X is random variable $\mu = 15$ $\sigma = 10$. $n = 100$

$n = 100 \geq 30 \rightarrow$ Central Limit Theorem.

$\overline{X}$ will Normal$(\mu, \sigma/\sqrt{n})$

Normal$(\mu_{\bar{x}} = 15, \sigma_{\bar{x}} = 10/\sqrt{100})$

Normal$(15, 1)$

How often should $\bar{x}$ be within 2 units of $\mu = 15$?

$15 \pm 2 \times 1$

$\mu_{\bar{x}} \pm 2\sigma_{\bar{x}} \rightarrow$ empirical rule! 95% of observations $(\overline{X})$ will fall with 2 std dev of the mean!