In **Math and Statistics**, **Pie Charts** and **Bar Charts** are common tools used for **data visualization**. Here's a simple breakdown of both, including **definitions**, **use cases**, and **differences**:

## **🥧 Pie Chart**

### **✅ Definition:**

A **Pie Chart** is a circular graph divided into **slices**, where each slice represents a **proportion or percentage** of a **whole**.

### **📊 Use Case:**

* To show **part-to-whole relationships**
* Best when you have **few categories** (ideally < 6)

### **📎 Example:**

Showing market share:

* Apple: 40%
* Samsung: 30%
* Xiaomi: 20%
* Others: 10%

Each percentage is shown as a slice of the circle.

### **🎯 Key Features:**

* Emphasizes **proportions**
* Always adds up to **100%**
* Not good for comparing exact values

## **📊 Bar Chart**

### **✅ Definition:**

A **Bar Chart** uses **rectangular bars** to represent **quantitative data**. The length of each bar is proportional to the value it represents.

### **📊 Use Case:**

* To compare **individual values** across **different categories**
* Works for **categorical** and **discrete data**

### **📎 Example:**

Number of students in 4 classes:

* Class A: 20
* Class B: 35
* Class C: 30
* Class D: 25

Each bar height shows the number of students.

### **🎯 Key Features:**

* Can be **vertical or horizontal**
* Easy to **compare values**
* Works well with **many categories**

## **🔁 Pie Chart vs Bar Chart – Comparison Table**

| **Feature** | **Pie Chart** | **Bar Chart** |
| --- | --- | --- |
| Shape | Circle with slices | Bars (rectangular) |
| Best for | Proportions/percentages | Comparisons |
| Adds up to 100% | Yes | No |
| Number of Categories | Few | Many |
| Can show negative values? | No | Yes |
| Orientation | Circular | Vertical or horizontal |