Data Analytics Notes & Exercises

Day 1

1. Data Types
- Nominal → Categories without order (e.g., Customer, Region, Product).
- Ordinal → Categories with order (e.g., Education Level).
- Discrete → Countable numbers (e.g., Quantity).
- Continuous → Measurable values (can have decimals).
- Ratio → Continuous data with absolute zero (e.g., Price, Sales).
- Interval → Values with no true zero (e.g., Date, Temperature).

2. Functions
1. Total Sales per Order = Quantity × Price.
2. Total Sales overall = SUM(Sales).
3. Average Quantity = AVERAGE(Quantity).
4. Median Quantity = MEDIAN(Quantity).
5. Mode Product = MODE(Product).
6. Variance & Standard Deviation = VAR/ STDEV.
7. IQR (Interquartile Range) → Middle 50% spread.

3. Formulas
- IF → Check condition.
Example: IF(Quantity>5, "Big Order", "Small Order").
- COUNT → Count values matching condition.
- Sorting & Filtering → Organize data (e.g., Sales > 500).

Day 2

1. Charts
- Bar chart → Compare sales by region.
- Pie chart → Product share in sales.
- Histogram → Quantity distribution.
- Box Plot → Spread & outliers.
- Scatter Plot → Relationship between Quantity & Sales.
- Line chart → Sales trend over dates.

2. Skewness & Kurtosis
- Skewness → Left or right leaning distribution.
- Kurtosis → Extreme values (outliers).

3. Correlation
- Positive correlation: More Quantity → More Sales.
- Negative correlation: Price ↑ → Demand ↓.
- No correlation: Shoe size vs Salary.

4. Storytelling with Data
Example: "North region contributed the most to sales. Milk is most popular. Most orders are 2–7 units, but some extreme outliers exist. Sales peaked on Jan 3 & Jan 6."

Exercises

Day 1
1. Identify Nominal, Ordinal, Discrete, Continuous, Ratio, Interval in dataset.
2. Calculate Total Sales per Order.

3. Find overall Total Sales.
4. Find Average, Median, and Mode of Quantity.
5. Calculate Variance, SD, and IQR of Quantity.
6. Add "Order Type" column using IF.
7. Count orders from South region.
8. Filter orders with Sales > 500.

Day 2
1. Create charts (Bar, Pie, Histogram, Box, Scatter, Line).
2. Calculate skewness and kurtosis of Quantity.
3. Check correlation between Quantity & Sales.
4. Write a 3–5 line story explaining your findings.