# Machine Learning Basics

**1. What is Machine Learning?**

Machine Learning (ML) is a part of Artificial Intelligence that allows computers to learn patterns from data and make decisions or predictions without being explicitly programmed for every rule.
Instead of writing step-by-step instructions, we give the system data, and it builds a model that improves its performance with experience.

**2. What are the main types of Machine Learning?**

- **Supervised Learning**
  The model learns from labeled data (input + correct output).
  Examples: spam detection, price prediction.
- **Unsupervised Learning**
  The model works with unlabeled data and tries to find hidden patterns or groupings.
  Examples: customer segmentation, anomaly detection.
- **Reinforcement Learning**
  The model learns by interacting with an environment and receiving rewards or penalties.
  Examples: game-playing AI, robotics.

**3. What is the difference between Classification and Regression?**

| **Classification** | **Regression** |
|---|---|
| Predicts categories or classes | Predicts continuous numerical values |
| Output is discrete (e.g., Yes/No, Spam/Not Spam) | Output is a number (e.g., price, temperature) |
| Example: Disease present or not | Example: Predicting house price |

**4. What is a feature in Machine Learning?**

A feature is an input variable used by the model to make predictions.
It represents measurable information about the data.
Example: In a house price model, features could be size, number of rooms, location, age of house.

**5. What is a label or target variable?**

The label (or target variable) is the output the model is trying to predict.
It is the correct answer in supervised learning.
Example: In a house price prediction model, the price is the label.