Statistics Assignment

Que 1) Plot a histogram,
10, 13, 18, 22, 27, 32, 38, 40, 45, 51, 56, 57, 88, 90, 92, 94, 99

Answer: **Excel sheet result**

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.

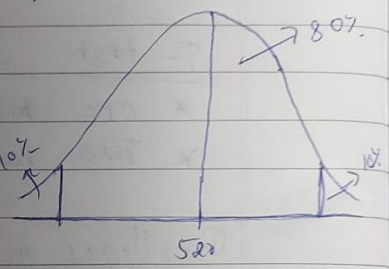
03/07/22 Assignment

1) In the Quest 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% Confidence interval about the mean.

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

CI = Point Estimate $\pm$ Margin of error

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



$\alpha = 10\% = 0.1 \qquad 1 - 0.10 = 0.9$

$Z_{\alpha/2} = Z_{0.05} = 1.29$

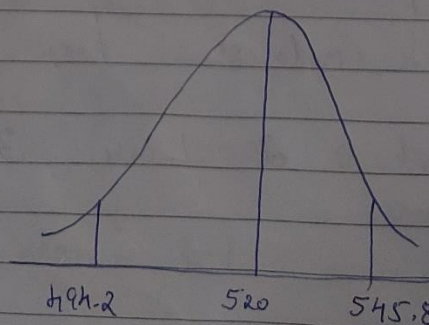
Lower fence $= \bar{x} - \left(Z_{\alpha/2} \times \frac{\sigma}{\sqrt{n}}\right)$

$= 520 - \left(1.29 \times \frac{100}{\sqrt{25}}\right)$

$= 520 - (1.29 \times 20) = 494.2$

Higher fence $= \bar{x} + \left(Z_{\alpha/2} \times \frac{\sigma}{n}\right)$

$= 520 + (1.29 \times 20) = 545.8$

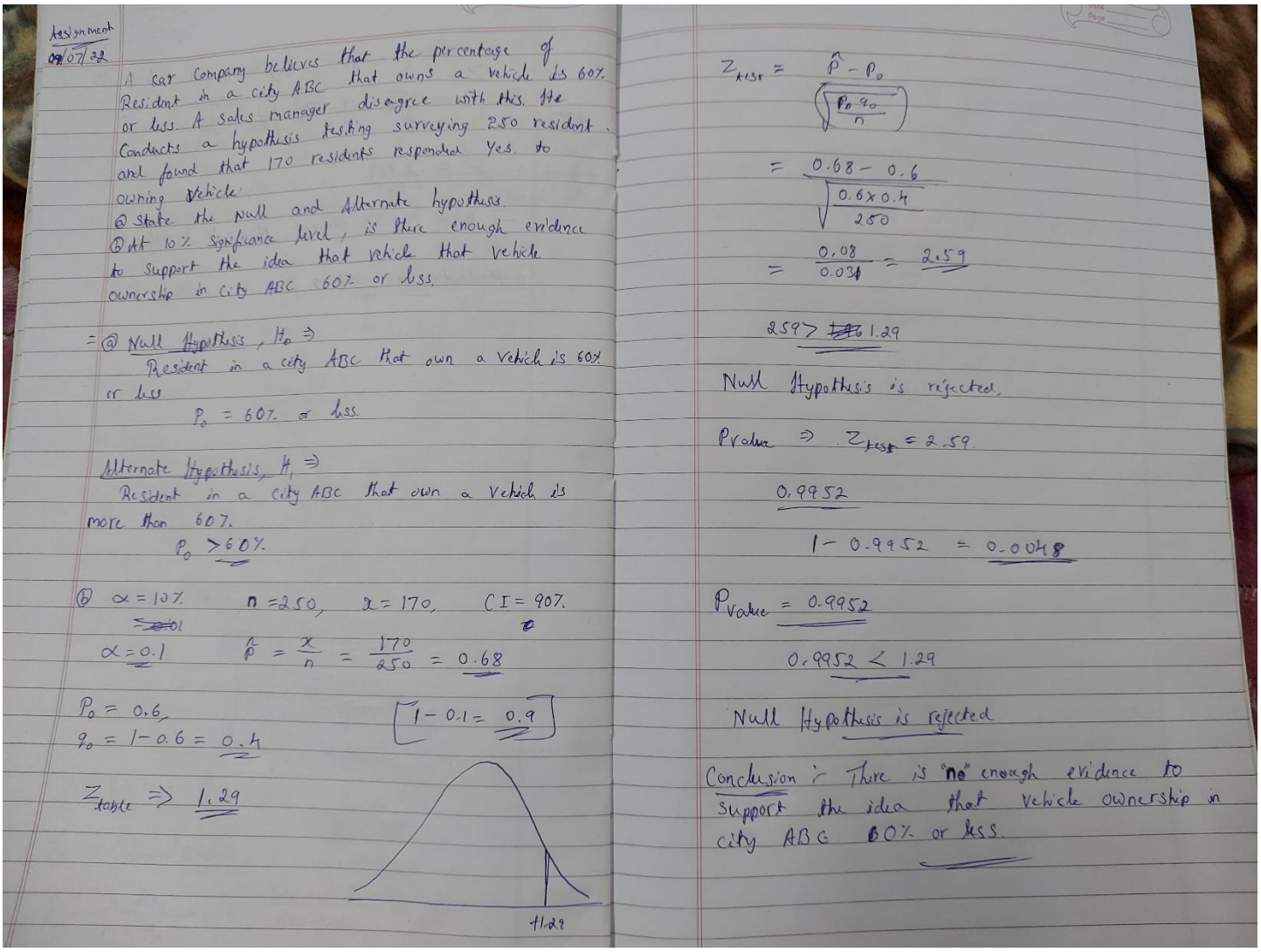


Que 3) A car believes that the percentage of citizens in city ABC that owns a vehicle is 60% or less. A sales manager disagrees with this. He conducted a hypothesis testing surveying 250 residents & found that 170 residents responded yes to owning a vehicle.

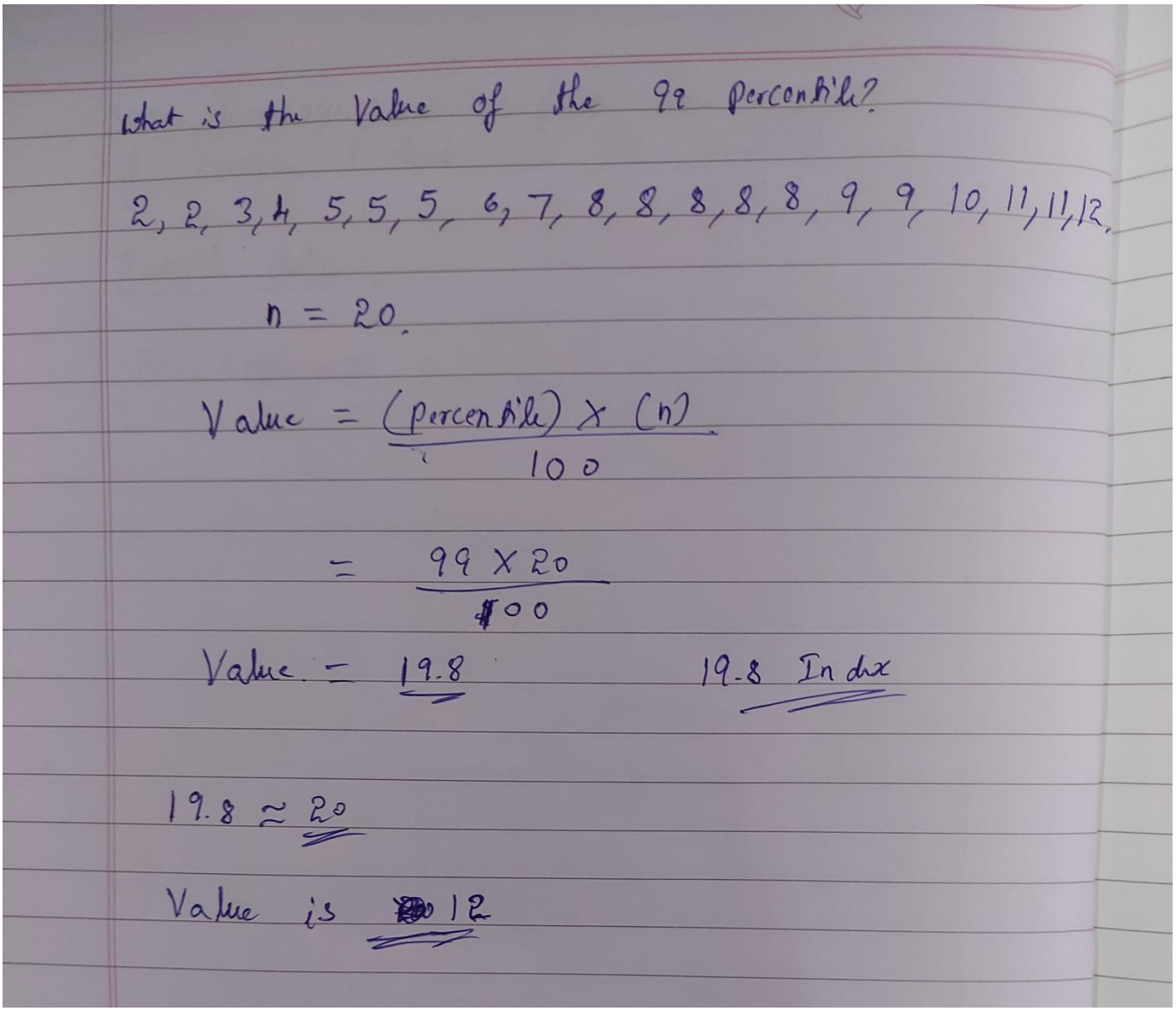
a) State the null & alternate hypothesis.

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

Answer :



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
Answer :



Excel Sheet Result :

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

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

Value of 99 Percentile	11.81

Que 5) In left & right-skewed data, what is the relationship between mean, median & mode? Draw the graph to represent the same.

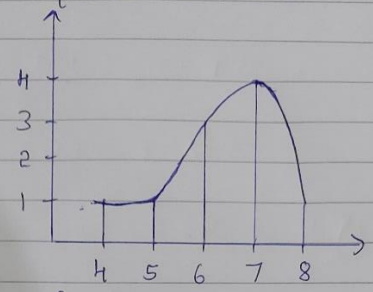
Answer :

2) What is the differences between mean, median & mode Right skewed & left skewed graph.

Left Skewed	Right Skewed.
"Mean" is less than "Median" and they both are less than "Mode".	"Mode" is less than "Median" and they both are less than "Mean".

Example:- Left skewed.

Data = {4 5 6 6 6 7 7 7 7 8}



Mean = $\frac{(4+5+6+6+6+7+7+7+7+8)}{10} = \frac{63}{10} = 6.3$

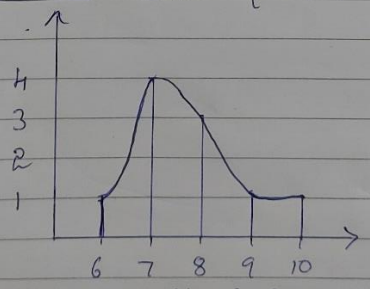
Mean = 6.3 Mode = 7

Median = $\frac{6+7}{2} = \frac{13}{2}$

Median = 6.5

Conclusion:- "Mean" is lesser than Median & they both are lesser than Mode.

Right skewed:- Data = {6 7 7 7 7 8 8 8 9 10}



Mean = $\frac{6+7+7+7+7+8+8+8+9+10}{10} = \frac{77}{10}$

= 7.7 Median = $\frac{7+8}{2} = \frac{15}{2} = 7.5$ Mode = 7

Conclusion = " Mode is lesser than Median & they both are lesser than Mean.