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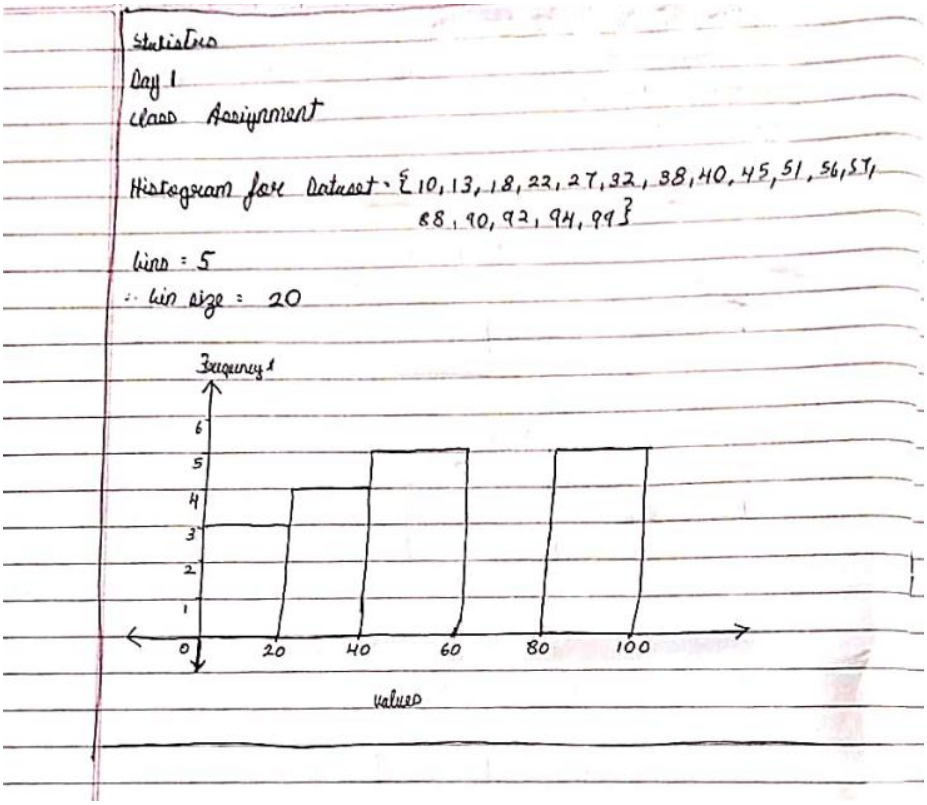
GIT-HUB

Statistics All Assignments

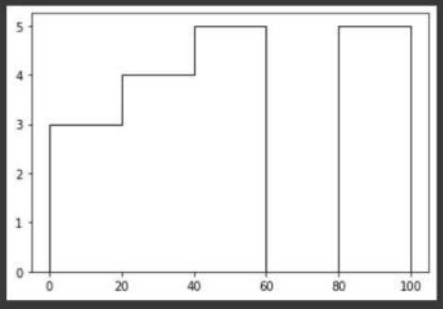
Que 1) Plot a histogram 10, 13, 18, 22, 27, 32, 38, 40, 45, 51, 56, 57, 88, 90, 92, 94, 99.

My Solution:

Git-Hub



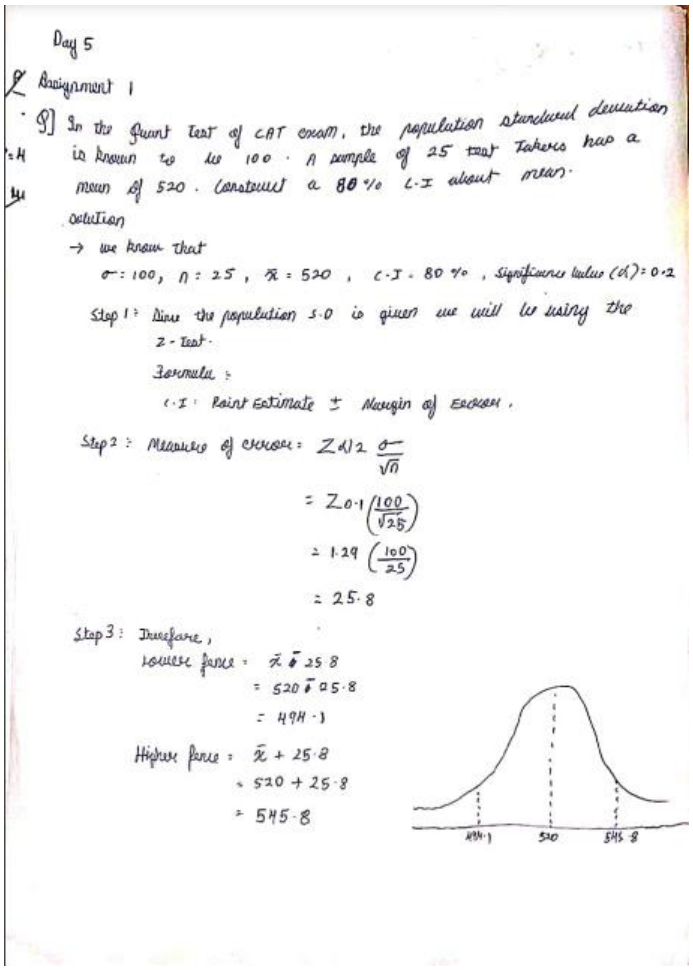

```
import numpy as np
import matplotlib.pyplot as plt
Dataset = np.array([10,13,18,22,27,32,38,40,45,51,56,57,88,90,92,94,99], ndmin=1, dtype=int)
plot = plt.hist(Dataset, bins=5, range=(0,100), histtype='step', color='Black')
```



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.

My Solution:

Git-Hub



Day 5

Assignment 1

Q] In the quant test of CAT exam, the population standard deviation is known to be 100. A sample of 25 test takers has a mean of 520. Construct a 80% C.I about mean.

solution

→ we know that

$\sigma = 100$, $n = 25$, $\bar{x} = 520$, C.I = 80%, Significance value (α) = 0.2

Step 1: Since the population S.D is given we will be using the z-test.

formula:

C.I: Point Estimate ± Margin of Error.

Step 2: Measure of error: $Z_{\alpha/2} \frac{\sigma}{\sqrt{n}}$

$= Z_{0.1} \left(\frac{100}{\sqrt{25}}\right)$

$= 1.29 \left(\frac{100}{25}\right)$

$= 25.8$

Step 3: Therefore,

lowest point: $\bar{x} - 25.8$

$= 520 - 25.8$

$= 494.1$

Higher point: $\bar{x} + 25.8$

$= 520 + 25.8$

$= 545.8$

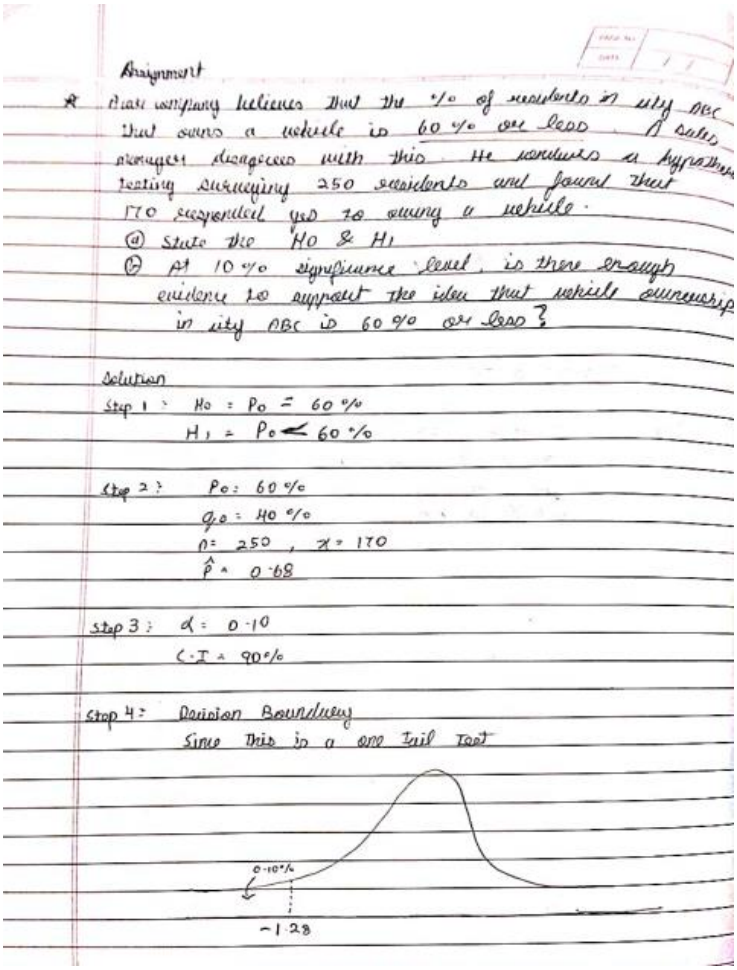
494.1 520 545.8

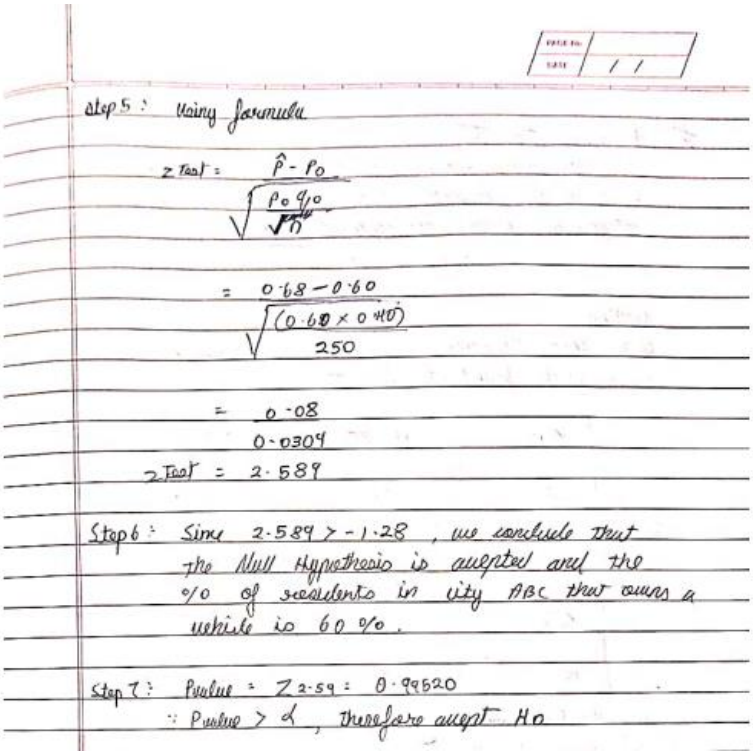
Que 3) A car believes that the percentage of citizens in city ABC that owns a vehicle is 60% or less. A sales manager disagrees with this. He conducted a hypothesis testing surveying 250 residents & found that 170 residents responded yes to owning a vehicle.

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.

My Solution

Git-Hub





Step 5 : Using formula

$$z_{Test} = \frac{\hat{P} - P_0}{\sqrt{\frac{P_0 q_0}{n}}}$$

$$= \frac{0.68 - 0.60}{\sqrt{\frac{(0.60 \times 0.40)}{250}}}$$

$$= \frac{0.08}{0.0309}$$

$$z_{Test} = 2.589$$

Step 6 : Since $2.589 > -1.28$, we conclude that the Null Hypothesis is accepted and the % of residents in city ABC that owns a vehicle is 60 %.

Step 7 : Pvalue = $Z_{2.59} = 0.99520$

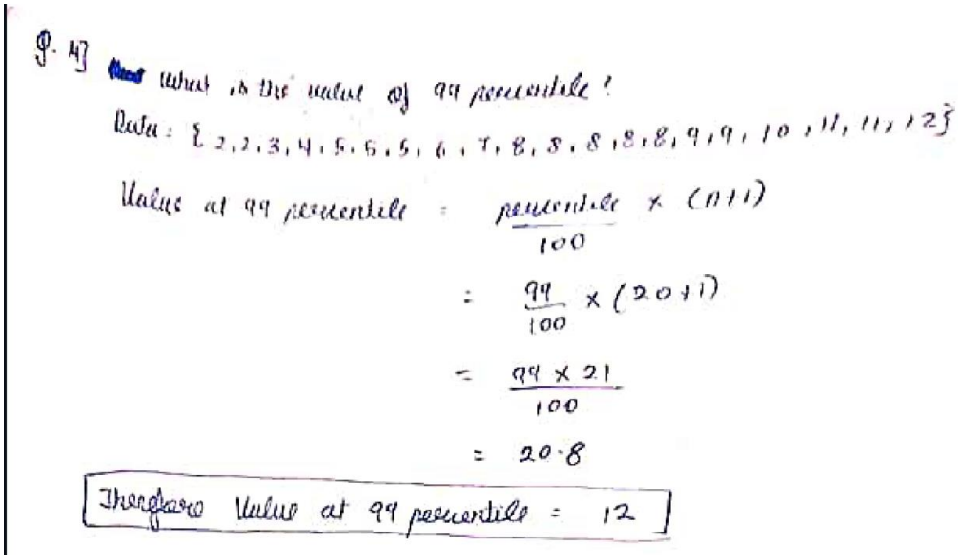
$\because$ Pvalue $> \alpha$, therefore accept H_0

Que 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

My Solution:

[Git-Hub]



Q. 4] What is the value of 99 percentile ?

Data : {2, 2, 3, 4, 5, 5, 5, 6, 7, 8, 8, 8, 8, 8, 9, 9, 10, 11, 11, 12}

Value at 99 percentile : $\frac{\text{percentile} \times (n+1)}{100}$

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

$= \frac{99 \times 21}{100}$

$= 20.8$

Therefore Value at 99 percentile = 12

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

Draw the graph to represent the same.
My Solution:

[Git-Hub]