1. Excel / Google Sheets

Used for quick exploration, cleaning, and simple analysis.

Key Functions:

IF

```
=IF(A2>1000, "High", "Low")
```

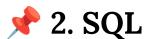
- → If sales > 1000, mark as "High", else "Low".
 - VLOOKUP (or XLOOKUP)

```
=VLOOKUP(101, A2:C100, 2, FALSE)
```

- → Search for ID 101 in first column, return corresponding value in column 2.
 - SUMIFS

```
=SUMIFS(C2:C100, B2:B100, "North")
```

- \rightarrow Sum of column C (sales) where region = North.
 - **Pivot Table**Summarize data (e.g., average sales by region). Drag-and-drop, no code needed.



The main tool for extracting & transforming data from databases.

Must-know commands:

Select rows

SELECT customer_id, revenue

• Aggregation with GROUP BY

SELECT region, AVG(revenue) AS avg_revenue FROM sales GROUP BY region;

Join tables

SELECT o.order_id, c.customer_name, o.revenue FROM orders o JOIN customers c ON o.customer_id = c.customer_id;

• Window function

SELECT customer_id, revenue, RANK() OVER (ORDER BY revenue DESC) AS revenue_rank FROM sales;

3. Tableau / Power BI

For visualization & storytelling.

Key visualizations:

- **Bar chart** → compare categories (e.g., revenue by region).
- **Line chart** → show trend over time.
- **Pie chart / Donut** → show percentage breakdown (use sparingly).
- **KPI cards** → highlight total sales, average order, etc.

Dashboard example:

• KPI cards (Total Revenue, Avg Order Value)

- Line chart (Revenue over time)
- Bar chart (Top 5 products)
- Map (Sales by region)
- Filter (date range, product category)

4. Analytics Workflow (with just these tools)

1. Extract & clean

- \circ Use SQL \rightarrow get raw data
- Export into Excel/Sheets → clean (remove nulls, standardize values)

2. Analyze

- \circ Pivot Table in Excel \rightarrow quick summary
- o SQL queries → deeper aggregation

3. Visualize & Present

- o Import cleaned dataset into Tableau/Power BI
- o Build dashboard with KPIs + trends + breakdowns
- o Write insights in plain English