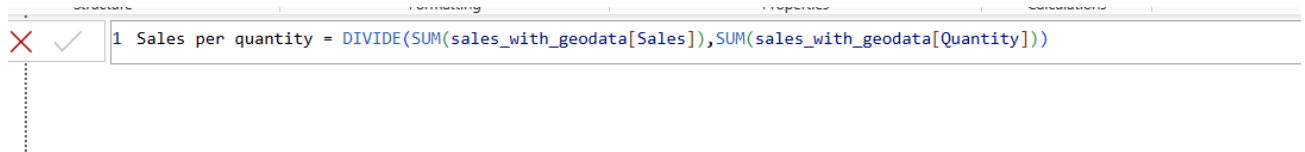


- Puzzle 1: Confusing Totals
 - Visual: Table
 - Columns: Product, Sales, Quantity, Sales / Quantity (as a new column)
 - Problem: The total of Sales / Quantity doesn't match the sum of individual rows.
 - Question: Why is the total different? How would you rewrite the DAX to get the correct total?



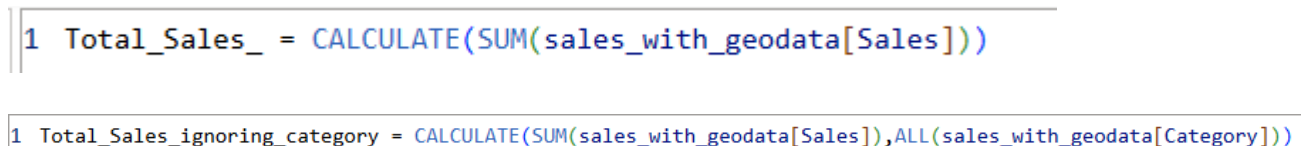
At the row level:

- Each row shows Sales / Quantity correctly.

But at the total row, Power BI doesn't sum up the individual ratios.
Instead, it recomputes the formula at the total level →
Total Sales ÷ Total Quantity.

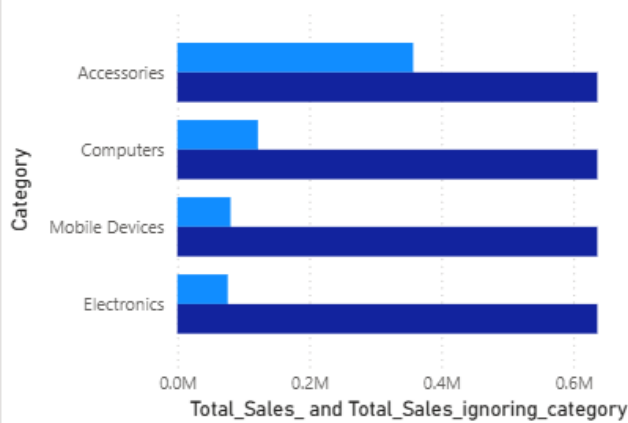
That's why the grand total looks "wrong" compared to adding up the visible row values.

- Puzzle 2: Filtered vs. Unfiltered Totals
 - Visual: Bar Chart
 - Values: Total Sales (explicit measure), Total Sales (All Categories)
 - Axis: Category
 - Task: Write two measures:
 - One for total sales per category.
 - One ignoring the axis filter (always total sales for all categories).
 - Bonus: Add a % of total column.



Total_Sales_ and Total_Sales_ignoring_category by Category

● Total_Sales_ ● Total_Sales_ignoring_category



Category	Total_Sales_ignoring_category	Total_Sales_
Accessories	636,036.12	357,138.64
Computers	636,036.12	121,993.28
Electronics	636,036.12	76,294.07
Mobile Devices	636,036.12	80,610.13
Total	636,036.12	636,036.12

- Puzzle 3: Changing Context with Slicers
 - Visual: Card
 - Measure: Total Sales
 - Task: Add a slicer for Country.
 - Question: Why does the card change when you select different countries?
 - Follow-Up: Add a second measure to ignore the slicer.
-

```
1 Total_Sales_ = CALCULATE(SUM(sales_with_geodata[Sales]))
```

```
1 Total_Sales_Ignoring_Slicer = CALCULATE(SUM(sales_with_geodata[Sales]),REMOVEFILTERS(sales_with_geodata[Country]))
```

49.77K

Total_Sales_

Country

- ☐ Australia
- ☐ Brazil
- ☐ Canada
- ☐ France
- ☐ Germany
- ☒ India
- ☐ Japan
- ☐ Mexico

636.04K

Total_Sales_Ignoring_Slicer

- Puzzle 4: Misleading Average
 - Visual: Table
 - Columns: Region, Average Sales per Order
 - Problem: You calculate Average Sales using:
 - $\text{Average Sales} = [\text{Total Sales}] / [\text{Total Orders}]$
 - But results are incorrect in visual.
 - Question: Why doesn't this work as expected in a visual?

So when you do $[\text{Total Sales}] / [\text{Total Orders}]$, you're dividing aggregates at the current filter context.

In the table, each row might be fine.

But when you look at totals, Power BI recomputes at the grand total level:

$(\text{All Sales}) \div (\text{All Orders})$

instead of averaging the row-level averages.

This gives a misleading weighted result — not a true "average per order" at row level.

OrderID	Average sales per Order
1060	1,198.45
1089	887.30
1109	551.32
1122	351.87
1130	598.67
1132	526.74
1171	939.38
1188	598.84
1189	1,172.16
1196	855.04
1197	630.79
1211	205.70
1224	534.20
1236	724.12
1254	332.70
1256	325.31
1259	571.17
1269	1,291.95
1275	365.54
1279	1,094.30
Total	681.84

```
1 Average sales per Order = AVERAGEX(VALUES(sales_with_geodata[OrderID]),CALCULATE(SUM(sales_with_geodata[Sales])))
```

- **Puzzle 5: Highlight Top Product per Category**

- Visual: Matrix
- Rows: Category, Product
- Values: Total Sales
- Task: Add a visual-level filter to show only the top-selling product per category.

```

Top Product per Category =
VAR CurrentCategory = MAX ( sales_with_geodata[Category] )
RETURN
CALCULATE (
    SELECTEDVALUE ( sales_with_geodata[Product] ),
    TOPN (
        1,
        FILTER (
            ALL ( sales_with_geodata ),
            sales_with_geodata[Category] = CurrentCategory
        ),
        [Total_Sales_], DESC
    )
)

```

Category	Top Product per Category	Total_Sales_
Accessories	Laptop	23,403.96
Computers	Monitor	13,841.02
Electronics	Phone	6,637.85
Mobile Devices	Camera	5,891.57
Total	Camera	49,774.40

- Visual: Table
- Columns: Customer, Sales in France
- Measure: Sales in France = CALCULATE(SUM(Sales[Sales]), Sales[Country] = "France")
- Problem: Some customers have blank values even though they made purchases.
- Question: Why? How to fix it?

```

1 Sales in France =
2 CALCULATE(
3     SUM(sales_with_geodata[Sales]),
4     KEEPFILTERS ( sales_with_geodata[Country] = "France" )
5 )

```

Customer	Sales in France
Alice	7,486.94
Ava	1,369.63
Bob	7,074.49
Charlie	3,196.54
David	6,279.38
Emma	4,802.27
Frank	5,236.50
Grace	1,898.54
Hannah	5,250.96
Isaac	1,655.86
Jack	751.95
Liam	2,294.95
Noah	1,987.36
Olivia	2,000.28
Sophia	1,247.19
Total	52,532.84

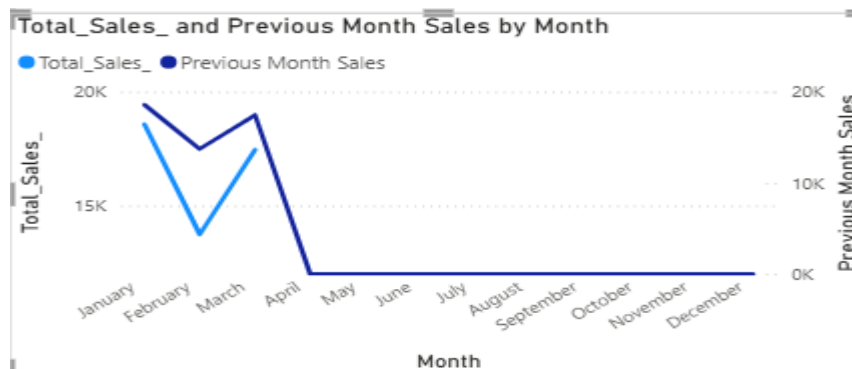
- **Puzzle 7: Time Intelligence Confusion**

- Visual: Line chart
- Axis: OrderDate (by Month)
- Values: Sales, Previous Month Sales
- Task: Add a line for previous month's sales.
- Challenge: Handle edge cases like first month of year or missing months.

```

1 Previous Month Sales =
2 COALESCE(
3     CALCULATE(
4         [Total_Sales_],
5         DATEADD('Date'[Date], -1, MONTH)
6     ),
7     0
8 )

```



- **Puzzle 8: Row-Level Calculation**

- Visual: Table
- Columns: Product, Quantity, Discount per Unit, Total Discount
- Measure: Total Discount = SUMX(Sales, Sales[Quantity] * Sales[Discount per Unit])
- Question: Why use SUMX() instead of just multiplying two columns?

If you do:

`SUM(Sales[Quantity]) * SUM(Sales[Discount per Unit])`

This multiplies **aggregated totals**, not row by row.

That means you'd get the wrong number unless *every row* had the exact same discount.

- But with:

```
SUMX(  
    Sales,  
    Sales[Quantity] * Sales[Discount per Unit]  
)
```

It multiplies **per row** first, then sums up → which is the correct logic (since each product can have a different discount).

- Visual: Table
- Columns: City, Total Sales, Rank
- Challenge: Use RANKX() to handle ties correctly and allow descending/ascending logic.

Puzzle 9: Rank with Ties

- Visual: Table
- Columns: City, Total Sales, Rank
- Challenge: Use RANKX() to handle ties correctly and allow descending/ascending logic.

`Ranking cities = RANKX(ALL(sales_with_geodata[City]),[Total_Sales_],,DESC,Dense)`

City	Total Sales	Ranking cities
Paris	52,532.84	1
London	51,136.30	2
Mumbai	49,774.40	3
Berlin	48,647.22	4
Dubai	48,047.22	5
Los Angeles	47,948.55	6
Moscow	46,463.52	7
Cape Town	45,569.21	8
Tokyo	39,797.05	9
Toronto	38,046.27	10
Singapore	37,758.75	11
Sydney	34,216.25	12
Mexico City	33,170.80	13
New York	32,259.85	14
São Paulo	30,667.89	15
Total	636,036.12	1

- **Puzzle 10: Dynamic Titles and KPIs**

- Visual: Card and Title
- Task: Show a dynamic card title that changes based on slicer (e.g., selected country).
- Measure: Title = "Sales for " & SELECTEDVALUE(Sales[Country], "All Countries")

Title = "Sales for " & SELECTEDVALUE(sales_with_geodata[Country], "All Countries")

Sales for Japan

Title

- Country
- ☐ Australia
 - ☐ Brazil
 - ☐ Canada
 - ☐ France
 - ☐ Germany
 - ☐ India
 - ☒ Japan
 - ☐ Mexico