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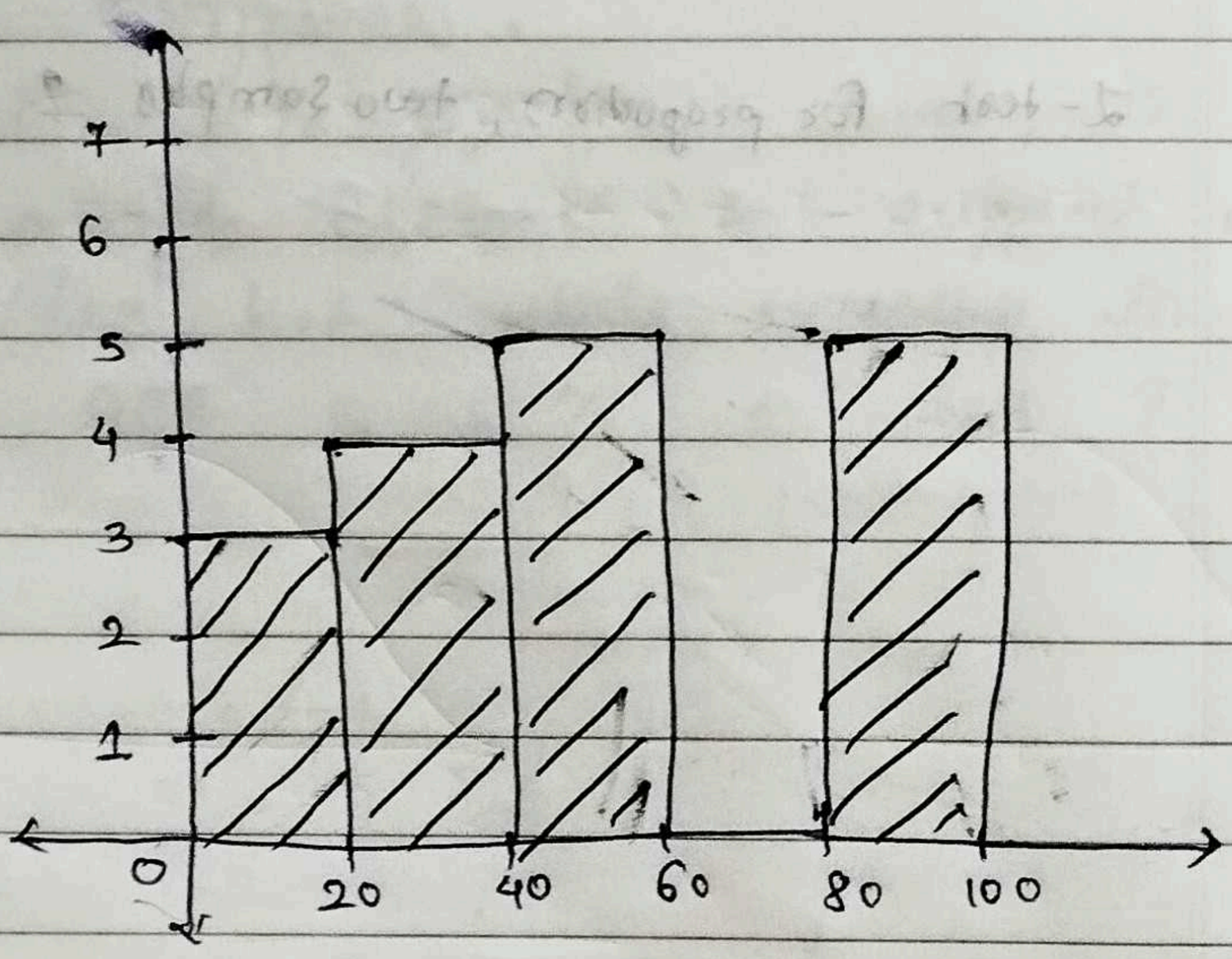
* Assignments → Statistics (All)

Ex 1] 10, 13, 18, 22, 27, 32, 38, 40, 45, 51, 56, 57, 88, 90, 92, 94, 99.

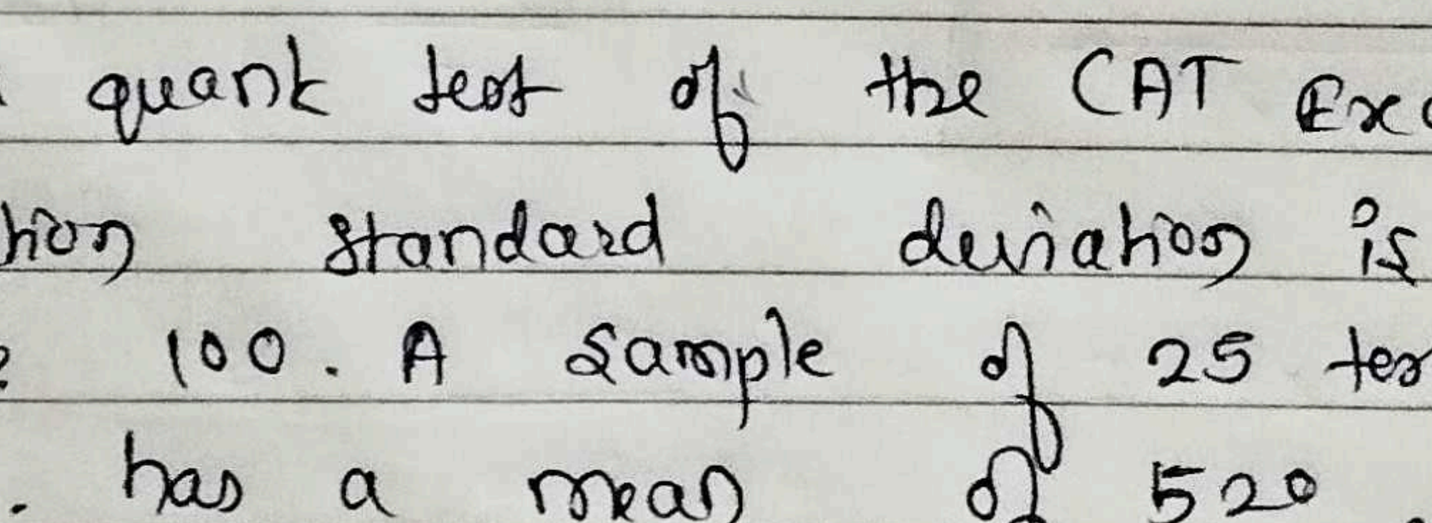
Bins = 5

Bin size = 20



Ex 2] 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.

⇒



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here; $\alpha = 0.2$ $\quad t = 0.2/2 \Rightarrow t \Rightarrow 0.1$

Degree of freedom,

$n-1 = 25-1 = 24$

The total proportion for both tails is 0.2

The proportion in each tail is 0.1.

$t = 1.3178$

lower

$$520 - 1.3178 \left(\frac{100}{\sqrt{25}}\right) = 493.464$$

upper

$$520 + 1.3178 \left(\frac{100}{\sqrt{25}}\right) = 546.536$$

I am 80% confident that the CAT exam is between 493.464 to 546.536.

Ex 3] A car company believes that the percentage of citizens in city ABC that owns a vehicle is 60% or less. A sales manager disagrees with this. He conducted a hypothesis testing surveying 250 residents and found that 170 residents responded yes to owning a vehicle.

a) State the null and alternate hypothesis.

b) At a 10% significance level, is there enough residence to support the idea that

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vehicle owner in ABC city is 60% or less.

⇒ $H_0 : p \leq 0.60$ $\quad n = 250$

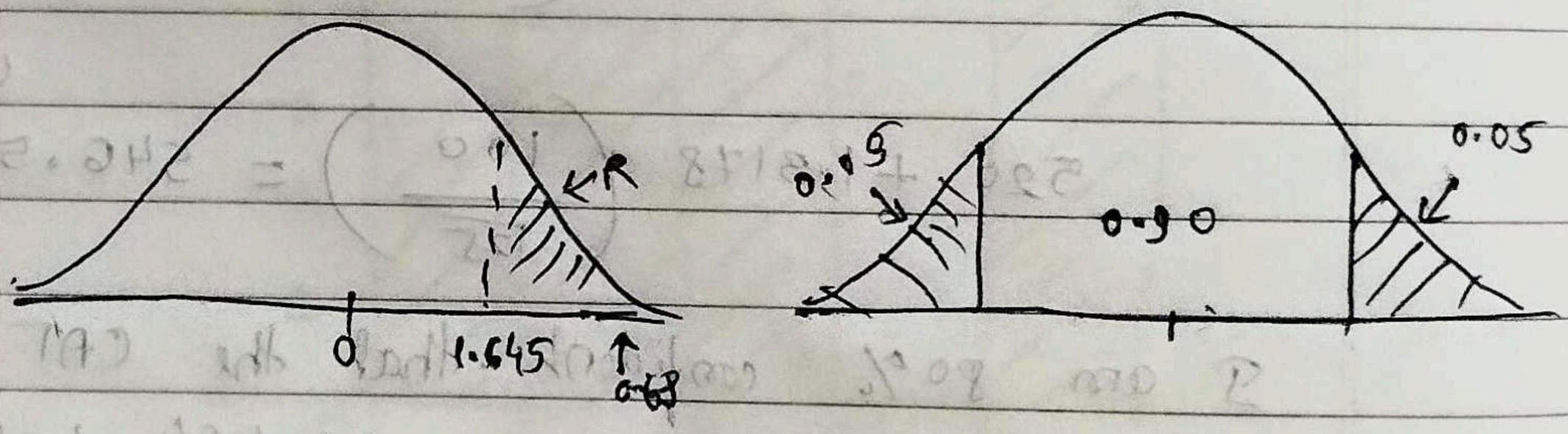
$H_1 : p > 0.60$ $\quad x = 170$

$\hat{p} = \frac{170}{250} = 0.68$

$p_0 = 0.60$

$q_0 = 1 - 0.6 = 0.40$

$\alpha = 0.10$ $\quad c = 1 - \alpha = 1 - 0.10 = 0.90$



$$\Rightarrow \sqrt{\frac{p_0 q_0}{n}} = \sqrt{\frac{0.06\,(0.40)}{250}}$$

$$z = \frac{0.08}{0.003984} = 2.58$$

⇒ At a 10% significance level. Is there enough evidence to reject the idea that vehicle owner in ABC city is 60% or less.

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Ex 4] 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, 11

⇒

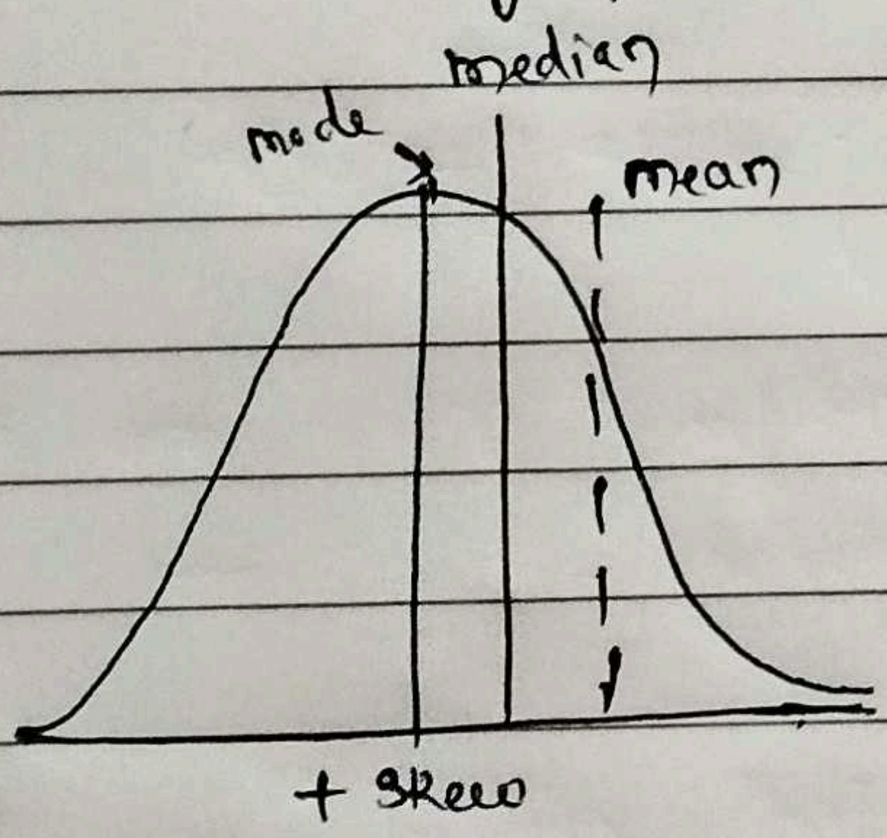
55% ↓ 99% ↓ ↓

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

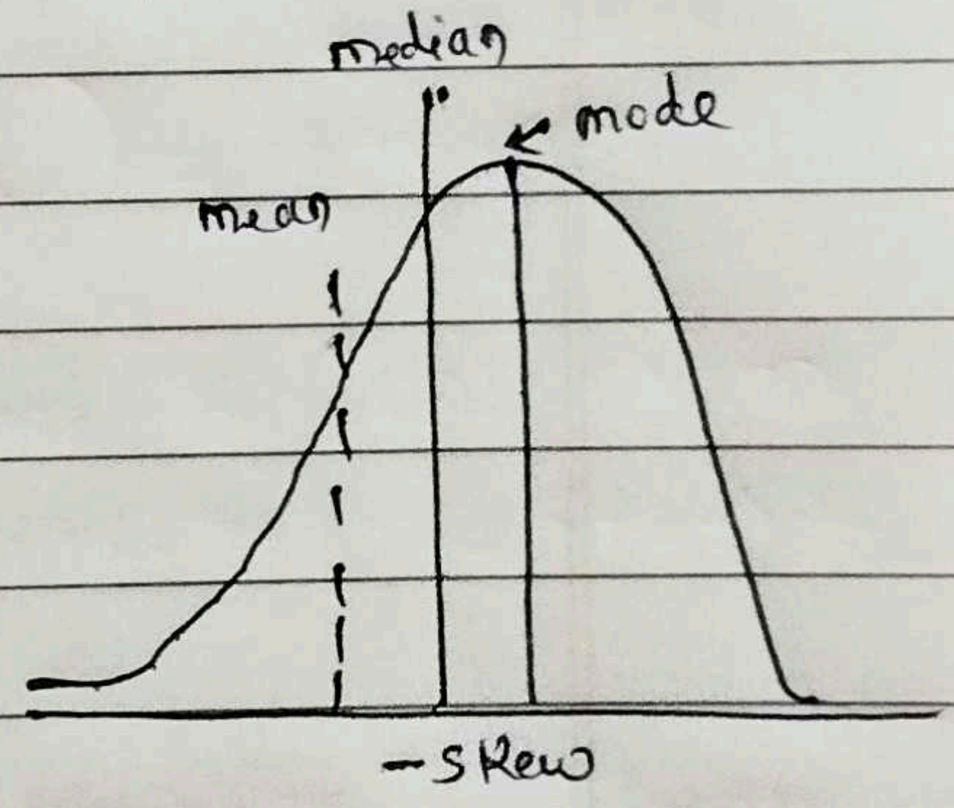
$$\text{value} = \frac{99}{100} \times 21 = 20.79$$

Ex 5] In left and right skewed data, what is the relationship between mean, median, mode ? Draw the graph and represent the same.

⇒



Mean > median > mode



mode > median > mean