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# 1.1 Data Analytics – Overview and Importance

## Introduction

Data analytics refers to the systematic use of statistical and computational techniques to discover patterns, trends and relationships within data. It transforms raw observations into actionable knowledge that supports decision‑making across industries.

## Key points

* **Definition** – Data analytics encompasses the collection, processing and analysis of large datasets to draw insights and inform decisions. It goes beyond descriptive statistics by applying advanced algorithms and models.
* **Importance** – According to Investopedia, data analytics helps organisations optimise performance, reduce costs and predict future outcomes【205746635100822†L299-L369】.
* **Steps in the process** – A typical analytics workflow involves determining data requirements, collecting data, organising and cleaning it, analysing patterns and interpreting results【205746635100822†L299-L369】. Data cleaning ensures quality and reliability before analysis.
* **Types of decisions** – Analytics supports strategic (long‑term), tactical (medium‑term) and operational (day‑to‑day) decisions.

## Examples

* **Business** – A retail chain analyses purchase histories to identify which products sell well in different seasons and optimises inventory accordingly.
* **Healthcare** – Hospitals use analytics to monitor patient outcomes and predict resource needs, improving quality of care and reducing costs.
* **Education** – Universities analyse student performance data to identify at‑risk students and tailor intervention strategies.

## Summary

Data analytics transforms data into knowledge that enables organisations to act intelligently. It integrates statistical methods and computing to find patterns, improve efficiency and guide strategic planning【205746635100822†L299-L369】.

## Reflection questions

1. How does data analytics differ from simple data analysis?
2. Explain how data analytics can help a business reduce costs.
3. Provide an example of data analytics in the healthcare sector.

## References