Measure of Central Tendency

Central tendency refers to the measure used to determine the "center" of distribution of data.

* Mean (Average) :

Population Data (N)	Sample Data (n)
$\mu = \frac{\sum_{i=1}^{N} x_i}{N}$	$\bar{x} = \frac{\sum_{i=1}^{n} x_i}{n}$
Population Mean	Sample Mean

Let $x : \{1, 2, 2, 3, 4, 5\} \longrightarrow$ Population Data.

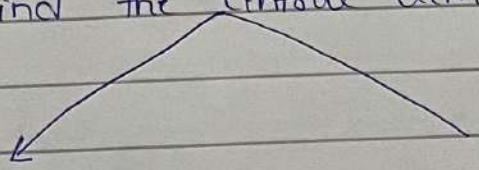
$$\therefore \mu = \frac{1+2+2+3+4+5}{6} = 2.833$$

* Median :

Steps :

① Sort all the numbers

② Find the central element



Odd length

$\{1, 2, 2, \boxed{3}, 4, 5\}$

Median

Even length

$\{1, 2, 2, \underset{x_1}{\boxed{3}}, \underset{x_2}{\boxed{4}}, 5, 100\}$

$$\text{Median} = \frac{x_1 + x_2}{2} = \frac{3+4}{2} = 3.5$$

* Mode : (Most frequent element)

x : {1, 5, 2, 5, 6, 5, 3, 5, 4, 3, 5}

Mode = 5 (∵ 5 is most occuring element)

→ Usecases :

① Mean → This should use when data is normally distributed.

② Median → This should use when outliers present in data.

③ Mode → This should use when data is categorical in nature.