset. Execute the code to generate a table with a single date column containing a list of dates with time.



3. Now you must format and configure the table. Rename the column as **Date** and format the column as **Date** data type. Select the **Date** column and navigate to the **Column tool** tab.



05-01-2017
06-01-2017
07-01-2017
08-01-2017
09-01-2017
10-01-2017
11-01-2017
12-01-2017
13-01-2017
14-01-2017
15-01-2017
16-01-2017
17-01-2017
18-01-2017
19-01-2017
20-01-2017
21-01-2017
22-01-2017
23-01-2017

Table: Date (1,826 rows) Columns: Date (1,826 distinct values)

Select the appropriate date format from the format drop-down list of options.

The screenshot shows the Power BI Desktop interface. The 'Column tools' tab is active, and the 'Format' dropdown menu is open. The dropdown lists various date and time formats. The format '14-03-2001 (dd/mm/yyyy)' is highlighted with a red box. The background shows a table with dates from 2017-01-01 to 2017-01-23.

- Next, you must populate the date dimension table with related columns like **year**, **month number**, **month**, **day of the week**, and **week number**. Select **New column** from the **Calculations** group of the **Column tools** tab to expand the DAX formula bar. Then enter the following DAX codes, one in each step.

```

1 Year = YEAR ( 'Date'[Date] )
2 Month = FORMAT ( 'Date'[Date], "MMMM" )
3 Month Number = MONTH ( 'Date'[Date] )
4 Day of the Week = FORMAT ( WEEKDAY( 'Date'[Date] ), "dddd" )
5 Week Number = WEEKNUM ( 'Date'[Date] )

```

- The date-related functions in the above DAX formulas, like **YEAR**, **MONTH**, **WEEKNUM**, **WEEKDAY** extract the relevant information from the date column of the table.

The screenshot shows the Power BI Desktop interface. The 'Column tools' tab is active, and the 'New column' button is highlighted. The DAX formula bar contains the formula: `Date = CALENDAR(DATE(2017,1,1), DATE(2021,12,31))`. The background shows a table with dates from 2017-01-01 to 2017-01-03.

04-01-2017
05-01-2017
06-01-2017
07-01-2017
08-01-2017
09-01-2017
10-01-2017
11-01-2017
12-01-2017
13-01-2017
14-01-2017
15-01-2017
16-01-2017
17-01-2017
18-01-2017
19-01-2017
20-01-2017
21-01-2017
22-01-2017
23-01-2017

Table: Date (1,826 rows) Column: Date (1,826 distinct values)

Copy and paste the following code into the formula bar to add the **YEAR** data.

```
1 Year = YEAR ( 'Date'[Date] )
```

Adventure Works - Power BI Desktop

File Home Help Table tools Column tools

Name: Year Format: Whole number Summarization: Sum Data type: Whole number Data category: Uncategorized

1 Year = YEAR('Date'[Date])

Date	Year
01-01-2017	2017
02-01-2017	2017
03-01-2017	2017
04-01-2017	2017
05-01-2017	2017
06-01-2017	2017
07-01-2017	2017
08-01-2017	2017
09-01-2017	2017
10-01-2017	2017
11-01-2017	2017
12-01-2017	2017
13-01-2017	2017
14-01-2017	2017
15-01-2017	2017
16-01-2017	2017
17-01-2017	2017
18-01-2017	2017
19-01-2017	2017
20-01-2017	2017
21-01-2017	2017
22-01-2017	2017
23-01-2017	2017

Table: Date (1,826 rows) Column: Year (5 distinct values)

Copy and paste the following code into the formula bar to add the **MONTH** data.

```
1 Month = FORMAT ( 'Date'[Date], "MMMM" )
```

Adventure Works - Power BI Desktop

File Home Help Table tools Column tools

Name: Month Format: Text Summarization: Don't summarize Data type: Text Data category: Uncategorized

1 Month = FORMAT('Date'[Date], "MMMM")

Date	Year	Month
01-01-2017	2017	January
02-01-2017	2017	January
03-01-2017	2017	January

04-01-2017	2017	January
05-01-2017	2017	January
06-01-2017	2017	January
07-01-2017	2017	January
08-01-2017	2017	January
09-01-2017	2017	January
10-01-2017	2017	January
11-01-2017	2017	January
12-01-2017	2017	January
13-01-2017	2017	January
14-01-2017	2017	January
15-01-2017	2017	January
16-01-2017	2017	January
17-01-2017	2017	January
18-01-2017	2017	January
19-01-2017	2017	January
20-01-2017	2017	January
21-01-2017	2017	January
22-01-2017	2017	January
23-01-2017	2017	January

Table: Date (1,826 rows) Column: Month (12 distinct values)

Copy and paste the following code into the formula bar to add the **DAY OF THE WEEK** data.

```
1 Day of the Week = FORMAT ( WEEKDAY( 'Date'[Date] ), "dddd" )
```

The screenshot shows the Power BI Desktop interface. The 'Table tools' ribbon is active, and the 'Column tools' tab is selected. The 'Data' pane on the right shows the 'Date' table with columns: Date, Year, Month, Month Number, Day of the Week, and Week Number. The 'Week Number' column is highlighted in the table. The formula bar shows the DAX formula: `Week Number = WEEKNUM('Date'[Date])`. The table data shows dates from 01-01-2017 to 23-01-2017, with corresponding days of the week and week numbers.

Date	Year	Month	Month Number	Day of the Week	Week Number
01-01-2017	2017	January	1	Sunday	1
02-01-2017	2017	January	1	Monday	1
03-01-2017	2017	January	1	Tuesday	1
04-01-2017	2017	January	1	Wednesday	1
05-01-2017	2017	January	1	Thursday	1
06-01-2017	2017	January	1	Friday	1
07-01-2017	2017	January	1	Saturday	1
08-01-2017	2017	January	1	Sunday	2
09-01-2017	2017	January	1	Monday	2
10-01-2017	2017	January	1	Tuesday	2
11-01-2017	2017	January	1	Wednesday	2
12-01-2017	2017	January	1	Thursday	2
13-01-2017	2017	January	1	Friday	2
14-01-2017	2017	January	1	Saturday	2
15-01-2017	2017	January	1	Sunday	3
16-01-2017	2017	January	1	Monday	3
17-01-2017	2017	January	1	Tuesday	3
18-01-2017	2017	January	1	Wednesday	3
19-01-2017	2017	January	1	Thursday	3
20-01-2017	2017	January	1	Friday	3
21-01-2017	2017	January	1	Saturday	3
22-01-2017	2017	January	1	Sunday	4
23-01-2017	2017	January	1	Monday	4

Table: Date (1,826 rows) Column: Week Number (53 distinct values)

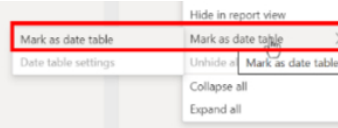
- Next, mark the newly created **date** dimension table as a date table. Select the ellipses on the right side of the date table and select **Mark as date table** from the drop-down list of options. This opens a dialog box that states **Mark as date table**.

The screenshot shows the Power BI Desktop interface with the 'Date' table selected. The context menu is open, showing options like 'New measure', 'New column', 'New quick measure', 'Manage relationships', 'Copy table', 'Rename', and 'Delete from model'. The 'Mark as date table' option is highlighted.

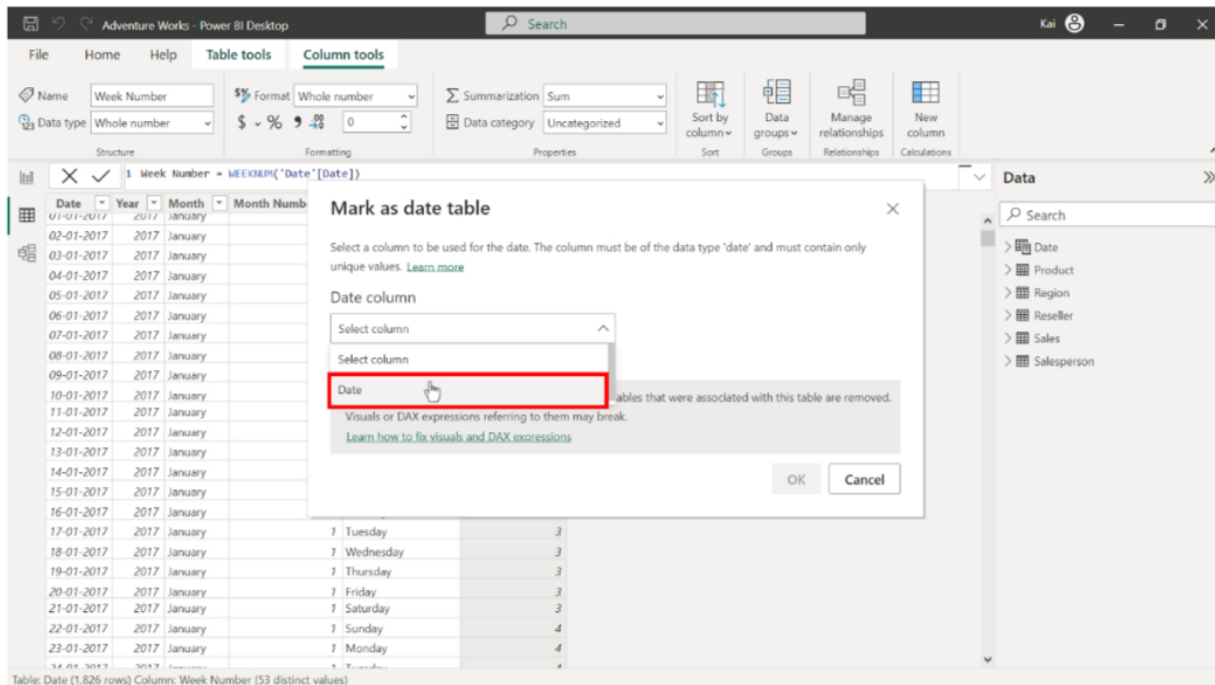
Date	Year	Month	Month Number	Day of the Week	Week Number
01-01-2017	2017	January	1	Sunday	1
02-01-2017	2017	January	1	Monday	1
03-01-2017	2017	January	1	Tuesday	1
04-01-2017	2017	January	1	Wednesday	1
05-01-2017	2017	January	1	Thursday	1
06-01-2017	2017	January	1	Friday	1
07-01-2017	2017	January	1	Saturday	1
08-01-2017	2017	January	1	Sunday	2
09-01-2017	2017	January	1	Monday	2
10-01-2017	2017	January	1	Tuesday	2

11-01-2017	2017	January	1	Wednesday	2
12-01-2017	2017	January	1	Thursday	2
13-01-2017	2017	January	1	Friday	2
14-01-2017	2017	January	1	Saturday	2
15-01-2017	2017	January	1	Sunday	3
16-01-2017	2017	January	1	Monday	3
17-01-2017	2017	January	1	Tuesday	3
18-01-2017	2017	January	1	Wednesday	3
19-01-2017	2017	January	1	Thursday	3
20-01-2017	2017	January	1	Friday	3
21-01-2017	2017	January	1	Saturday	3
22-01-2017	2017	January	1	Sunday	4
23-01-2017	2017	January	1	Monday	4

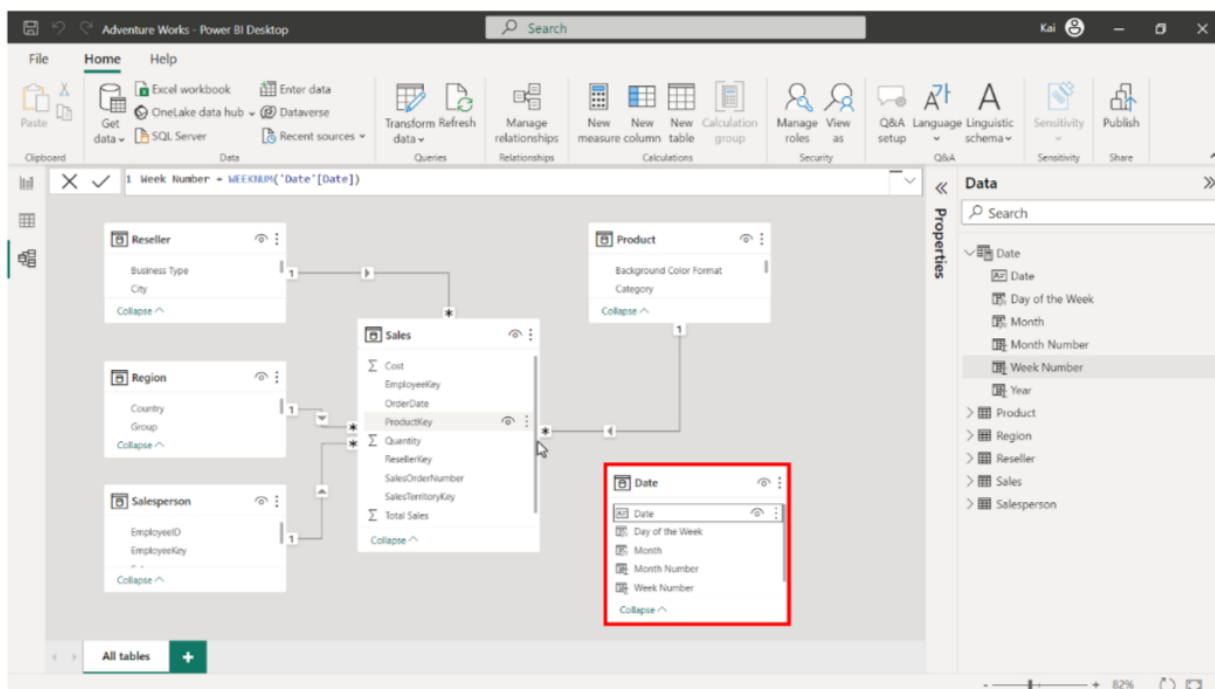
Table: Date (1,826 rows) Column: Week Number (53 distinct values)



Select the **Date** option from the **Date** column drop-down menu. Once you select the date column, it displays a message **Validate successfully**. Select **OK**.



- Next, you must establish a relationship between the **Date** and the **Fact** table in the data model. A **Date** dimension table is ready for analysis and reporting in your data model.



Step 4: Save the project.

Save the Power BI project with the new date table as a new project. Ensure to provide an appropriate name and path to the folder at your local computer.