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POWER BI TABLE & MATRIX – COMPLETE TEACHING NOTES
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Trainer: Use this file while teaching. All 9 topics with step-by-step
         instructions and explanations suitable for students.

Dataset: PowerBI_Dataset.txt (100 rows | 7 columns | Tab-separated)
         Ready to load into Power BI

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SECTION 0 – DATASET OVERVIEW
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Dataset Name: PowerBI_Dataset.txt
Columns: 7
Rows: 100 (plus 1 header row)

Column Details:
  1. OrderID         – Order number (1001–1100)
  2. OrderDate       – Order date (Jan–Mar 2025)
  3. Region          – Geographic region (North, South, East, West)
  4. City            – City name (Delhi, Mumbai, Bangalore, Chennai, etc.)
  5. Category        – Product category (Electronics, Clothing, Grocery,
Stationery)
  6. Quantity        – Number of units (1–9)
  7. SalesAmount     – Sale value in ₹ (200–28,500)

This one dataset covers all 9 topics. Use it for the entire training session.

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TOPIC 1 – CREATE SIMPLE TABLE
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Learning Goal:
  • Understand how to load data into Power BI
  • Create a Table visual
  • Display raw row-level data

Step-by-Step Instructions:

1) LOAD DATA INTO POWER BI
   • Open Power BI Desktop
   • Home tab → Get Data → Text/CSV
   • Browse to: PowerBI_Dataset.txt (or .xlsx)
   • Click Load
   • Wait for data to load into the model

2) GO TO REPORT VIEW
   • Click the Report icon (left sidebar)
   • You are now on a blank report page

3) INSERT TABLE VISUAL
   • Visualizations pane (right side) → Click "Table" icon
   • A blank table appears on the canvas

4) ADD FIELDS TO TABLE
   • Fields pane (right side, below Visualizations)
   • Drag these fields into the Values area of the visual:
       ✓ OrderID
       ✓ OrderDate
       ✓ City
       ✓ Category
       ✓ Quantity
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✓ SalesAmount

5) RESIZE & VIEW
- You should see all 100 rows displayed
- Scroll down to see more rows
- Columns auto-fit; you can manually resize columns

Key Teaching Points:
- ✓ Each row in the Table visual = one row in the Excel file
- ✓ We have 100 orders, so 100 rows in the table (plus header)
- ✓ Table visual shows "detailed" or "granular" data
- ✓ OrderID is unique per row—important for understanding 1 row = 1 order
- ✓ No aggregation yet—just showing raw data

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TOPIC 2 – FORMATTING TABLE
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Learning Goal:
- Make the table professional and easy to read
- Control colors, fonts, and visual appearance
- Understand that formatting doesn't change data, only appearance

Step-by-Step Instructions:

1) SELECT THE TABLE VISUAL
- Click anywhere on the Table to select it
- You should see selection handles around it

2) OPEN FORMAT PANE
- In the Visualizations pane, look for Format icon (paint roller/brush)
- Click it to open the Format pane

3) FORMAT COLUMN HEADERS
- Expand "Column headers" section
- Text size: increase to 12–14pt
- Font color: change to white
- Background color: set to dark blue or dark gray
- Bold: turn ON

4) FORMAT VALUES (DATA CELLS)
- Expand "Values" section
- Text size: increase to 10–11pt
- Alternating row colors: turn ON, set light gray
- Font color: keep dark

5) ADD TITLE
- Expand "General" section
- Title: turn ON
- Title text: "Sales Detail Table"
- Title font size: 16pt

Key Teaching Points:
- ✓ Formatting is cosmetic—it doesn't change any data
- ✓ Good formatting improves readability
- ✓ Consistent formatting across reports looks professional

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TOPIC 3 – CONDITIONAL FORMATTING IN TABLE
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Learning Goal:
- Use color to highlight important values automatically
- Understand color scale and rule-based formatting

Example A – COLOR SCALE ON SALESAMOUNT

1) SELECT TABLE VISUAL
   • Click on the table to select it

2) ACCESS CONDITIONAL FORMATTING
   • In Fields pane, find SalesAmount
   • Click dropdown (▼) next to SalesAmount
   • Select: Conditional formatting → Background color

3) CHOOSE COLOR SCALE
   • Format by: Color scale
   • Minimum value color: Light green
   • Maximum value color: Dark green
   • Click OK

4) OBSERVE RESULTS
   • Low SalesAmount cells → light green
   • High SalesAmount cells → dark green
   • Students can instantly see high-value orders

Example B – RULE-BASED FONT COLOR ON QUANTITY

1) SELECT TABLE VISUAL & QUANTITY FIELD
   • In Fields pane, find Quantity
   • Click dropdown (▼) next to Quantity
   • Select: Conditional formatting → Font color

2) CHOOSE RULE-BASED FORMAT
   • Format by: Rules
   • Add Rule 1: If Quantity < 3 → Font color Red
   • Add Rule 2: If Quantity >= 8 → Font color Blue
   • Click OK

3) OBSERVE RESULTS
   • Red = small quantities (< 3)
   • Blue = large quantities (≥ 8)

Key Teaching Points:
  ✓ Color scale = gradient (light to dark)
  ✓ Rules = specific thresholds
  ✓ Conditional formatting highlights patterns automatically

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TOPIC 4 – CHANGING AGGREGATION IN A TABLE
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Learning Goal:
  • Understand what aggregation means
  • Learn Sum, Average, Max, Min, Count

Step-by-Step Instructions:

1) CREATE A NEW TABLE VISUAL
   • Insert another Table visual

2) ADD CATEGORY (GROUPING FIELD)
   • From Fields pane, drag Category into the Table
   • You now see 4 rows: Electronics, Clothing, Grocery, Stationery

3) ADD QUANTITY (MEASURE FIELD)
   • From Fields pane, drag Quantity into Values area
   • Power BI automatically sums quantities

4) CHANGE AGGREGATION OPTIONS

SUM: In Values pane, click ▼ next to Quantity → Sum
• Example: Electronics 173, Clothing 118, Grocery 152, Stationery 107
• Question: "How many total units per category?"

AVERAGE: Click ▼ next to Quantity → Average
• Example: Electronics 5.9, Clothing 3.9, Grocery 5.1, Stationery 3.6
• Question: "What's the average quantity per order?"

MAXIMUM: Click ▼ next to Quantity → Maximum
• Example: Electronics 9, Clothing 7, Grocery 8, Stationery 8
• Question: "What's the largest single order?"

MINIMUM: Click ▼ next to Quantity → Minimum
• Example: Electronics 3, Clothing 2, Grocery 2, Stationery 1
• Question: "What's the smallest order?"

COUNT: Click ▼ next to Quantity → Count
• Example: Electronics 29, Clothing 30, Grocery 30, Stationery 29
• Question: "How many orders per category?"

Key Teaching Points:
✓ Same column, different aggregation = different answer
✓ Aggregation depends on your business question
✓ Sum = total; Average = typical; Max/Min = extremes; Count = frequency

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TOPIC 5 – CREATE MATRIX IN POWER BI

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Learning Goal:
• Understand Matrix visual (advanced table with rows and columns)
• Create a pivot-style view (like Excel PivotTable)

Step-by-Step Instructions:

1) INSERT MATRIX VISUAL
• In blank area, go to Visualizations
• Click Matrix icon
• A blank matrix appears

2) ADD REGION TO ROWS
• From Fields pane, drag Region to "Rows" area
• You see: North, South, East, West

3) ADD CITY TO ROWS (BELOW REGION)
• From Fields pane, drag City to "Rows" area
• Make sure it's below Region (creates hierarchy)
• Under North: Chandigarh, Delhi, Lucknow
• Under South: Bangalore, Chennai, Hyderabad
• Under East: Bhubaneswar, Guwahati, Kolkata
• Under West: Mumbai, Nagpur, Pune

4) ADD CATEGORY TO COLUMNS
• From Fields pane, drag Category to "Columns" area
• You see column headers: Clothing | Electronics | Grocery | Stationery

5) ADD SALESAMOUNT TO VALUES
• From Fields pane, drag SalesAmount to "Values" area
• Default aggregation = Sum
• Each cell shows total SalesAmount for Region/City/Category

Key Teaching Points:
  ✓ Matrix = Table with row hierarchy + column hierarchy + values
  ✓ Looks like Excel PivotTable
  ✓ Easy to compare categories across regions
  ✓ Subtotals appear automatically

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TOPIC 6 – CONDITIONAL FORMATTING IN MATRIX
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Learning Goal:
  • Apply conditional formatting to Matrix values
  • Use color scale to highlight performance

Step-by-Step Instructions:

1) SELECT MATRIX VISUAL
   • Click on the matrix to select it

2) OPEN CONDITIONAL FORMATTING
   • In Fields pane, find SalesAmount (under Values)
   • Click ▼ next to SalesAmount
   • Select: Conditional formatting → Background color

3) CHOOSE COLOR SCALE
   • Format by: Color scale
   • Minimum value: Light color (light yellow)
   • Maximum value: Dark color (dark green)
   • Click OK

4) OBSERVE RESULTS
   • Cells with low sales → light yellow
   • Cells with high sales → dark green
   • Patterns jump out immediately

Optional: Add Icons

1) ▼ next to SalesAmount → Conditional formatting → Icons
2) Format by: Rules
3) Rule 1: If SalesAmount >= 20000 → Up arrow (green)
4) Rule 2: If SalesAmount 5000–19999 → Right arrow (yellow)
5) Rule 3: If SalesAmount < 5000 → Down arrow (red)

Key Teaching Points:
  ✓ Color scale works great for comparing many cells
  ✓ Icons are good for status/performance reporting
  ✓ Useful for KPI dashboards

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TOPIC 7 – AUTOMATIC HIERARCHY IN MATRIX
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Learning Goal:
  • Understand hierarchies (parent-child relationships)
  • Use drill-down to zoom into detail
  • Use drill-up to return to summary

Step-by-Step Instructions:

1) REVIEW MATRIX STRUCTURE
   • Look at the Matrix from Topic 5
   • Rows show: Region (parent) → City (child)
   • Notice expand (+) or collapse (−) icons next to Region names

2) EXPAND A SINGLE REGION
   • Click (+) next to "North"
   • Cities under North expand
   • The matrix now shows detail for North

3) COLLAPSE A REGION
   • Click (−) next to "North"
   • Cities collapse back

4) EXPAND ALL REGIONS
   • Top-left corner of matrix → "Expand all down one level"
   • Now all regions show all their cities

5) COLLAPSE ALL REGIONS
   • Click "Collapse all" or "Drill up" button
   • Back to just Region level

Key Teaching Points:
  ✓ Hierarchy = multiple fields in same area
  ✓ Parent (Region) contains Child (City)
  ✓ Drill-down = show detail; Drill-up = show summary
  ✓ One matrix handles both levels (no new visuals needed)

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TOPIC 8 – SUBTOTAL & GRAND TOTAL IN MATRIX
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Learning Goal:
  • Control what subtotals appear (group totals)
  • Control grand total (overall total)

Step-by-Step Instructions:

1) SELECT MATRIX VISUAL
   • Click on the matrix to select it

2) OPEN FORMAT PANE
   • Visualizations → Format (paint roller icon)

3) FIND SUBTOTALS SECTION
   • Scroll down in Format pane to find "Subtotals"
   • Options: Per row level, Per column level

4) TURN ON ROW SUBTOTALS
   • Per row level: turn ON
   • You see subtotal rows:
     North
      Chandigarh …
      Delhi …
      Lucknow …
     North Total (subtotal for all North cities)

5) TURN ON COLUMN SUBTOTALS
   • Per column level: turn ON
   • You see subtotal columns: Clothing Total | Electronics Total | etc.

6) OBSERVE GRAND TOTAL
   • Bottom-right corner shows "Grand Total"
   • This is the sum of all SalesAmount across all regions and categories

7) TURN OFF UNWANTED SUBTOTALS
   • If cluttered, turn them OFF
   • Expand options to disable specific levels

Key Teaching Points:
  ✓ Subtotals = intermediate totals (Region total, Category total)
  ✓ Grand total = overall total
  ✓ Subtotals help understand contribution at each level

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TOPIC 9 – NUMBER FORMATTING IN TABLE & MATRIX
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Learning Goal:
  • Format SalesAmount as Indian currency (₹)
  • Format Quantity as whole number (no decimals)

Step-by-Step Instructions:

PART A – FORMAT SALESAMOUNT AS CURRENCY

1) GO TO DATA VIEW
   • Left sidebar → Data icon (table-like icon)

2) SELECT SALESAMOUNT COLUMN
   • Click on the SalesAmount column header
   • The entire column highlights

3) OPEN COLUMN TOOLS
   • Modeling tab → Data type
   • Or look for Column tools in the ribbon

4) SET DATA TYPE
   • Data type: Decimal Number
   • Format: Currency

5) SELECT LOCALE
   • Locale: English (India)
   • Sets currency to ₹ and Indian number format
   • Example: 25,000.00 becomes ₹25,000.00

6) APPLY & RETURN TO REPORT
   • Click OK or press Enter
   • Click Report icon to go back
   • All visuals now show SalesAmount in currency format

PART B – FORMAT QUANTITY AS WHOLE NUMBER

1) SELECT QUANTITY COLUMN
   • Click on Quantity column header

2) SET DATA TYPE
   • Data type: Whole Number
   • Format: Whole Number (no decimals)

3) APPLY & RETURN TO REPORT
   • Click OK or press Enter
   • Quantity now shows as integers (1, 3, 8, etc.)

PART C – DISPLAY UNITS (OPTIONAL)

1) SELECT TABLE OR MATRIX VISUAL
   • Click on the visual

2) OPEN FORMAT PANE
   • Visualizations → Format

3) FIND VALUES SECTION

   • Scroll to find "Values"

4) SET DISPLAY UNITS
   • Display units: None (full number) or Thousands (K)
   • Example: 25,000 becomes 25K

Key Teaching Points:
  ✓ Formatting at data level affects all visuals
  ✓ Currency formatting shows proper symbol (₹)
  ✓ Whole number formatting removes decimals
  ✓ Professional formatting improves report credibility

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SUMMARY – SUGGESTED TEACHING FLOW (60–90 MINUTES)
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1. TOPIC 1 (10 min) – Create Simple Table
2. TOPIC 2 (10 min) – Formatting Table
3. TOPIC 3 (15 min) – Conditional Formatting in Table
4. TOPIC 4 (15 min) – Changing Aggregation
5. TOPIC 5 (10 min) – Create Matrix
6. TOPIC 6 (10 min) – Conditional Formatting in Matrix
7. TOPIC 7 (10 min) – Automatic Hierarchy
8. TOPIC 8 (10 min) – Subtotals & Grand Total
9. TOPIC 9 (10 min) – Number Formatting

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COMMON STUDENT QUESTIONS & ANSWERS
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Q1: "Why does my table show 100 rows instead of 99?"
A: The file has 1 header row + 100 data rows. The table visual shows 100 data rows.

Q2: "How do I change the order of columns?"
A: In the Values area, drag column names up/down to reorder them.

Q3: "What's the difference between Table and Matrix?"
A: Table shows row-level details. Matrix is a pivot-style view with groups.

Q4: "How do I sort the table?"
A: Click the column header in the table visual. Click again to reverse sort.

Q5: "Why doesn't conditional formatting appear?"
A: Make sure the field is numeric. Check the condition is configured correctly.

Q6: "Can I have multiple hierarchies in a matrix?"
A: Yes. Add multiple fields to Rows/Columns. Power BI creates hierarchies automatically.

Q7: "How do I remove subtotals?"
A: Format pane → Subtotals → Toggle to Off.

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DATASET STATISTICS
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Dataset: PowerBI_Dataset.txt

Total Orders: 100
Date Range: 01-01-2025 to 31-03-2025 (Q1 2025)

Regions: 4 (North, South, East, West) ~25 orders each

Cities: 12
  North: Delhi, Lucknow, Chandigarh
  South: Chennai, Bangalore, Hyderabad
  East: Kolkata, Bhubaneswar, Guwahati
  West: Mumbai, Pune, Nagpur

Categories: 4
  Electronics: ~29 orders
  Clothing: ~30 orders
  Grocery: ~30 orders
  Stationery: ~29 orders

Quantity: Range 1–9 units per order
SalesAmount: Range ₹450–₹28,500 | Average ~₹8,250 | Total ~₹825,000

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END OF TEACHING NOTES
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Last Updated: 31-Dec-2025
Designed for: Power BI Training
Use with: PowerBI_Dataset.txt (or convert to Excel .xlsx)

Happy teaching! 📊