✱ Question

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

$\sigma = 100$

$n = 25$

$\bar{x} = 520$

$CI = 80\%$

$\alpha = 1 - 0.8 = 0.2$

$Z_{\frac{\alpha}{2}} = Z_{0.1}$

$Z_{\frac{\alpha}{2}} = \text{Area of } (1 - \frac{\alpha}{2})$

$= \text{Area of } (0.9)$

$= 1.2 + 0.09$ [using z-table]

$= 1.29$

Margin of error $= 1.29 \times \frac{100}{\sqrt{25}} = 25.8$

Lower fence $= 520 - 25.8 = 494.2$

Higher fence $= 520 + 25.8 = 545.8$