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Assignment FSDA

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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% CI about mean?

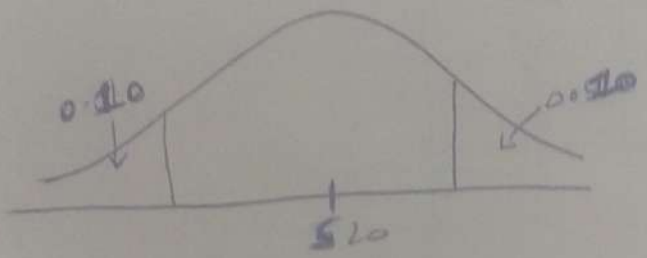
Soln

Here $\sigma = 100$ $n = 25$ $\bar{x} = 520$

α = Significance value

$1 - C.I = 0.2$

$C.I = 0.8$



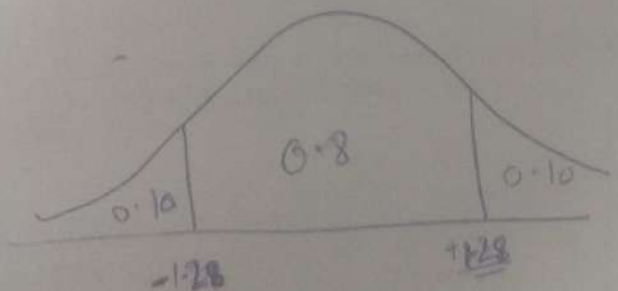
Point Estimate ± Margin of Error

↓

$\bar{x} \pm Z_{\frac{\alpha}{2}} \frac{\sigma}{\sqrt{n}}$ = Standard Error

$Z_{\frac{0.20}{2}} = Z_{0.10} = 1.28$

~~Lower fence = $\bar{x} - Z_{\frac{\alpha}{2}} \frac{\sigma}{\sqrt{n}}$~~



Lower fence = $\bar{x} - Z_{\frac{\alpha}{2}} \frac{\sigma}{\sqrt{n}}$

$= 520 - 1.28 \frac{100}{\sqrt{25}}$

$\Rightarrow 520 - 1.28 \times 20 = 494.4$

Higher fence = $\bar{x} - Z_{\frac{\alpha}{n}} \frac{\sigma}{\sqrt{n}}$

$= 520 + 1.28 \frac{100}{\sqrt{25}} = 545.6$