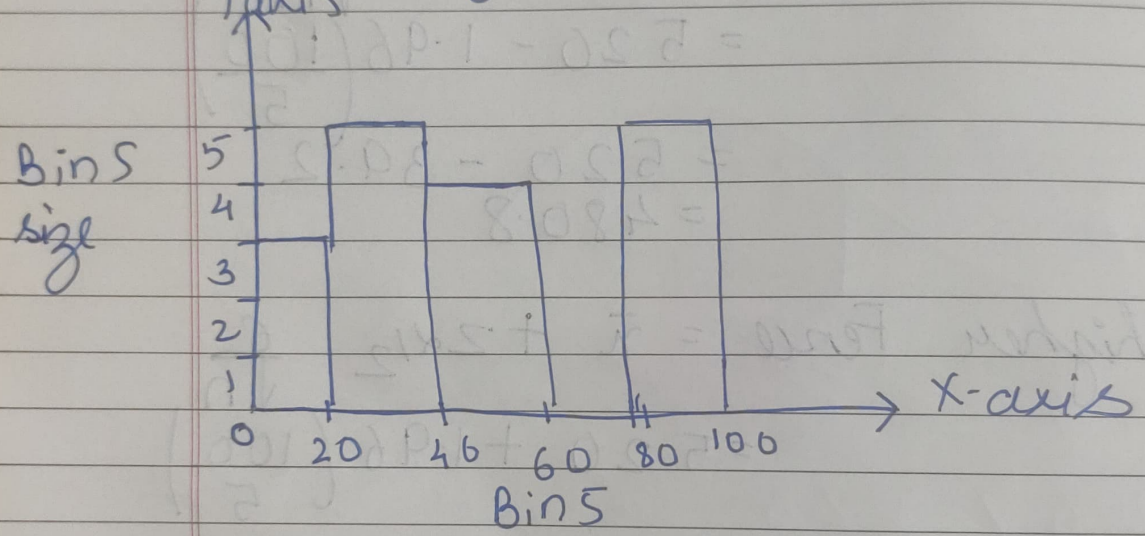
Statistics
Assignment 1

Eg: 10, 13, 18, 2·2, 2·7, 3·2, 3·8, 40, 4·5, 5·1, 5·6, 5·7, 88, 90, 92, 94, 99

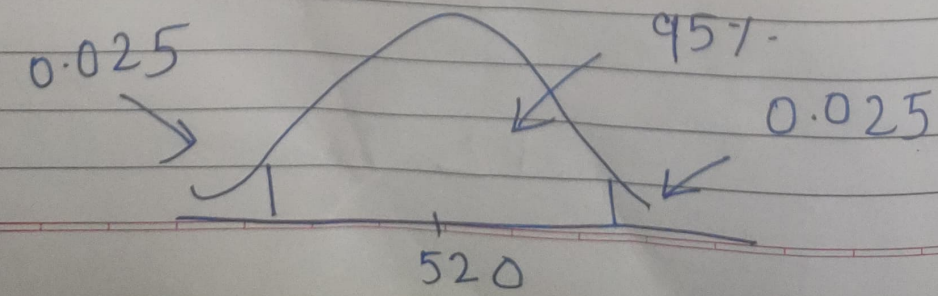
bins = 5
bins size = 20



Assignment

Question 2 In a quant test of the CAT Exam, the population standard deviation is known to be 100. A sample of 25 test taken has a mean of 520. Construct an 80% C.I about the mean

Ans (2) $\sigma = 100$ $n = 25$ $\bar{x} = 520$



Point Estimater ± Margin of Error

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

$z_{\frac{0.05}{2}} = z_{0.025} = 1.96$

lower Fence $= \bar{x} - z_{\alpha/2} \frac{\sigma}{\sqrt{n}}$

$= 520 - 1.96\left(\frac{100}{5}\right)$

$= 520 - 39.2$

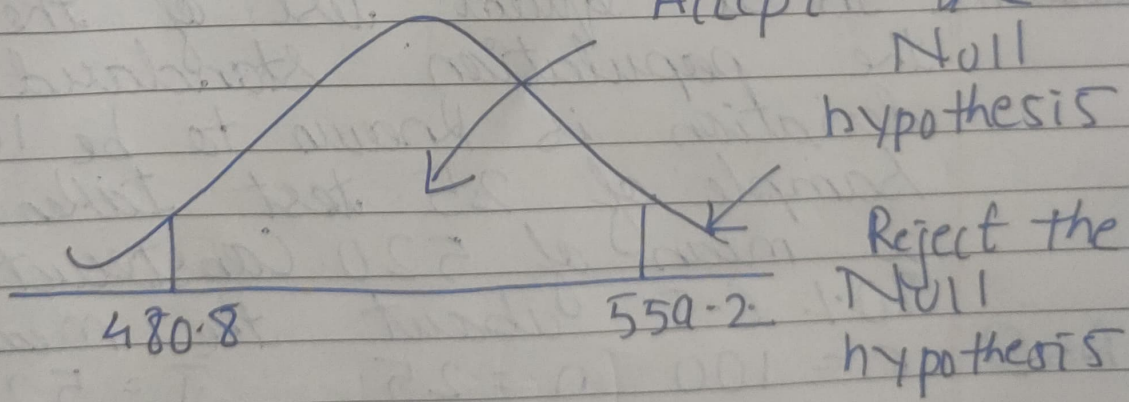
$= 480.8$

higher Fence $= \bar{x} + z_{\alpha/2} \frac{\sigma}{\sqrt{n}}$

$= 520 + 1.96\left(\frac{100}{5}\right)$

$= 520 + 39.2$

$= 559.2$



Question 3

H_0: Null hypothesis $p_0 = 60\%$. $n = 250$

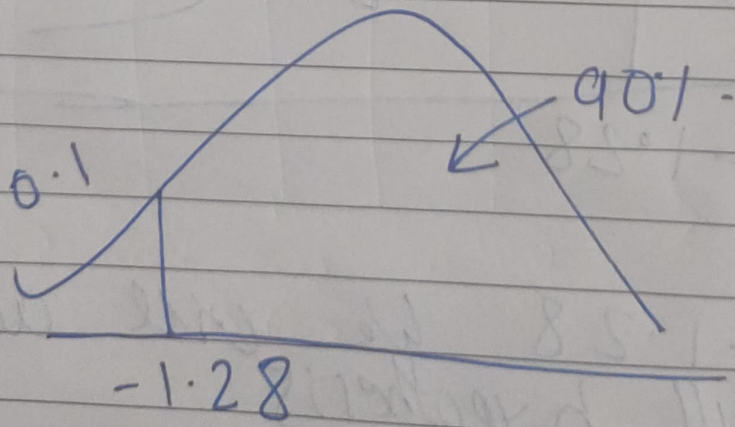
H_1: Alternate hypothesis $\neq 60\%$. $x = 170$

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

$$p_0 = 1 - 0.6 = 0.4$$

$\alpha = 0.1$

$1 - 0.1 = 0.9 = 90\%$.

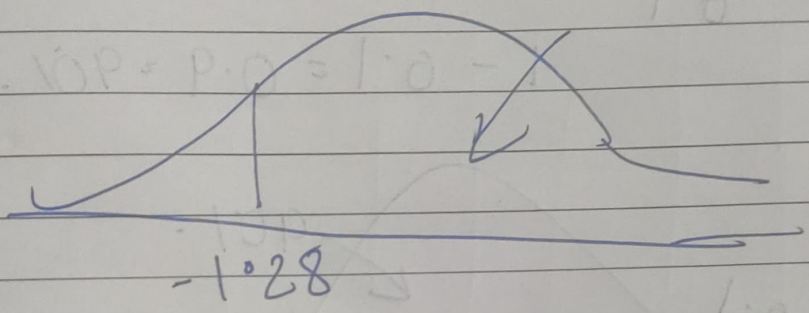


z - test with proportion

Z test $= \frac{0.68 - 0.6}{\sqrt{\frac{0.4 \times 0.6}{250}}}$

$= \frac{0.08}{\sqrt{0.00096}}$

$= \frac{0.08}{0.030} = 2.6$



$2.6 > -1.28$ We will accept the Null hypothesis

Q. What is the value of the 99 percentile?

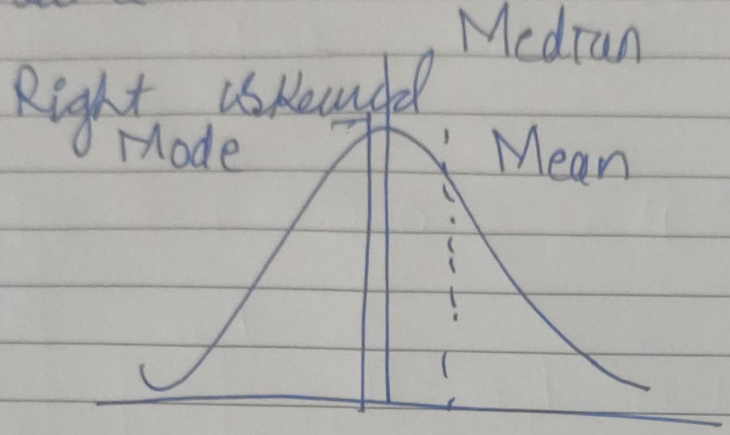
2, 2, 3, 4, 5, 5, 5, 6, 7, 8, 8, 8, 8, 9, 9, 10, 11, 11, 12

Value $= \frac{99}{100} \times (21) = \frac{2079}{100}$

$= 20.79$

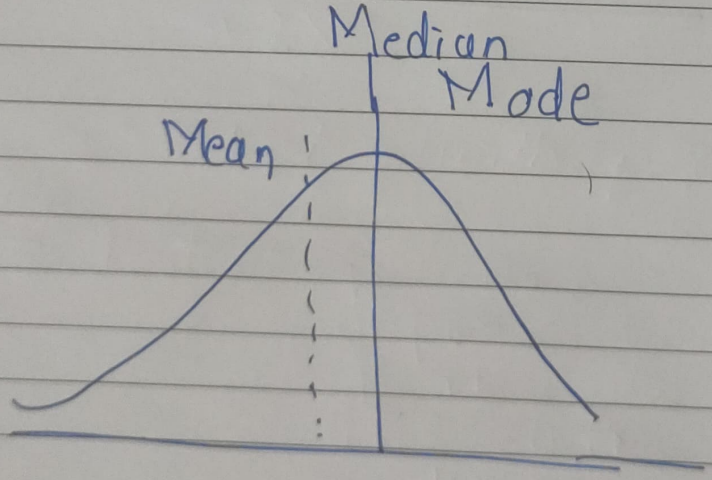
$= 12$

Q5 In left & right skewed data, what is the relationship between mean, median, & mode? Draw the graph to represent the same.



Mean > Median > Mode

left skewed graph



Mode > Median > Mean