

Lower fence

$$\bar{x} - z_{\alpha/2} \frac{\sigma}{\sqrt{n}}$$

$$\Rightarrow 520 - 1.29 \frac{100}{\sqrt{25}}$$

$$\Rightarrow 520 - 1.29 \times 20$$

$$\Rightarrow 494.2$$

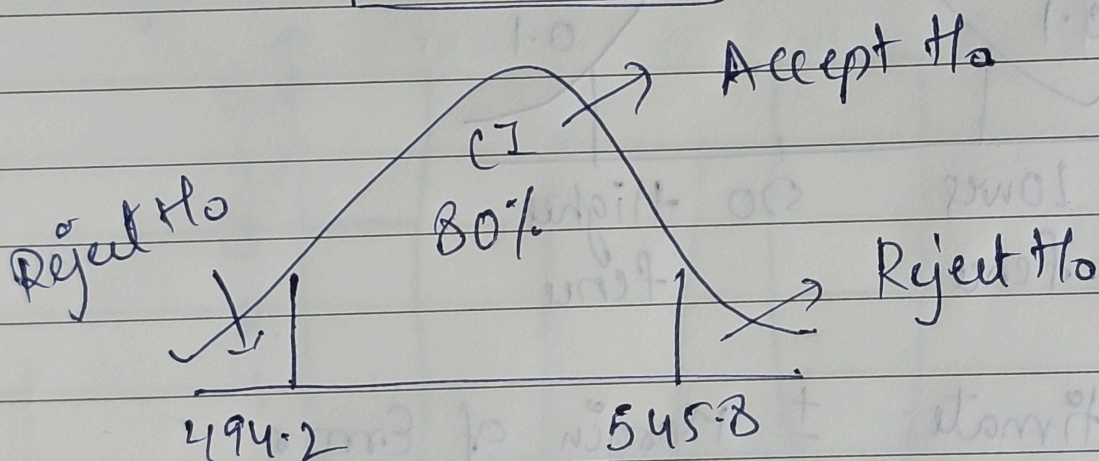
Higher fence

$$\bar{x} + z_{\alpha/2} \frac{\sigma}{\sqrt{n}}$$

$$\Rightarrow 520 + 1.29 \frac{100}{\sqrt{25}}$$

$$\Rightarrow 520 + 1.29 \times 20$$

$$\Rightarrow 545.8$$





② In a quant test of the CAT Exam, the population std deviation is known to be 100. A sample of 25 tests taken has a mean of 520. Construct an 80% CI about the mean.

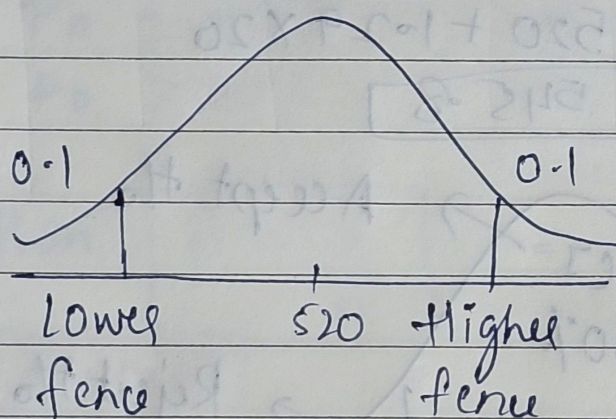
Sol<sup>n</sup>:  $\sigma = 100$      $n = 25$      $\bar{x} = 520$      $CI = 80\%$

$$\alpha = 1 - CI$$

$\alpha = \text{Significance Value}$

$$= 1 - 80\% = 1 - 0.8$$

$$\boxed{\alpha = 0.2}$$



$$\begin{array}{c} \text{Point Estimate} \\ \bar{x} \end{array} \pm \begin{array}{c} \text{Margin of Error} \\ Z_{\alpha/2} \sqrt{\frac{\sigma^2}{n}} \end{array} \Rightarrow \text{Standard Error}$$

$$Z_{\alpha/2} \Rightarrow Z_{\frac{0.2}{2}} \Rightarrow Z_{0.1} \Rightarrow 1 - 0.1$$

$$\Rightarrow 0.9$$

$$\boxed{Z_{\text{score}} \Rightarrow 1.29}$$