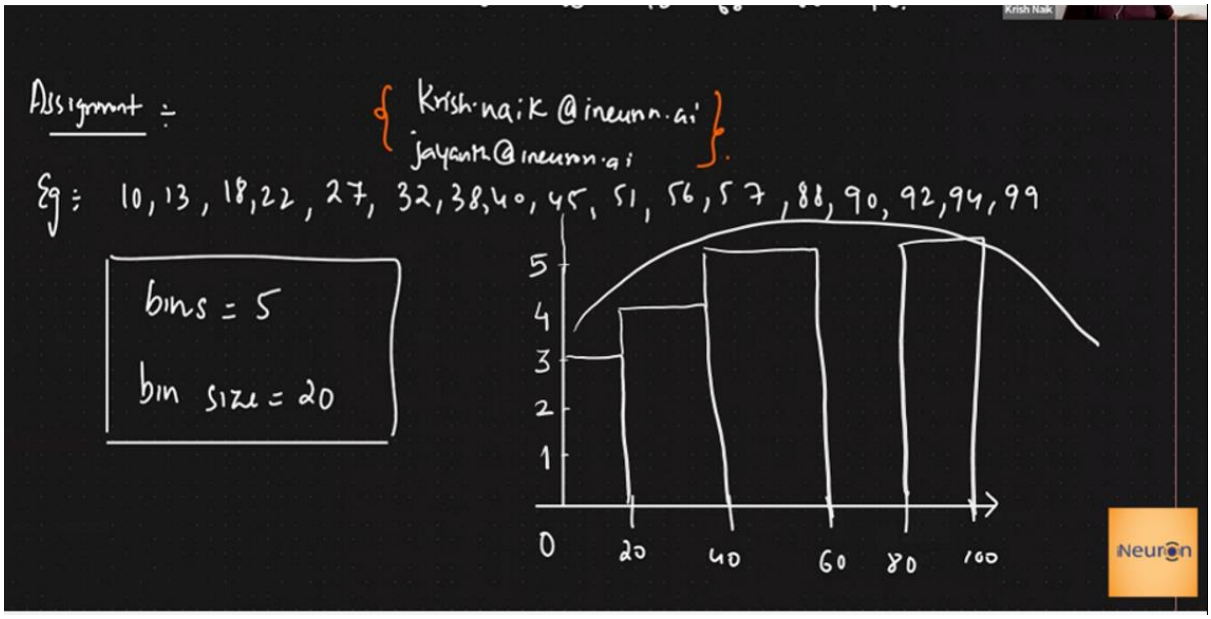
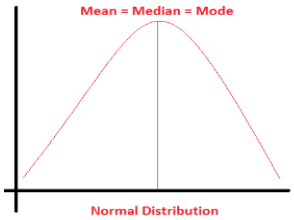
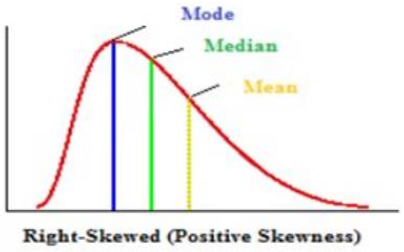
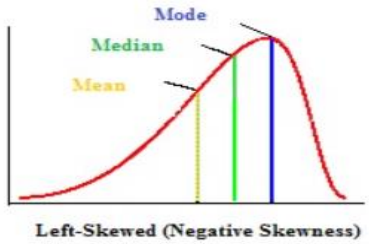
Assignment 1: Draw A Histogram Using the given Data Set

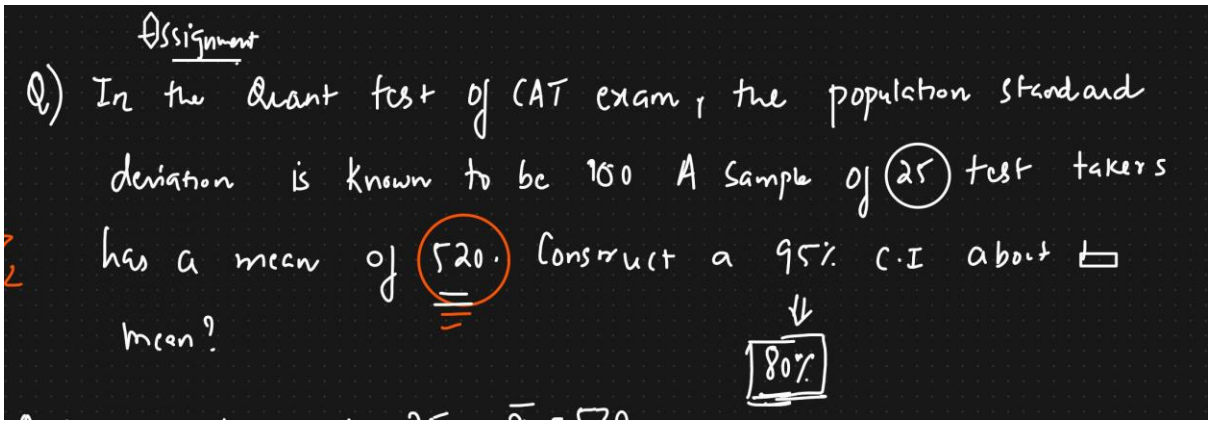


Here I am attaching the screen shot after completing the histogram. Later when I try to smoothen the histogram I got a Normal Distribution Curve.

Assignment 2: Skewed Distributions

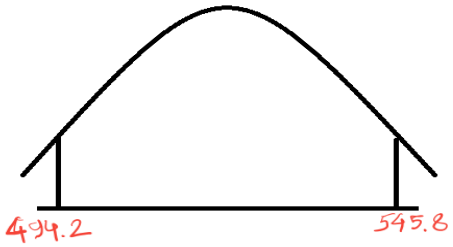
Normal Distribution (No Skew)	Right Skewed Distribution (Positive Skew)	Left Skewed Distribution (Negative Skew)
		
One half of the distribution is mirror image of the other half. Example: Age, Height, IRIS. The distribution of heights is roughly symmetrical, with some being shorter and some being taller. **Mean=Median=Mode**	Long Tail in the positive direction on the number line. Example: Length of the comments on any YouTube channel, Average Income Distribution. This is because a large percentage of the total people residing in a particular state tends to fall under the category of a low-income earning group, while only a few people fall under the high-income earning group. Here Mean is to the right of Median **Mean>Median>Mode.**	Long tail in the negative direction on the number line. Example: The distribution of age of deaths. Age of death from natural causes (heart disease, cancer, etc.). Most such deaths happen at older ages, with fewer cases happening at younger ages. Here Mean is to the left of Median. **Mode>Median>Mean**

Assignment 3: Confidence Interval



Population SD =100; Sample Size= 25; Sample Mean=520; C.I.= 80%;
alpha= 1-0.8= 0.2
Area Under curve (0.1) =1-0.1=0.9
From Z Table Z (0.90147)= 1.29

Higher Fence =520 + Z (0.2/2) *100/5; 520+1.29*20= **545.8**
Lower Fence= 520-Z (0.2/2) *100/5; 520-1.29*20=**494.2**



Conclusion: My Population Mean Lies within this Range i.e. 494.2 to 545.8 at 80% confidence Interval.

Assignment 4: Percentile

Que: 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

Solution:
Here my data is already in ascending order.
Total Values :20
Let's Apply Percentile Formula
P*(n+1)/100
99*(21)/100= 20.79(Index)= 12

Value of 99 Percentile is 12.

Assignment 5: Hypothesis Testing

Que: 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.

Solution:

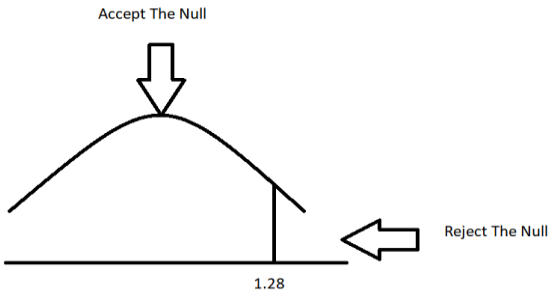
Step1: Set up the hypotheses and level of significance

H0: p0<=0.6
H1: p1>0.6 (One Tail Test); Alpha=10%(0.10)
p0=0.6; q0=0.4; n=250; x=170;
p^=x/n=170/250=0.68

Step 2: Select and compute the appropriate test statistics

Z test with proportion= p^-p0/Sqrt (p0q0/n)
Z(test)=0.68-0.6/Sqrt (0.6*0.4/250)
Z(test)=0.08/Sqrt (0.00096) =0.08/0.03098=2.5823

Step 3: Set up the decision Rule
The Decision Rule here is: Reject The Null Hypothesis if test statistics is larger than the critical value. Z(test)>1.28
A sales manager disagrees hence One Tail Test at alpha 0.10 critical value is 1.28.



Step 4: Conclusion: We Reject the Null Hypothesis as 2.58>1.28 we have statistically significant evidence at alpha 10%
Which means Sales Manager is right that vehicle owner in city ABC
Is more than 60%.