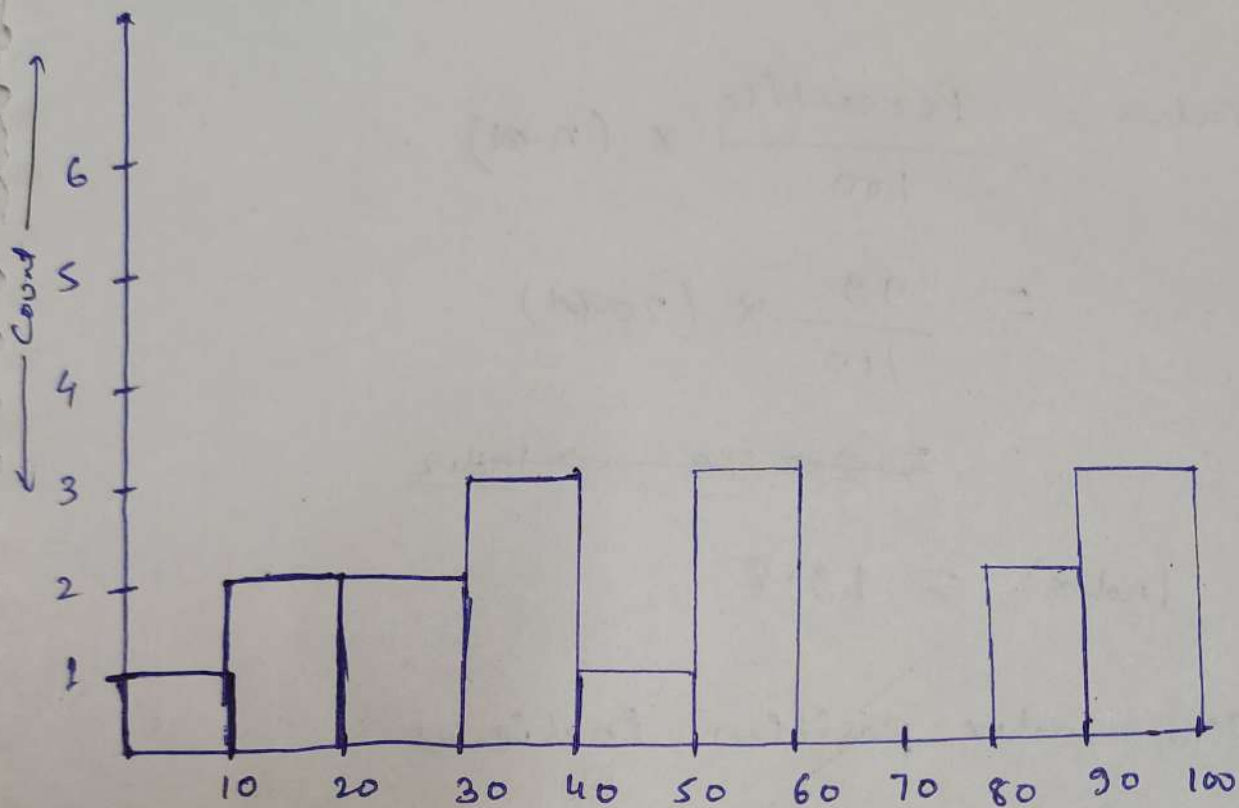


① Plot a histogram.

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



bin = 10

- 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.

$$\sigma = 100$$

$$n = 25$$

$$\bar{x} = 520$$

$$CI = 80\%$$

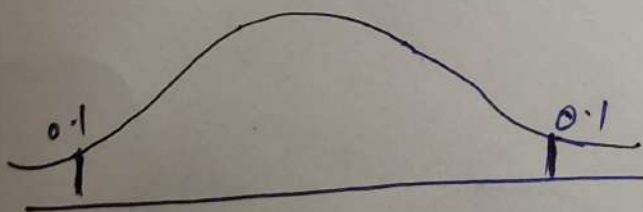
$$CI = \bar{x} \pm Z_{\frac{\alpha}{2}} \frac{\sigma}{\sqrt{n}}$$

$$\alpha = 1 - CI$$

$$= 1 - 0.8$$

$$= 0.2$$

$$Z_{\frac{\alpha}{2}} = Z_{\frac{0.2}{2}} = Z_{0.1}$$



Entire area of the curve = 1

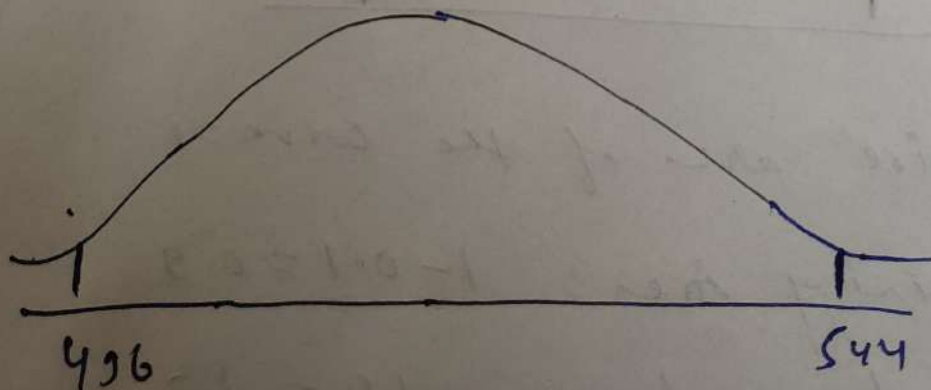
Remaining Area = $1 - 0.1 = 0.9$

value of 0.9 from Z table = 1.2

$$Z_{0.1} = 1.2$$

$$\begin{aligned}
 \text{Lower fence} &= \bar{x} - z_{\alpha/2} \frac{\sigma}{\sqrt{n}} \\
 &= 520 - 1.2 \times \frac{100}{\sqrt{25}} \\
 &= 520 - 102 \times 20 \\
 &= 520 - 24 \\
 &= 496
 \end{aligned}$$

$$\begin{aligned}
 \text{Higher fence} &= \\
 &\bar{x} + z_{\alpha/2} \frac{\sigma}{\sqrt{n}} \\
 &= 520 + 1.2 \times \frac{100}{\sqrt{25}} \\
 &= 520 + 24 \\
 &= 544
 \end{aligned}$$



④ What is the value of the 99 percentile?

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

Soln \rightarrow

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

$$= \frac{99}{100} \times (20+1)$$

$$\cancel{20.79} \rightarrow \text{Index}$$

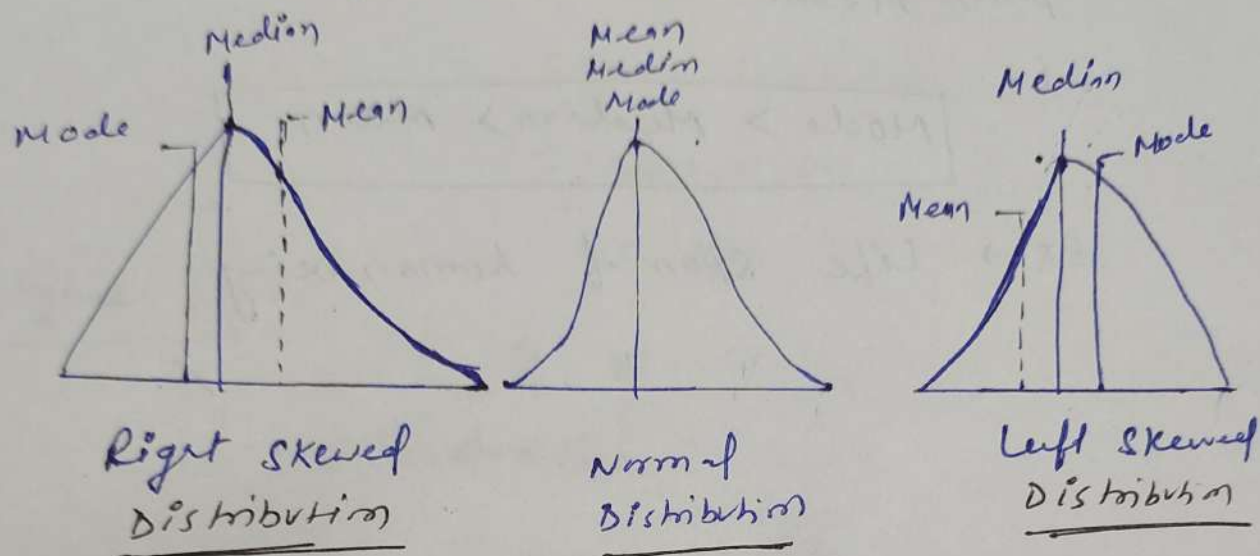
$$\text{Index} = 19.8$$

\Rightarrow 19.8 Index position indicates

Average (19+20)

$$= \frac{11+12}{2} = \underline{\underline{11.5}}$$

- ⑤ In left & right-skewed data, what is the relationship mean, median & Mode?
Draw the graph to represent the same



① Right Skewed Distribution:-

The relationship between Mean, Median & mode are:-

$$\text{Mean} > \text{Median} > \text{Mode}$$

Example:- Length distribution,
Length of comments.

② Symmetrical / normal distribution:-

In this mean, median, and mode is approximately ~~eq~~ equal.

i.e. $\text{Mean} \approx \text{Median} \approx \text{Mode}$

Example:- Age, height, weight

(iii) Left Skewed data :- it is also known as 'negative skew data'. in this the Mode is highest than Median and then Mean.

i.e.

$$\text{Mode} > \text{Median} > \text{Mean}$$

ex → Life span of human being