

# Mode (Most Frequent Value)

## ***Detailed Study Notes***

The mode is the value that appears most frequently in a dataset. Unlike mean and median, the mode can be used with categorical data.

**Definition:**

The mode is the value with the highest frequency in a dataset.

**Characteristics:**

- A dataset can have one mode (unimodal)
- A dataset can have multiple modes (bimodal, multimodal)
- A dataset may have no mode if all values are unique

**Detailed Example:**

**Example 1 (Unimodal):**

Dataset: 10, 20, 20, 30, 40

Mode = 20 (appears twice, all others appear once)

**Example 2 (Bimodal):**

Dataset: 10, 10, 20, 30, 30, 40

Modes = 10 and 30 (both appear twice)

**Example 3 (No mode):**

Dataset: 10, 20, 30, 40, 50

No mode (all values appear once)

**Example 4 (Categorical data):**

Dataset: Red, Blue, Blue, Green, Blue, Red

Mode = Blue (appears 3 times)

**Properties of the Mode:**

1. Can be used with nominal, ordinal, interval, and ratio data
2. The only measure of central tendency for nominal data
3. Not affected by extreme values
4. May not be unique

**When to Use the Mode:**

- Use with categorical or nominal data
- When you want to know the most common value
- In quality control to find most frequent defect

- In business to find most popular product

**Applications:**

- Most popular shoe size in a store
- Most common blood type in a population
- Most frequent error in a system
- Peak hours for customer traffic