STATISTICS ASSIGNMENT 1:

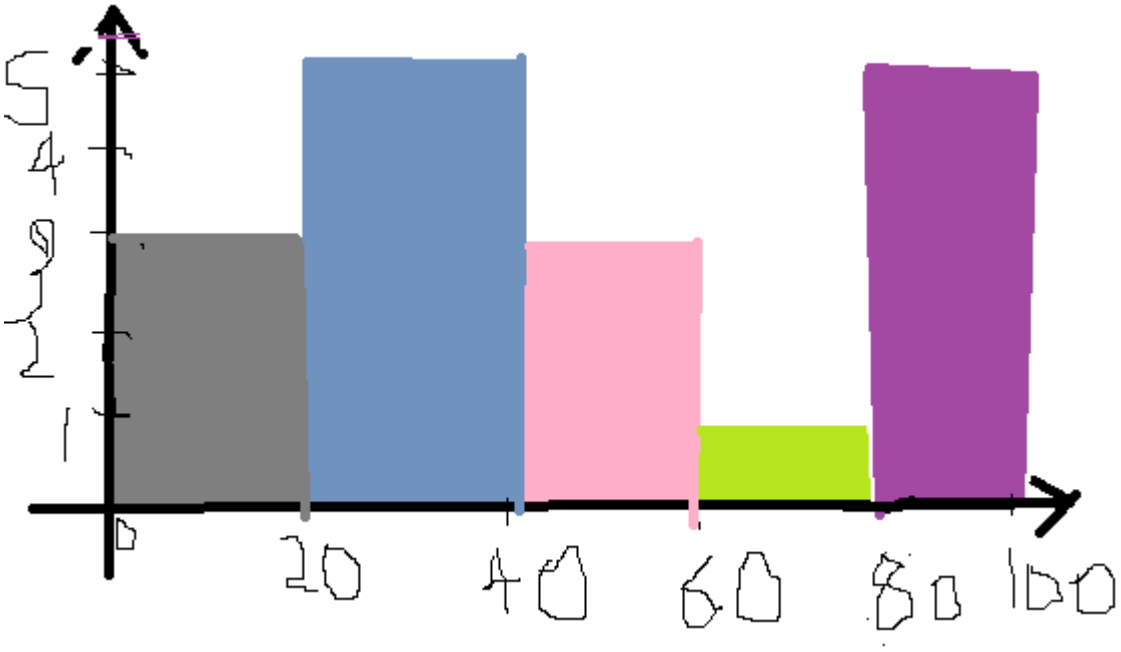
Que 1) Plot a histogram,

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

Ans) Bins=5

Binsize=20

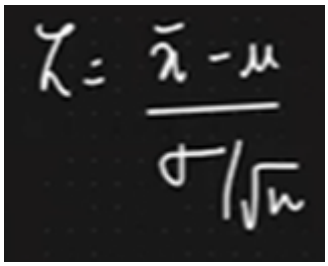
HISTOGRAM



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.

Ans)sd=100,n=25,mean=520,C.I=80%

Since we have sd so we use z test



At 80% CI z=1.282

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.

Ans) null hypothehis(H0)= percentage of citizens <=60%

Alternate hypothesis(H1)=percentage of citizens is>60%

CI=90%,SI=10%

n=250,x=170

ro=170/250=0.68

at 90% CI

z score=-1.6 to +1.6

Z = (0.68-0.60)/root of ((0.6*0.4)/250)

=2.58

2.58> -1.6 ,so null hypothesis is accepted,

Conclusion= percentage of citizens <=60%

Q4) 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

Ans) value = (percentile/100)*(n+1)

Value = (99/100)*21

Value=20.79 index

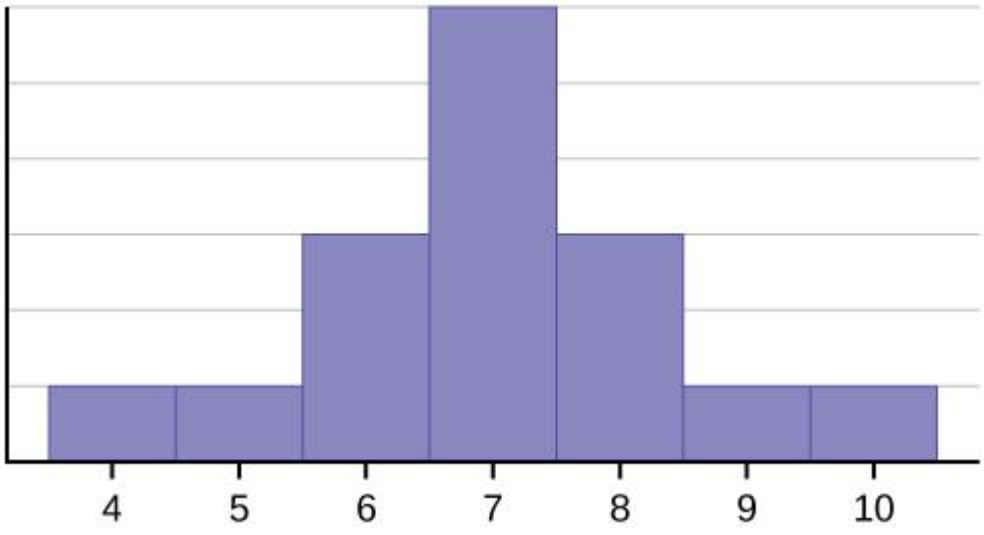
So from dataset we take 20^{th} and 21^{th} value and calculate average,but there is no 21th value,so

Value of 99 percentile is 20^{th} index=12

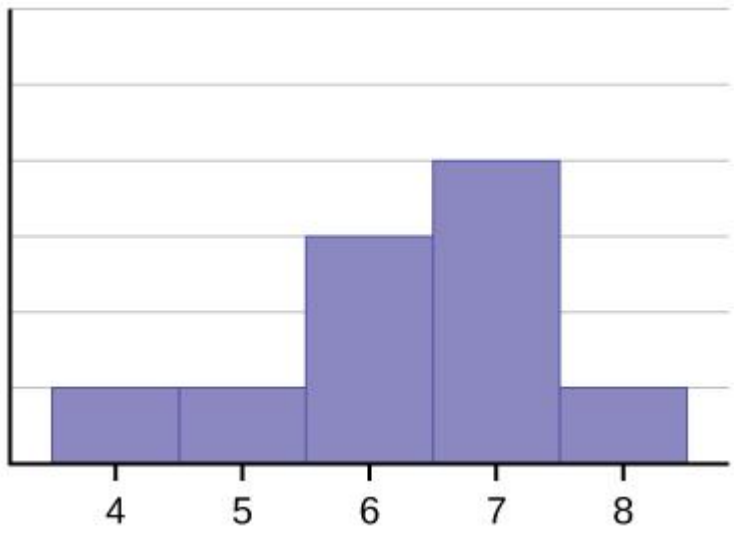
Que 5) In left & right-skewed data, what is the relationship between mean, median & mode?

Draw the graph to represent the same.

Ans) Consider the following data set.
4; 5; 6; 6; 6; 7; 7; 7; 7; 7; 7; 8; 8; 8; 9; 10

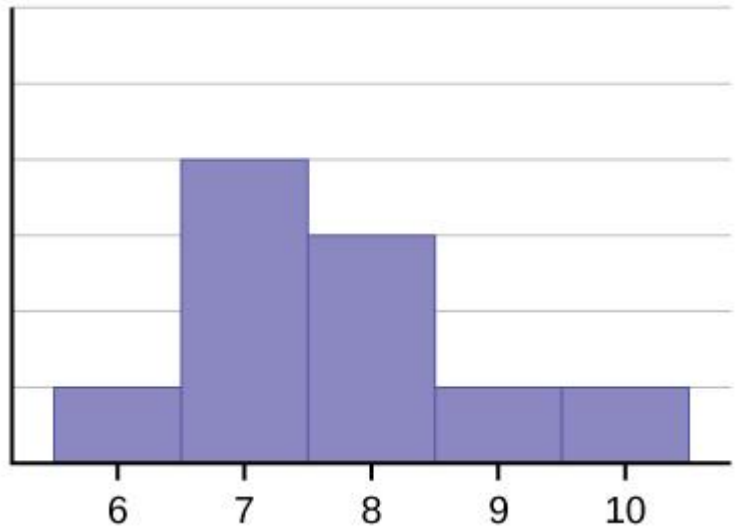


LEFT SKEWED DATA



The mean is 6.3, the median is 6.5, and the mode is seven. **Notice that the mean is less than the median, and they are both less than the mode.**

RIGHT SKEWED DATA



The mean is 7.7, the median is 7.5, and the mode is seven. Of the three statistics, **the mean is the largest, while the mode is the smallest**