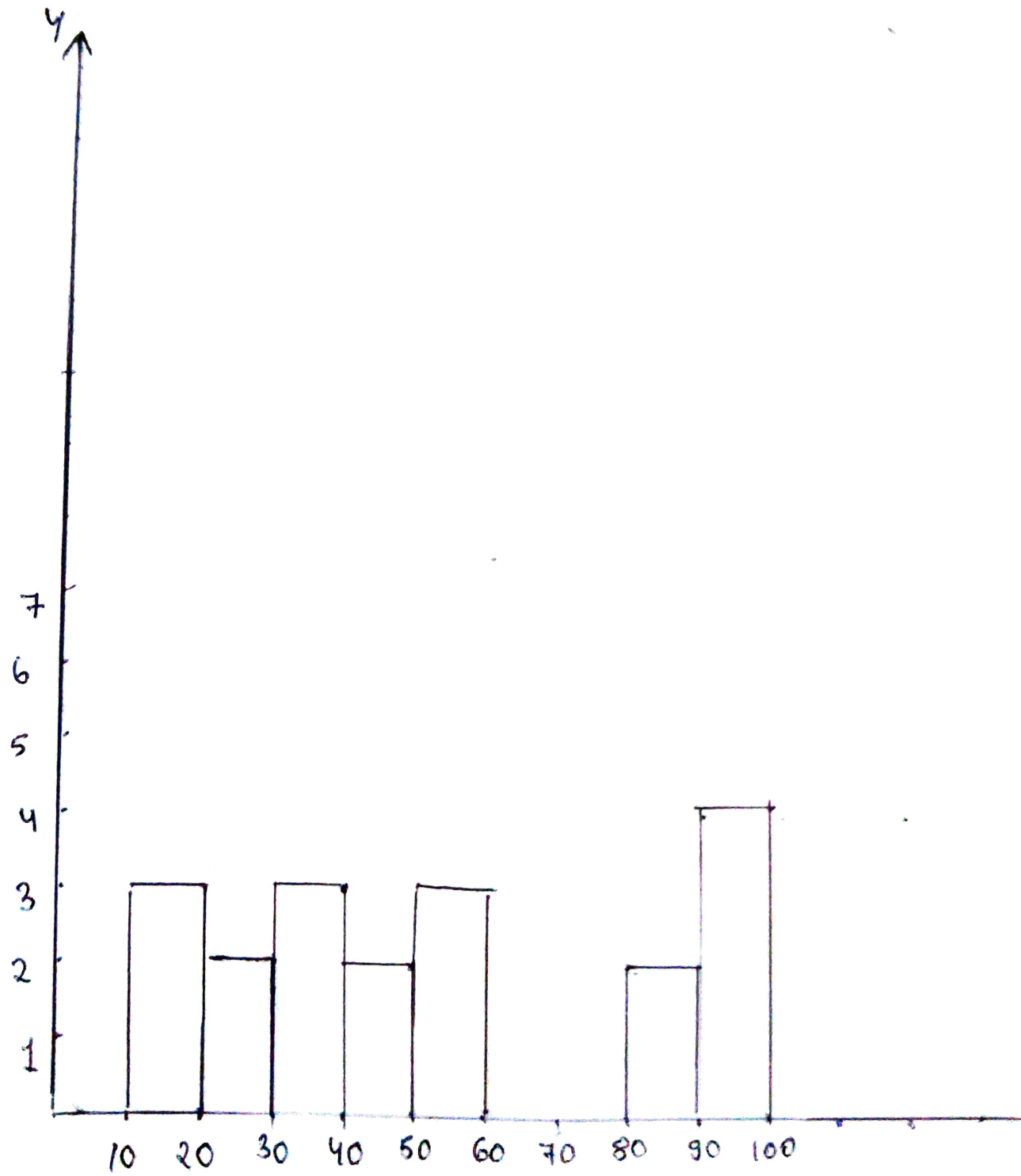
Quel) Plota histograma

10, 13, 18, 22, 27, 32, 38, 40, 45, 51, 56, 57, 88, 90, 92, 94, 99



Q2 In a quant test of the 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.

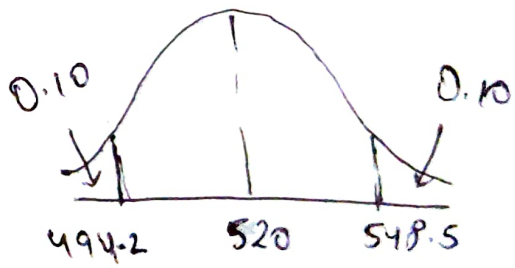
$\bar{x} = 520 \quad \sigma = 100 \quad n = 25.$

$\alpha = 1 - 0.80$
$= 0.20.$

Point estimate = $\bar{x} \pm$ margin of error

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

$$\bar{x} \pm Z_{0.10} \frac{100}{5}$$



Lower fence = $520 - 1.29 \times \frac{100}{5}$

$= 494.2$

Higher fence = $520 + 1.29 \times \frac{100}{5}$

$= 548.5$

03

H_0 : $P_0 \geq 60\%$

H_1 : $P_0 < 60\%$

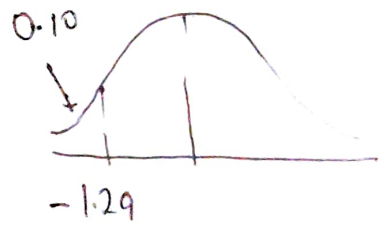
$n = 250$ $x > 170$

$\hat{P} = \frac{x}{n} = \frac{170}{250} = 0.68$

$P_0 = 0.60$ $q_0 = 1 - 0.60 = 40\%$ 0.40

$\alpha = 0.10$

$$Z\text{ test} = \frac{\hat{P} - P_0}{\sqrt{\frac{P_0 q_0}{n}}}$$



$$= \frac{0.68 - 0.60}{\sqrt{\frac{0.60 \times 0.40}{250}}}$$

$$= \sqrt{\frac{0.24}{250}} = \frac{0.08}{0.0309} = 2.5819.$$

So, we accept the null hypothesis & the car company is right.

Q4 What is the value of the 99 percentile?

2, 2, 3, 4, 5, 5, 5, 6, 7, 8, 8, 8, 8, 8, 9, 9, 10, 11, 11, 12

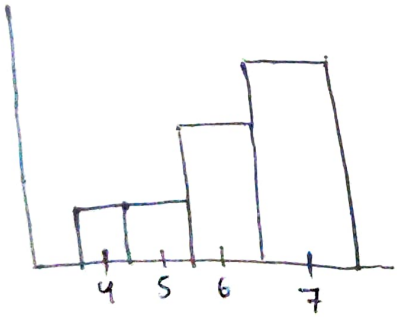
$\frac{99}{100} \times n+1$

$\frac{99}{100} \times 21 = 20.79$.

Value of 99 percentile = 12

Q5

left skewed

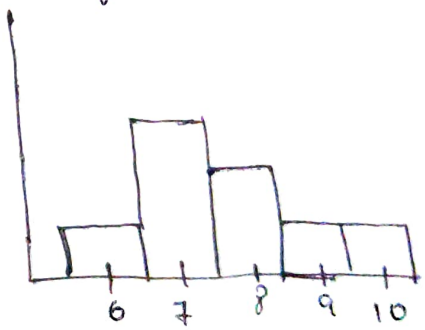


dataset → 4, 5, 6, 6, 6, 7, 7, 7, 7, 8

mean → 6.3
median → 6.5
mode → 7

mode > median > mean

right skewed



dataset → 6, 7, 7, 7, 7, 8, 8, 8, 9, 10

mean → 7.7
median → 7.5
mode → 7.

mean > median > mode.