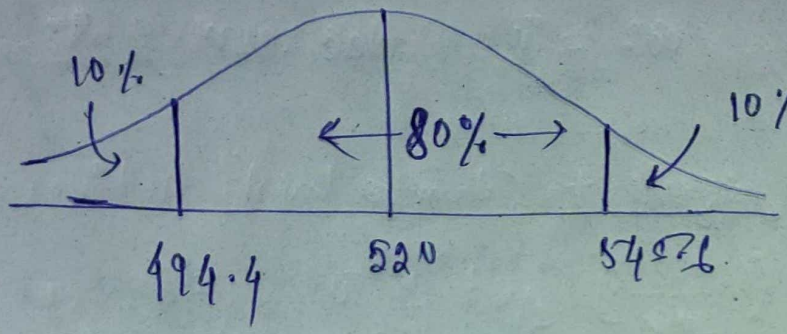
Bileram Kole

(Q.) In the quant test of CAT exam the population standard deviation is known to be 100. A sample of 25 test takers has a mean of 520. construct a 80% confidence interval about mean.

→ $\sigma = 100$, $n = 25$, $\alpha = 0.20$, $\bar{x} = 520$



$Z_{0.10}$
$= (1 - 0.10)$
$= \underline{0.9}$

CI = Point estimate ± margin of error.

$= \bar{x} \pm Z_{\alpha/2} \left(\frac{\sigma}{\sqrt{n}}\right)$

upper boundary $= \bar{x} + Z_{\alpha/2} \left(\frac{\sigma}{\sqrt{n}}\right)$

$= 520 + Z_{\frac{0.20}{2}} \left(\frac{100}{\sqrt{25}}\right)$

$= 520 + 1.28 \left(\frac{100}{5}\right)$

$= 520 + 25.1 \quad = 545.1$

Lower boundary $= \bar{x} - Z_{\alpha/2} (\sigma/\sqrt{n})$

$= 520 - (1.28 \times 20)$

$= 494.4$