Random Sampling and Sample Bias :-

Sample Bias occurs when sample is not representative of the population.

→ Sample should be representative of the population.

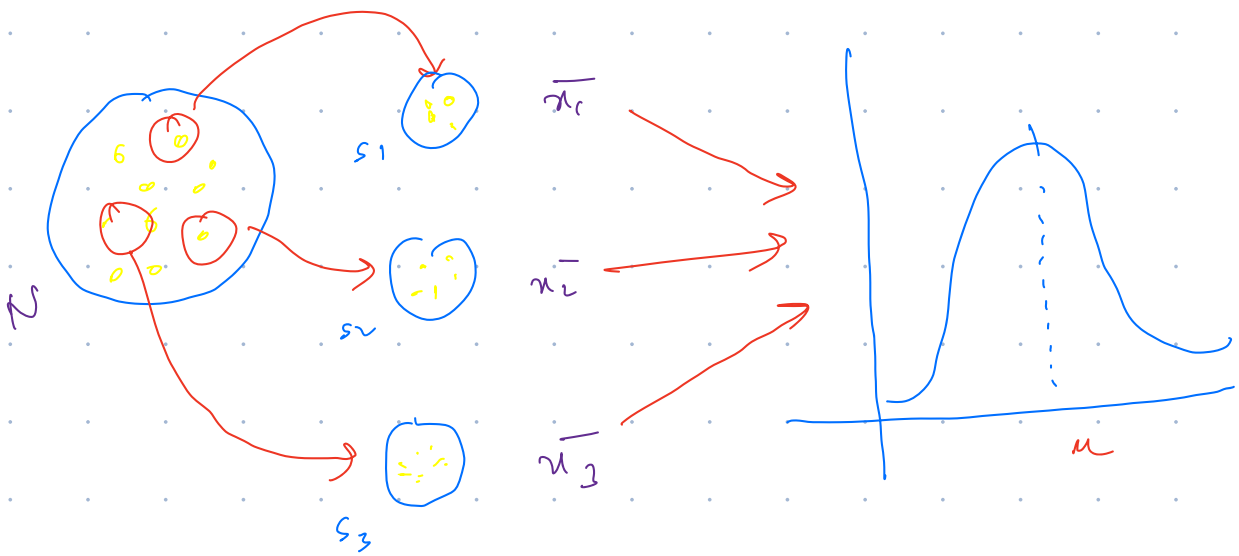
Law of Large Numbers (LLN) :

As the no. of trials increases, the avg. of the trial result gets closer to the theoretical or real average.

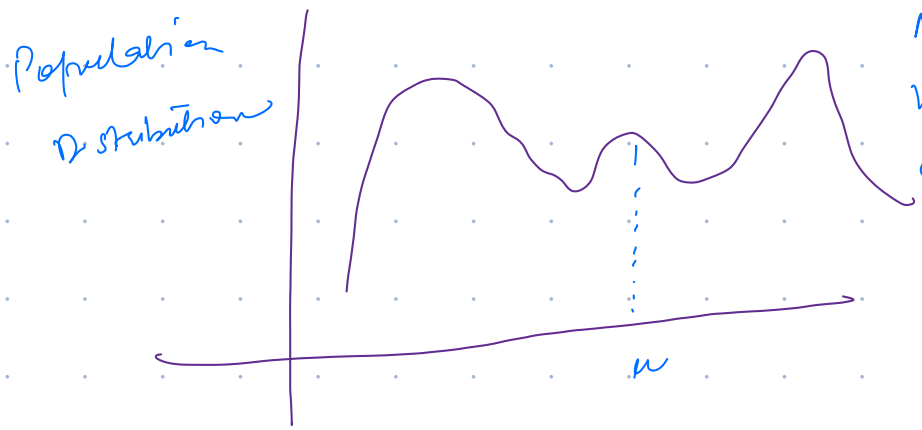
CENTRAL LIMIT THEOREM :-

For a large enough sample size, the distribution of the sample means (a.k.a the sampling distribution) will be approximately NORMALLY Distributed.

$$\bar{x} = \frac{x_1 + x_2 + \dots x_n}{n}$$



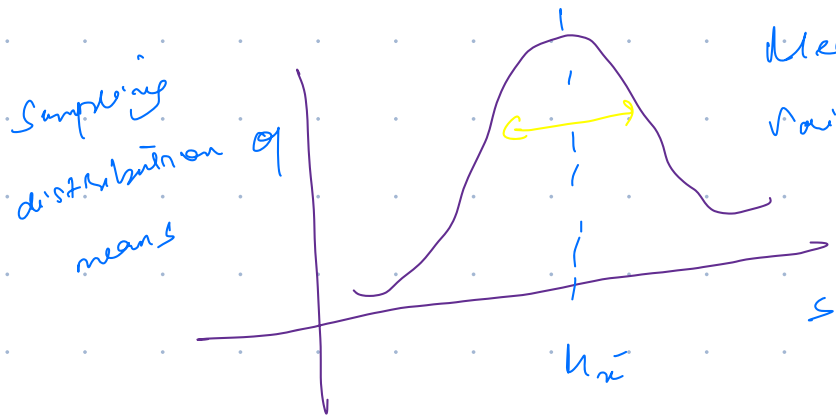
Standard Error :



Mean = μ

Variance = σ^2

Standard Deviation = σ



Mean = $\mu_{\bar{x}} = \mu$

Variance = $\sigma^2_{\bar{x}} = \frac{\sigma^2}{n}$

S.D : $\frac{\sigma}{\sqrt{n}}$

Std error = S.D.$_{\bar{x}}$ = $\frac{\sigma}{\sqrt{n}}$