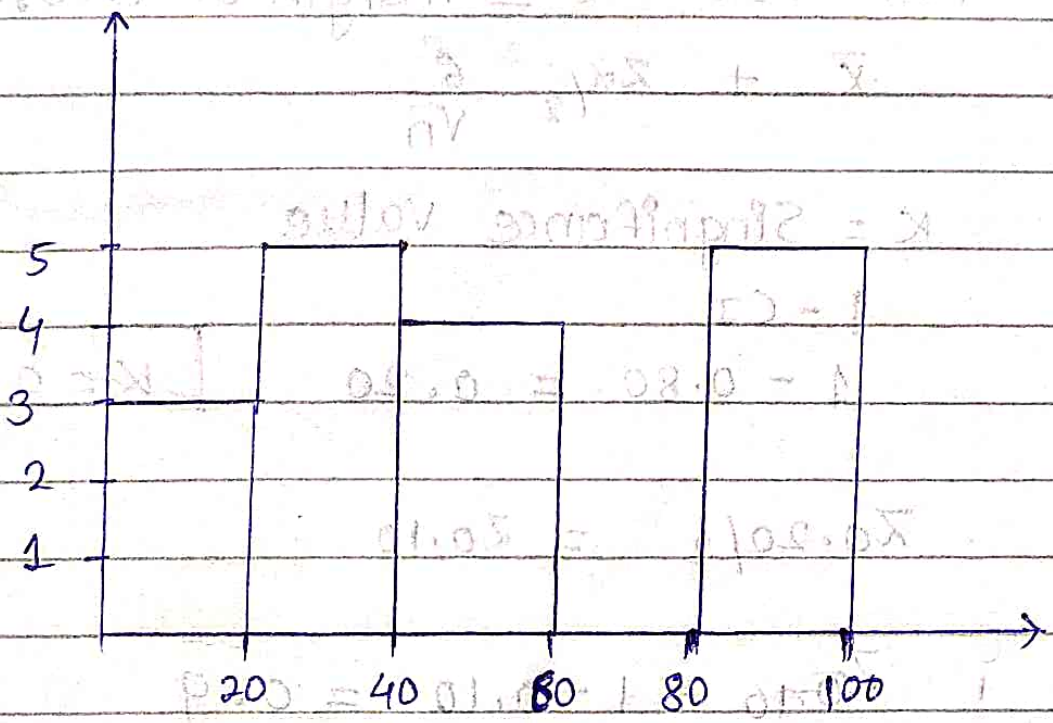
Assignment : 1

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

bins = 5

bin size = 20



Q.2 In a quant test of the CAT exam, the popula
standard deviation is known to be 100.
A sample of 25 tests has a mean of 52
construct an 80 % CI about the mean.

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

Point estimate ± margin of error

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

α = Signifiance value.

$1 - CI$

$1 - 0.80 = 0.20$ $\boxed{\alpha = 0.20}$

$z_{0.20/2} = z_{0.10}$

$z_{0.10} = 1 - 0.10 = 0.9$

$z_{\alpha/2} = z_{0.20/2} = 1.29$

$$\bar{x} - z_{\alpha/2} \frac{\sigma}{\sqrt{n}} = 520 - 1.29 \frac{100}{\sqrt{25}}$$

$$= 520 - 1.29 \times 20$$

$= 520 - 25.8$

$= 494.2$

$$\bar{x} + z_{\alpha/2} \frac{\sigma}{\sqrt{n}} = 520 + 1.29 \frac{100}{\sqrt{25}}$$

$$= 520 + 1.29 \times 20$$

$$= 545.8$$

Assignement : 1

Q. 3 A car belives with the percentage of citizens in the city ABC that owns a vehicle is 60 % or less. A sales manager disagree with this. He conducted a hypothesis testing surveying 250 residents & found that 170 residents reponded yes to owning a vehicle.

a) State the null & alternate hypothesis

b) At a 10% significance level is, is there enough evidence to support the idea that vehicle owner in ABC city is 60 % or less

→

1) $H_0 : P_0 \leq 60\% = H_0 : P_0 \leq 0.60$

$H_1 : P_0 > 0.60$

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

$P_0 = 1 - q_0 \Rightarrow q_0 = 1 - P_0 = 1 - 0.60$

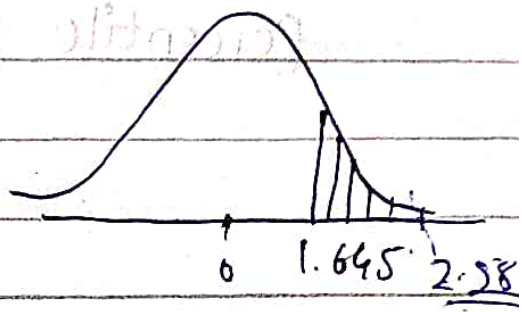
$\boxed{q_0 = 0.40} \quad \boxed{\hat{P} = 0.68}$

2) $CI = 0.90$

$\alpha = 0.10$

$$z\text{-test} = \frac{\hat{P} - q_0}{\sqrt{\frac{P_0 q_0}{n}}} = \frac{0.68 - 0.60}{\sqrt{\frac{0.60 \times 0.40}{250}}}$$

$$z = 2.58$$



$$P_0 > 0.60$$

$$2.58 > 0.68$$

Conclusion : Reject the null hypothesis

Q. What is the value of the 99th percentile

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

percentile rank of 99 % $= \frac{99}{100}(20+1)$

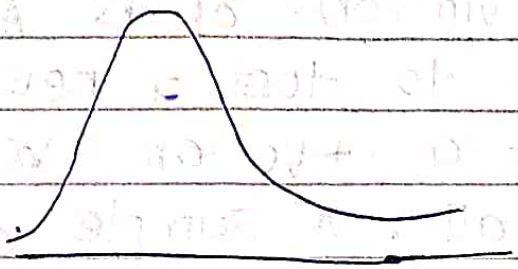
$= \frac{99}{100} \times 21$

$= 20.79$

99th percentile value is 12

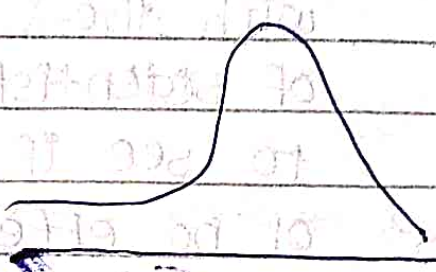
Assignement

* Relation between mean, median and mode



Right skewed distn

Mean > Median > mode



Left skewed distn

Mean < median < mode