

Day 5

03/07/2022

9

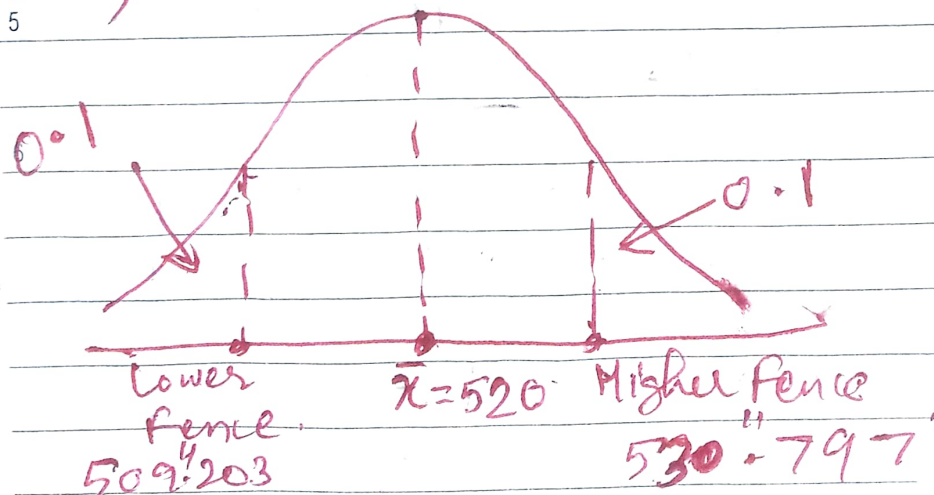
Q.2 In the Quant test of CAT exam, the population standard deviation is known to be 100. A sample of 25 test takers has a mean of 520. Construct a 80% C.I. about mean.

Solution Given;  $\sigma = 100, n = 25$   
 $\bar{x} = 520$

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For 80% or 0.8; C.I.;  $\alpha = 1 - CI$

Significant Value,  $\alpha = 1 - 0.8 = 0.2$



C.I. = Point estimate  $\pm$  Margin of error

FEBRUARY 2019

M	T	W	T	F	S	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28			

wherepoint estimate =  $\bar{x}$ 

$$\text{Margin of error} = Z_{\alpha/2} \frac{\sigma}{\sqrt{n}}$$

$$Z_{\alpha/2} = Z_{\frac{0.2}{2}} = Z_{0.1} = 0.53983$$

(from Z-Table)

So

$$\text{Higher fence} = \bar{x} + Z_{\alpha/2} \frac{\sigma}{\sqrt{n}}$$

$$= 520 + 0.53983 \times \frac{100}{\sqrt{25}}$$

$$= 520 + 0.53983 \times 20$$

$$\boxed{\text{Higher fence} = 530.7966}$$

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

$$= 520 - 0.53983 \times \frac{100}{\sqrt{25}}$$

$$= 520 - 0.53983 \times 20$$

$$= 520 - 10.7966$$

$$= 509.2034$$

MARCH 2019

M	T	W	T	F	S	S
					1	2
					3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	