Que 1) Plot a histogram,

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

Que 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.

Que 3) A car 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 & found that 170 residents responded yes to owning a vehicle.

a.

State the null & alternate hypothesis.

b.

c.

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

d.

Que 4) What is the value of the 99 percentile?

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

Que 5) In left & right-skewed data, what is the relationship between mean, median & mode?

Draw the graph to represent the same.

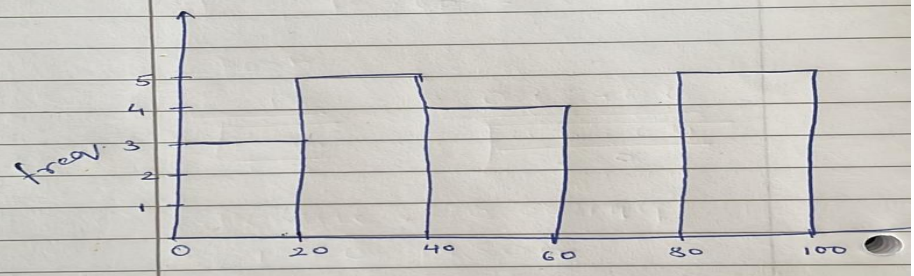
Q1. Plot a histogram

Bins = 5

bin size = 20

10, 13, 18, 22, 27, 32, 38, 40, 45

51, 56, 57, 88, 90, 92, 94, 9



Q2

$\sigma = 100$, $n = 25$, $\bar{x} = 520$ C.I = 80%

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

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

$$Z\alpha/2 = Z\frac{0.20}{2} = Z = 0.10$$

$$Z_{0.10} = 1.28$$

$$C.I = \bar{x} \pm Z\alpha/2 \frac{\sigma}{\sqrt{n}}$$

$$520 \pm \frac{1.28 \times 100}{\sqrt{25}}$$

$$520 \pm 1.28 \times 20$$

$$520 \pm 25.6$$

$$545.6$$

$$520 - 25.6$$
$$= 494.4$$

HF = 545.6
LF = 494.4

Q3

H_0: $P \leq 60\%$ $\quad n = 250$

H_1: $P > 60\%$ $\quad x = 170$

$\alpha = 0.10$ (significance level)

$P_0 = 0.60$

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

$q_0 = 1 - .60 = 0.40$

Z test

$$\frac{\hat{P} - P_0}{\sqrt{\frac{P_0 q_0}{n}}} = \frac{0.68 - 0.6}{\sqrt{\frac{0.6 \times 0.4}{250}}}$$

Pvalue = 0.00494

$1 - 0.99506$

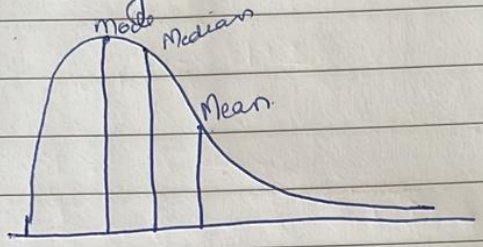
$P <$ significance level

Con- Null Hypo rejected

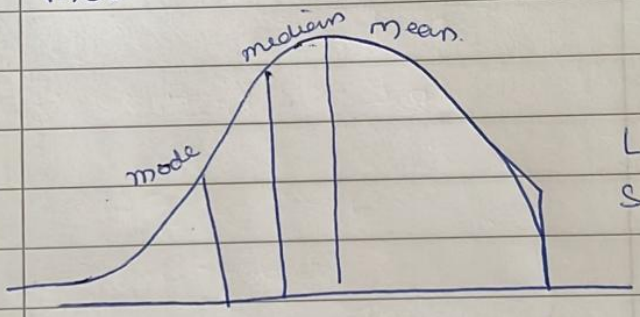
Q4 Value = $\frac{\text{Percentile}}{100} \times (n+1)$

$= \frac{99}{100} \times 21 = 20.79 = 12$

Q5 Right Skewed.



mode < median < mean.



Left Skewed.

mean < median < mode.