Complete Power BI Setup Guide for DAX Practice Dataset

Phase 1: Import Data into Power BI

Step 1: Open Power BI Desktop

- Launch **Power BI Desktop** (download from Microsoft if needed)
- Click **Get Data** on the Home ribbon

Step 2: Import CSV Files

1. Select **Text/CSV** from the data source options
2. Navigate to your dataset folder
3. Import each file one by one:
    - FactSales.csv
    - DimDate.csv
    - DimProduct.csv
    - DimCustomer.csv
    - DimEmployee.csv
    - DimGeography.csv
4. Click **Load** for each file (or **Transform Data** if you need to clean anything)

Phase 2: Build the Data Model (Star Schema)

Step 3: Access Model View

- Click the **Model View** icon (three connected tables) on the left sidebar
- You'll see all your tables displayed

Step 4: Create Relationships

Create the following relationships by **dragging** the key field from the fact table to the corresponding dimension table:

From (Fact Table)	To (Dimension Table)	Cardinality	Acti
FactSales[OrderDateKey]	DimDate[DateKey]	Many-to-One (*:1)	Ac

From (Fact Table)	To (Dimension Table)	Cardinality	Acti
FactSales[ShipDateKey]	DimDate[DateKey]	Many-to-One (*:1)	⚠ Inac
FactSales[ProductKey]	DimProduct[ProductKey]	Many-to-One (*:1)	Ac
FactSales[CustomerKey]	DimCustomer[CustomerKey]	Many-to-One (*:1)	Ac
FactSales[EmployeeKey]	DimEmployee[EmployeeKey]	Many-to-One (*:1)	Ac
FactSales[GeographyKey]	DimGeography[GeographyKey]	Many-to-One (*:1)	Ac

Note: ShipDateKey should be **inactive** by default (you'll use `USERELATIONSHIP` in DAX to activate it when needed)

Step 5: Set Cross-Filter Direction

- Double-click each relationship
- Set **Cross filter direction** to **Single** (Dimension → Fact)
- For most relationships, ensure **"Make this relationship active"** is checked (except ShipDateKey)

Phase 3: Configure Date Table

Step 6: Mark DimDate as Date Table

1. Click on **DimDate** table in Model View
2. Go to **Table Tools** ribbon
3. Click **Mark as date table**
4. Select **Date** column as the date column
5. Click **OK**

This enables time intelligence functions to work properly.

Phase 4: Create DAX Measures

Step 7: Create a Measures Table (Best Practice)

1. Go to **Home → Enter Data**
2. Leave it empty, name it **“_Measures”**
3. Click **Load**
4. This table will store all your DAX measures

Step 8: Create Basic Measures

Right-click **_Measures** table → **New Measure**, then create:

```
Total Sales = SUM(FactSales[SalesAmount])

Total Profit = SUM(FactSales[Profit])

Total Quantity = SUM(FactSales[Quantity])

Total Cost = SUM(FactSales[TotalCost])

Profit Margin % = DIVIDE([Total Profit], [Total Sales], 0)

Average Order Value = DIVIDE([Total Sales],
DISTINCTCOUNT(FactSales[SalesKey]))
```

Step 9: Create Time Intelligence Measures

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

Previous Year Sales = CALCULATE([Total Sales],
SAMEPERIODLASTYEAR(DimDate[Date]))

YoY Growth % =
DIVIDE(
    [Total Sales] - [Previous Year Sales],
    [Previous Year Sales],
    0
)

MTD Sales = TOTALMTD([Total Sales], DimDate[Date])

Rolling 3 Months Sales =
CALCULATE(
    [Total Sales],
    DATESINPERIOD(DimDate[Date], LASTDATE(DimDate[Date]), -3,
MONTH)
)
```

Step 10: Create Channel-Specific Measures

```
Online Sales = CALCULATE([Total Sales], FactSales[Channel] =
"Online")

Retail Sales = CALCULATE([Total Sales], FactSales[Channel] =
"Retail")

Distributor Sales = CALCULATE([Total Sales], FactSales[Channel] =
"Distributor")
```

Step 11: Create Shipping Analysis Measures

```
Sales by Ship Date =
CALCULATE(
    [Total Sales],
    USERELATIONSHIP(FactSales[ShipDateKey], DimDate[DateKey])
)
```

Step 12: Create Ranking Measures

```
Product Sales Rank =
RANKX(
    ALL(DimProduct[ProductName]),
    [Total Sales],
    ,
    DESC,
    DENSE
)

Customer Sales Rank =
RANKX(
    ALL(DimCustomer[CustomerName]),
    [Total Sales],
    ,
    DESC
)
```

Phase 5: Build Visualizations

Step 13: Create Sales Overview Dashboard

Page 1: Executive Summary

1. **Card Visuals** (Top Row):
   - Total Sales
   - Total Profit
   - Profit Margin %
   - YoY Growth %
2. **Line Chart**:
   - X-axis: DimDate[Date] (set to Month hierarchy)
   - Y-axis: Total Sales, Total Profit
   - Legend: (none)
3. **Clustered Column Chart**:
   - X-axis: DimDate[Year]
   - Y-axis: Total Sales
   - Legend: FactSales[Channel]
4. **Donut Chart**:
   - Legend: FactSales[Channel]
   - Values: Total Sales
5. **Map Visual**:
   - Location: DimGeography[Country]
   - Size: Total Sales
   - Color: Profit Margin %

Step 14: Create Product Analysis Dashboard

Page 2: Product Performance

1. **Table Visual**:
   - Columns: DimProduct[ProductName], Total Sales, Total Profit, Profit Margin %, Product Sales Rank
   - Add filter: Product Sales Rank ≤ 10
2. **Matrix Visual**:
   - Rows: DimProduct[Category], DimProduct[SubCategory]
   - Values: Total Sales, Total Quantity
   - Show as hierarchy
3. **Stacked Bar Chart**:
   - Y-axis: DimProduct[Category]
   - X-axis: Total Sales
   - Legend: DimDate[Year]

Step 15: Create Customer Insights Dashboard

Page 3: Customer Analysis

1. **Clustered Bar Chart**:
   - Y-axis: DimCustomer[LoyaltyTier]
   - X-axis: Total Sales

    - Sort by Total Sales descending
2. **Scatter Chart**:
    - X-axis: Total Sales (by Customer)
    - Y-axis: Total Profit (by Customer)
    - Details: DimCustomer[CustomerName]
3. **Table**:
    - Top 20 customers by sales

Step 16: Create Time Intelligence Dashboard

Page 4: Time Analysis

1. **Card Visuals**:
    - YTD Sales
    - MTD Sales
    - Previous Year Sales
2. **Line and Clustered Column Chart**:
    - X-axis: DimDate[MonthName]
    - Column values: Total Sales
    - Line values: Previous Year Sales
3. **Matrix**:
    - Rows: DimDate[Year], DimDate[Quarter]
    - Values: Total Sales, YoY Growth %

Phase 6: Format and Enhance

Step 17: Apply Formatting

1. Use consistent color scheme across all pages
2. Format currency fields: Select measure → Modeling tab → Format: Currency ($)
3. Format percentages: Format: Percentage (%)
4. Add titles to all visuals
5. Enable data labels where appropriate

Step 18: Add Slicers

Add these slicers to relevant pages: - DimDate[Year] - DimDate[Quarter] - DimProduct[Category] - FactSales[Channel] - DimGeography[Country] - DimCustomer[LoyaltyTier]

Step 19: Configure Interactions

- Go to **Format** ribbon → **Edit Interactions**
- Configure how slicers and visuals interact
- Disable interactions where needed (e.g., comparison charts)

Phase 7: Validate and Test

Step 20: Test Your DAX Measures

1. Create a test table with all measures
2. Apply different filters to verify calculations
3. Check time intelligence measures across different date ranges
4. Verify relationships are working correctly

Step 21: Performance Optimization

1. Remove unused columns from tables
2. Use calculated columns sparingly (prefer measures)
3. Avoid bi-directional relationships unless necessary
4. Check model size: File → Options → Data Load

Phase 8: Save and Publish

Step 22: Save Your Work

- Save as: **DAX_Practice_Project.pbix**
- Enable auto-save if using OneDrive

Step 23: Publish to Power BI Service (Optional)

1. Click **Publish** on Home ribbon
2. Select workspace
3. View in Power BI Service
4. Set up scheduled refresh if needed

Bonus: Advanced DAX Practice

Try creating these advanced measures:

```
Top 10 Products Sales =
CALCULATE(
    [Total Sales],
    TOPN(10, ALL(DimProduct[ProductName]), [Total Sales], DESC)
)

% of Total Sales =
DIVIDE(
    [Total Sales],
    CALCULATE([Total Sales], ALL(FactSales))
)
```

```
Moving Average 3 Months =
AVERAGEX(
    DATESINPERIOD(DimDate[Date], LASTDATE(DimDate[Date]), -3,
MONTH),
    [Total Sales]
)
```
