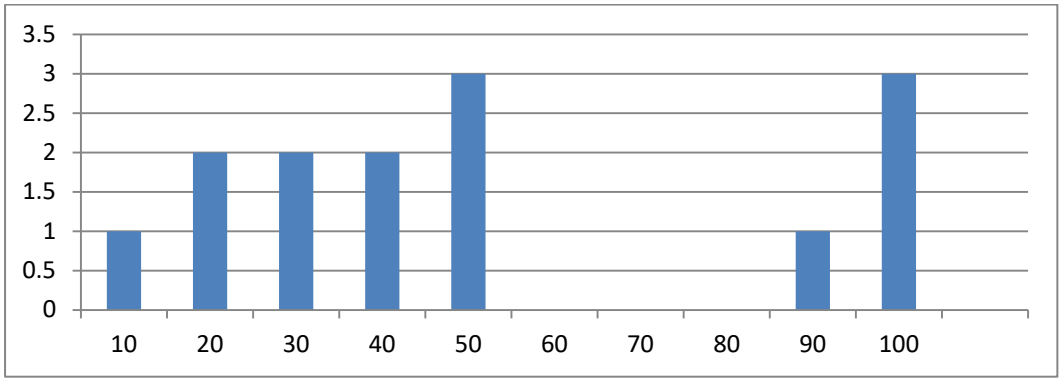
1) Plot a histogram,

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

Answer: See the below histogram.



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.

Answer: SD =100, n=30, $\bar{x}$ =520

CI = Point estimate ± margin error.

= 520± 2.33(20) =520± 46.6

Confidence interval is 473.4 to 566.6 of mean in CAT Exam.

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: Null Hypothesis H0= 60% n=250, x=170.

Alternative Hypothesis H1 < 60%

1. Pn=x/n=0.68, qo=0.4, Po=0.6
2. Significant value α= 0.9
3. Decision rule= 0.9= 1.2+0.09= 1.29
4. Z test with proportions.

   =0.68-0.6/√0.6*.0.4/250= 0.2581

0.2581 is lesser then 1.29.

P-value=0.59871 is lesser then 0.2581 so we can accept the null hypothesis.

Conclusion: In this city citizen owns less than 60% of vehicle.

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: Value = Percentile/100*(n+1)

= 99/100*21=20th Index of value.

Therefore the value of 99 percentile is 12.

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

Draw the graph to represent the same.

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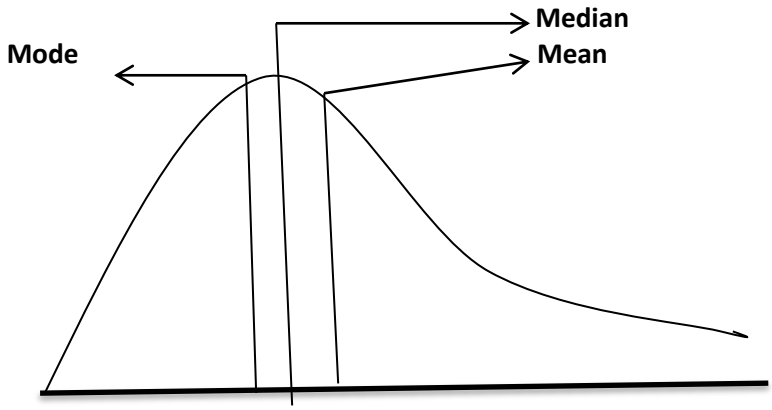
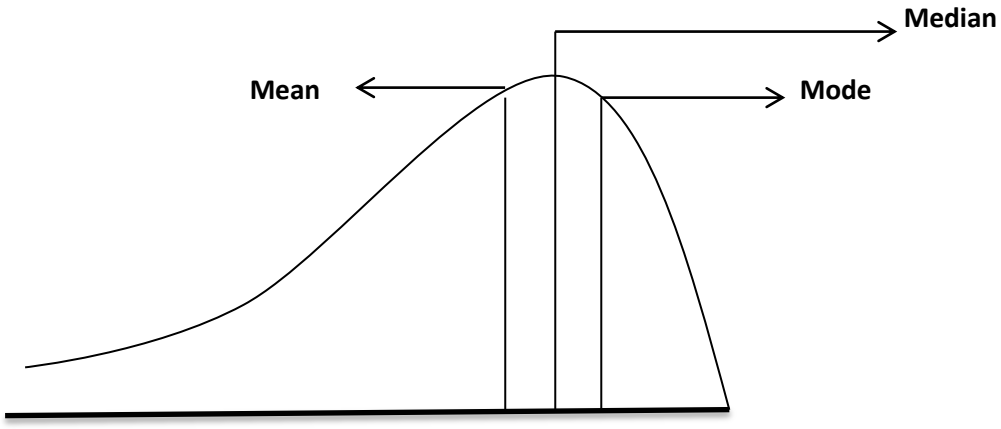


(Positive/Right Skewed data) => Mean>Median>Mode.

Example: Wealth Distribution and length of commands.



(Negative/Left Skewed data) => Mode>Median> Mean.

Example: Age of death from natural causes.