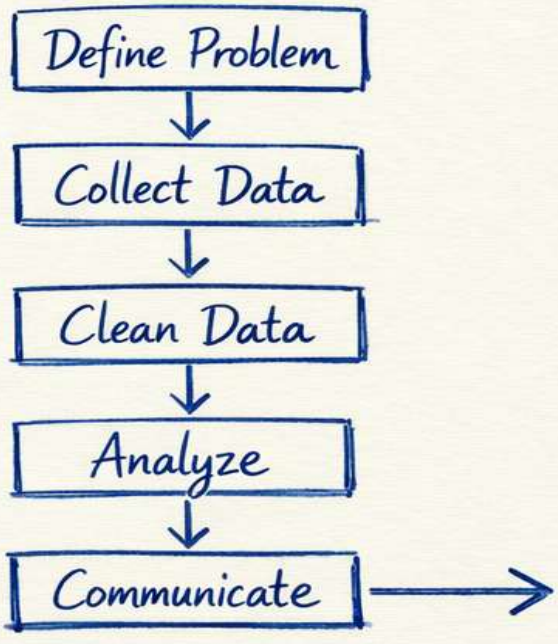
NOTES OF DATA ANALYTICS

What is Data Analytics?

Data Analytics is the process of examining data to find insights and make informed decisions.

We use data to identify trends, patterns, and answer important questions.

Data Analytics Workflow



Problem Definition

(Asking the Right Questions)

- Problem definition is about clearly understanding the issue you want to solve.
- By asking the right questions, you make sure you're focusing on what really matters, instead of wasting time on irrelevant details.
- It's like being a detective: you need to dig deep and find the real problem before jumping to solutions.

Good questions guide you to better answers!

Collection of Data in Terms of Data Analytics

In data analytics, the collection of data involves gathering relevant information from various sources to analyze and find answers.

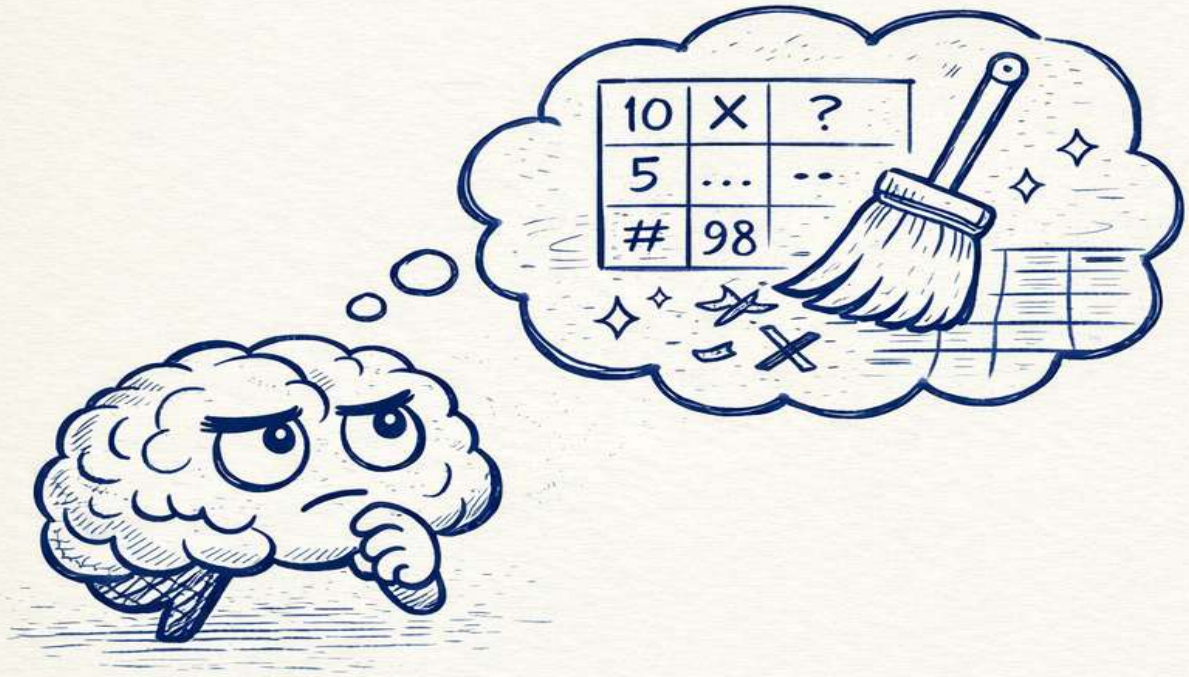
When collecting data:

* Identify the sources of data
* Decide how to gather the data (surveys, databases, sensors, etc.)
* Ensure the data is reliable and accurate
* Collect enough data to make informed decisions.

What is Data Cleaning?

Data Cleaning is the process of fixing or removing incorrect, corrupted, duplicate, or incomplete data from a dataset.

It helps ensure that the data is accurate, consistent, and useful for analysis.



Analyzing of Data Analytics?

Analyzing data means examining and interpreting data to uncover insights and make conclusions.

We search for trends, patterns, and relationships within the data.

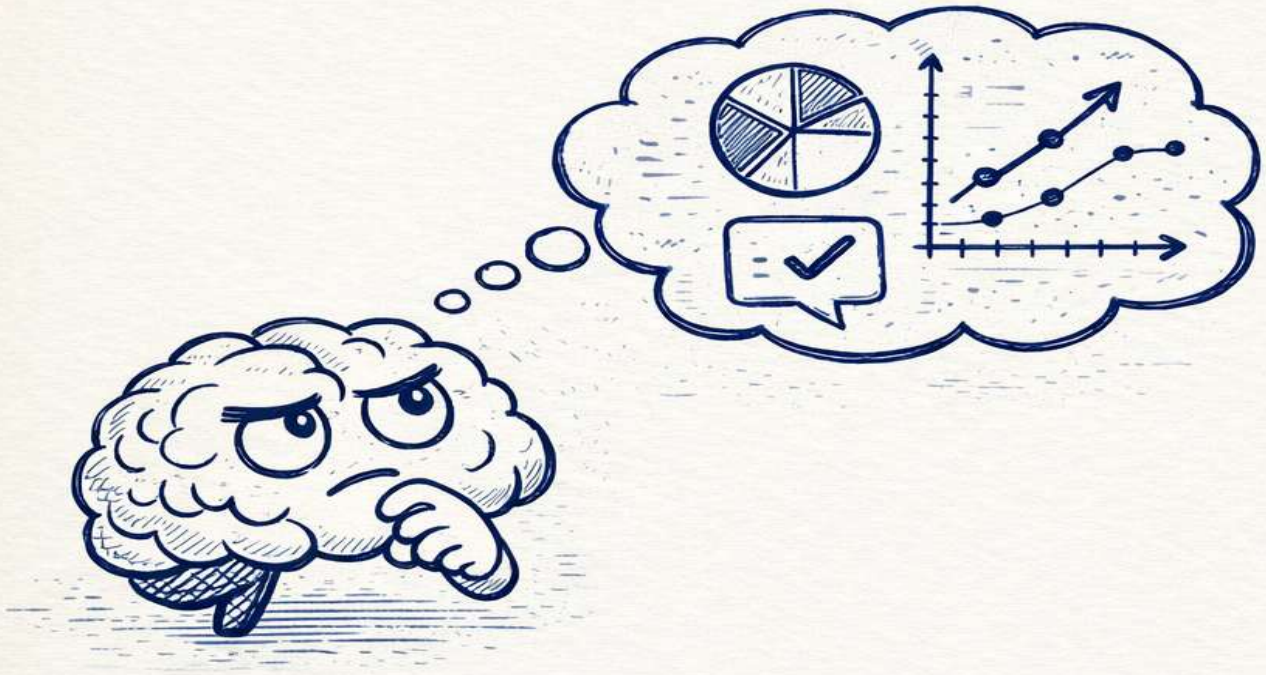
This helps us gain a deeper understanding of anything we're studying.

What is communication in terms of Data analytics and how is it useful?

Communication in data analytics means sharing findings and insights from data analysis with others.

We use charts, graphs, and clear explanations to tell the story of the data.

This helps ensure that the results of our analysis are understood and can be used to make informed decisions.



Qualitative vs. Quantitative Data

Qualitative Data

Descriptive information that describes qualities or characteristics (non-numerical).

Examples:

- Colors
- Opinions (happy, sad, etc.)
- Flavors (sweet, spicy, bitter, etc.)

Quantitative Data

Numerical information that can be counted or measured (numbers).

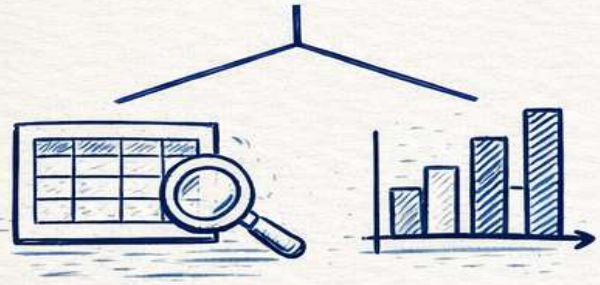
Examples:

- Age or height
- Temperature in °F or °C
- Number of items sold

Structured vs. Unstructured Data

Structured Data

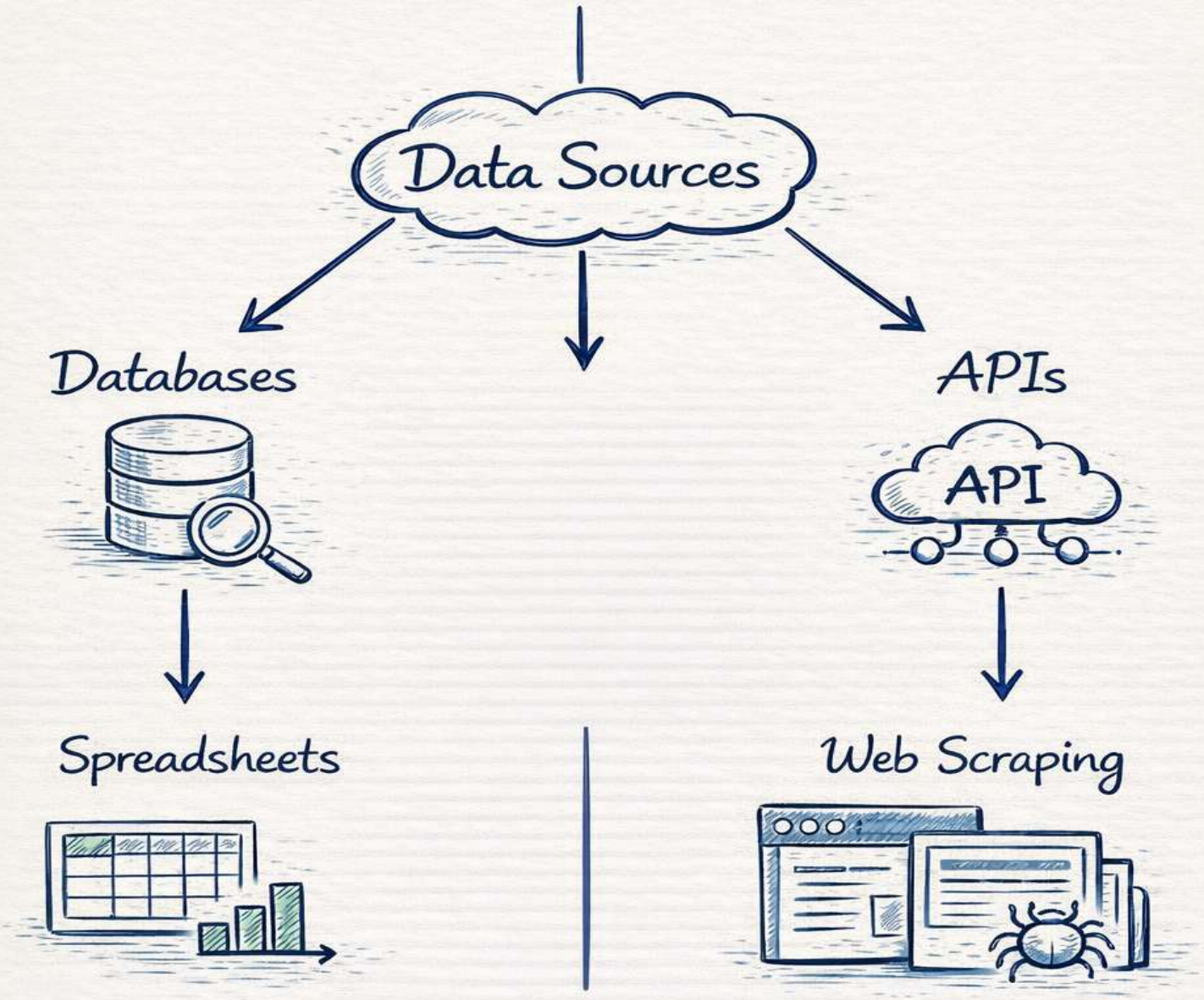
- Organized in a table or database
- Rows and columns
- Easily searchable



Unstructured Data

- No predefined format
- Text, images, audio, video
- Harder to search/analyze

Data Sources



Data Quality & Cleanliness

Data Quality & Cleanliness

Why it's important

- Accurate analysis

- Better decisions

- Time/Cost savings

Common issues

- Missing data

- Duplicates

- Inconsistent formats

Statistics for Data Analytics

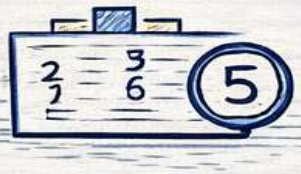
Statistics for Data Analytics

Why it's important

- Mean

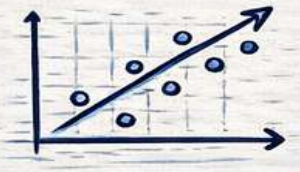
$$\frac{5+7+8}{3} = 6.7$$

- Median



- Mode

- Standard Deviation

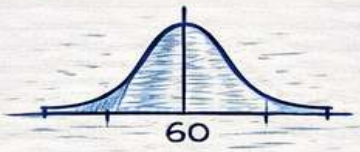


Common issues

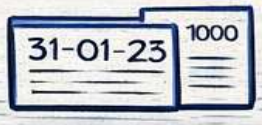
- Average value

- Most common value

- Spread of data



- Relation between variables



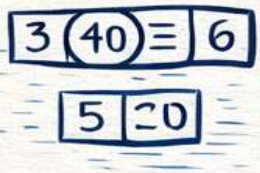
Data Visualization Basics

Data Visualization Basics

Charts

$$\frac{(5+7+8)}{3} = 6.7$$

- Median



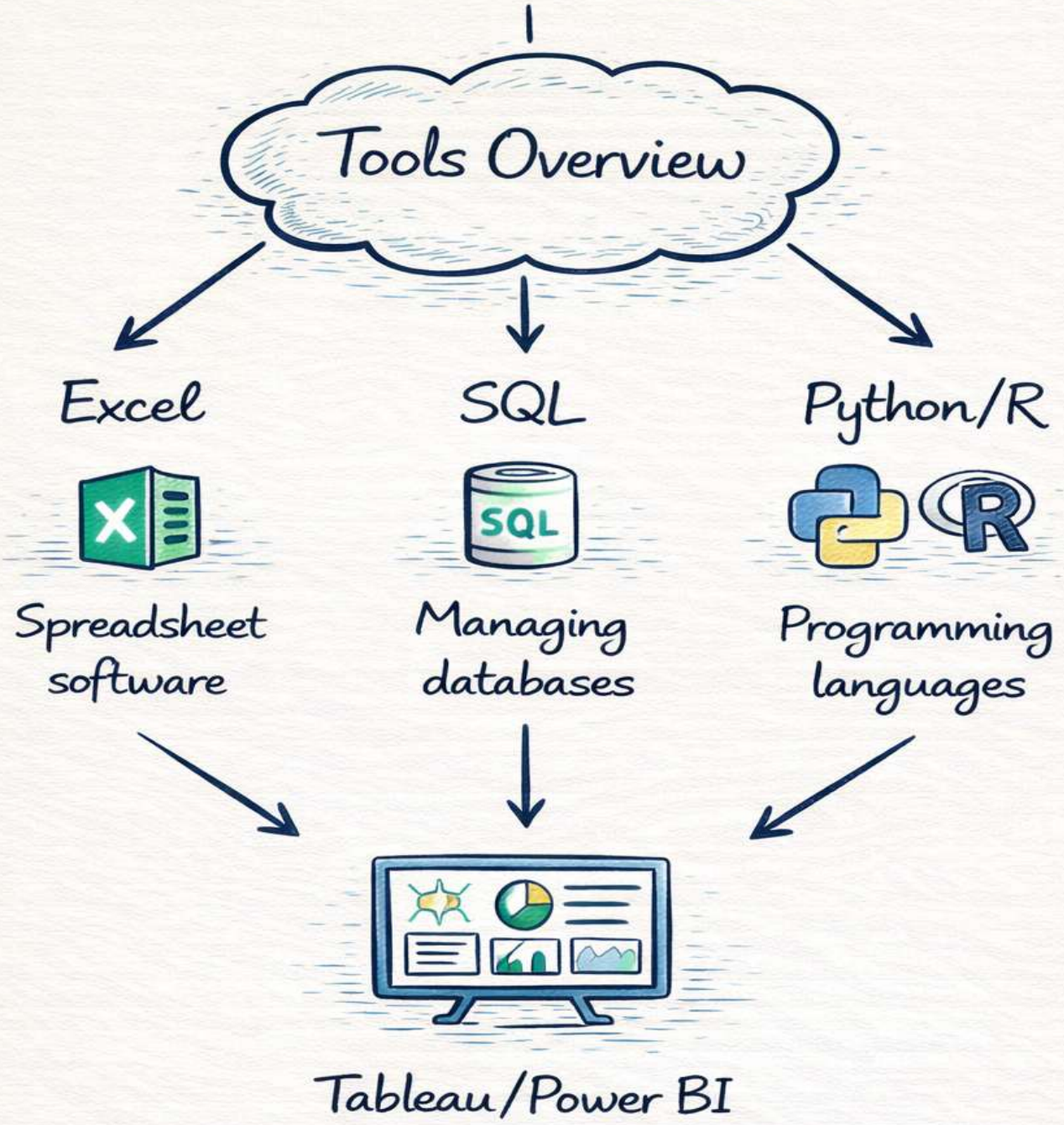
- Dashboards

Graphs

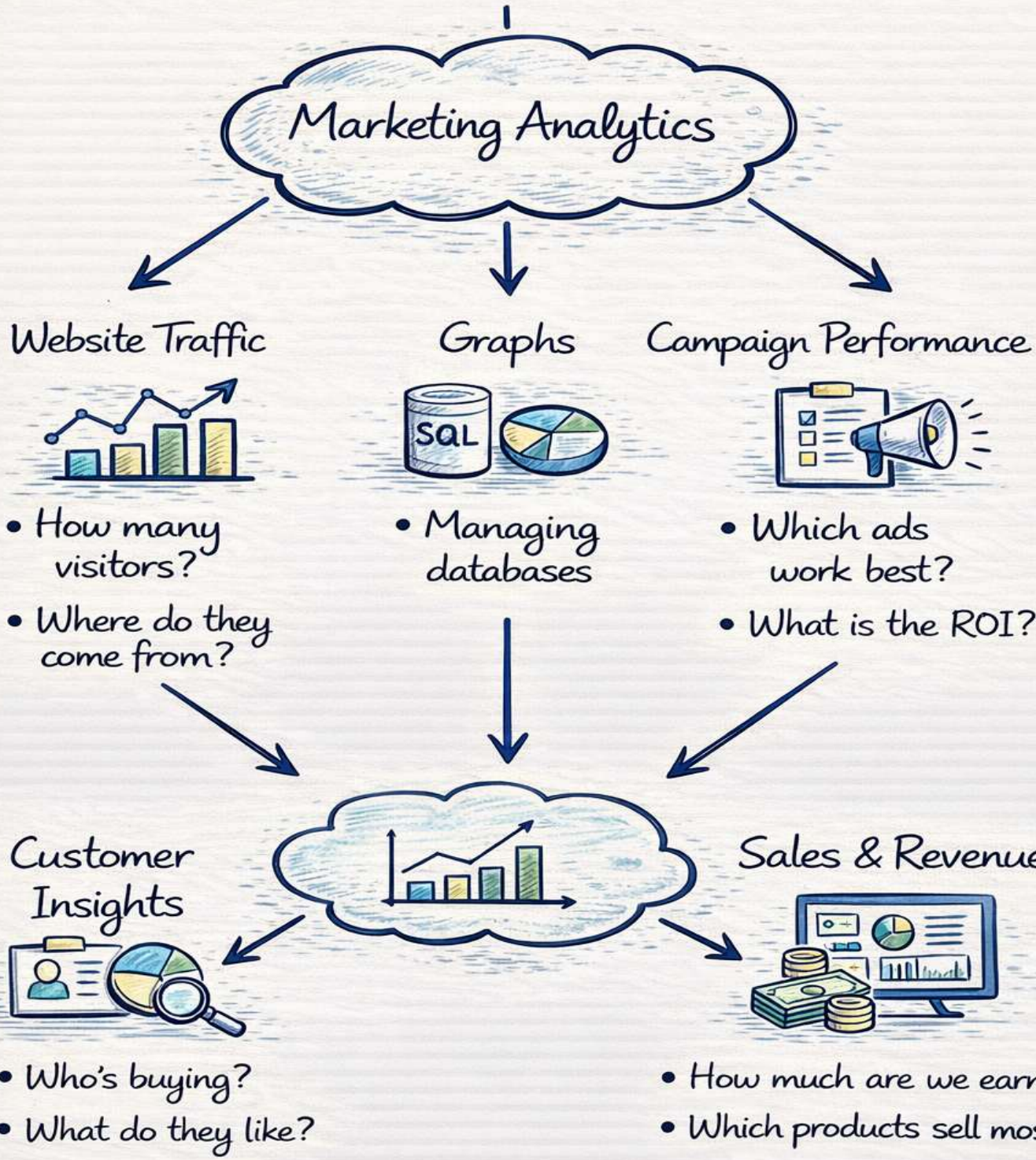
Telling a story with data

- Making data easy to understand
- Spotting patterns and trends
- Communicating insights

Tools Overview



Marketing Analytics



Financial Analytics

Financial Analytics

Budgeting

- Planning expenses
- Managing cash flow

Performance Tracking

- Analyzing profits
- Tracking financial goals

Risk Management

- Analyzing profits
- Tracking financial goals

Risk Management

- Identifying risks
- Protecting assets

Investment Analysis

- Evaluating opportunities
- Maximizing returns

Healthcare Analytics

Healthcare Analytics

Patient Care

- Improving treatment
- Monitoring outcomes

Hospital Operations

- Staff and resource
- Reducing wait times

Population Health

- Understanding trends
- Preventing timess

Population Health

- Understanding trends
- Preventing illness

Cost Management

- Reducing expenses
- Optimizing resources

Operations Analytics

Operations Analytics

Process Improvement

- Streamlining workflows
- Boosting efficiency

Inventory Management

- Tracking stock levels
- Reducing waste

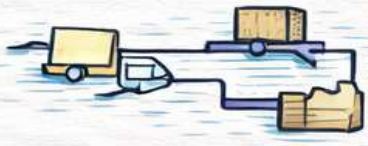
Inventory Management

- Reducing waste

Quality Control

- Detecting defects
- Ensuring standards

Supply Chain Optimization

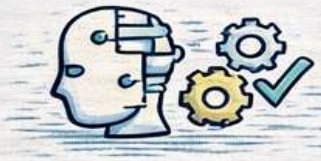


- Improving logistics
- Enhancing delivery

The Future of Data Analytics

The Future of Data Analytics

AI & Machine Learning



- Automating insights
- Advanced predictive models

Ethical Considerations

- Privacy & bias
- Responsible use

How to Continue Learning

- Staying updated
- Exploring new technologies

AI & Machine Learning

- Automating insights
- Advanced predictive models

How to Continue Learning

- Staying updated
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