

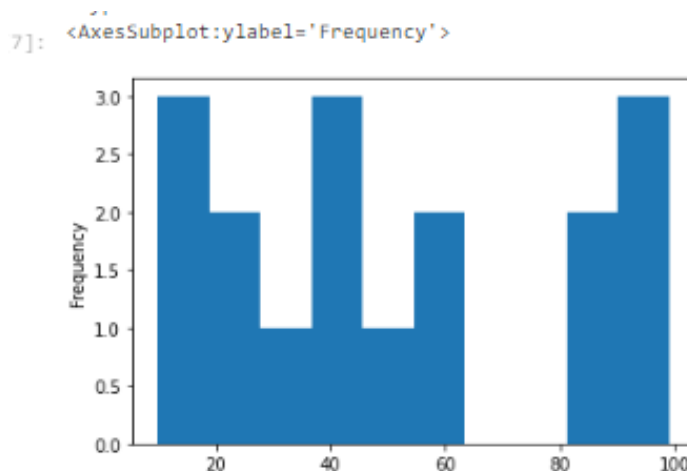
ASSIGNMENT-STATISTICS

que 1) Plot a histogram

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

```
import pandas as pd
import matplotlib.pyplot as plt
```

```
A = [10, 13, 18, 22, 27, 32, 38, 40, 45, 51, 56, 57, 88, 90, 92, 94, 99]
myvar = pd.Series(A)
print(myvar)
myvar.plot(kind="hist")
```



que2) 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

sd=100 [C.I = point estimate +/- margin range]

n=25

mean=520

$$Z = 1.28$$

$$= \bar{X} \pm Z_{\alpha/2} SD / \sqrt{n}$$

$$= 520 \pm Z_{0.2/2} 100 / \sqrt{n}$$

$$= \text{Lower limit} : 520 - 1.28 * 100 / \sqrt{25} = 494.4$$

$$= \text{Upper limit} : 520 + 1.28 * 100 / \sqrt{25} = 545.6$$

80% of μ falls between 494.4 to 545.6

que3) A car believes that the percentage of the 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.

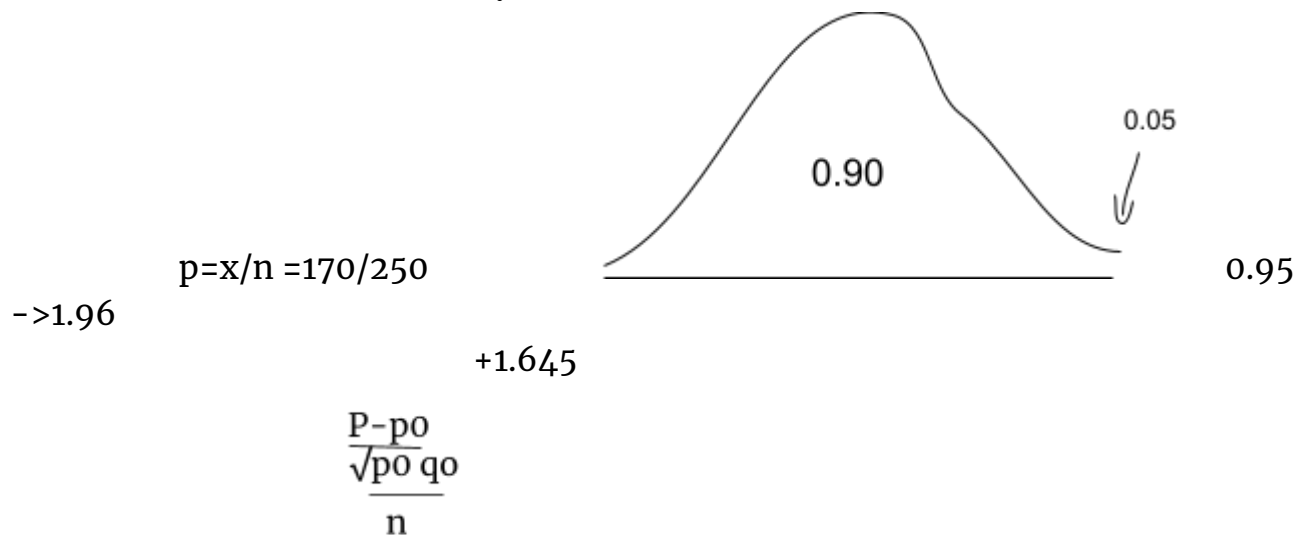
a) state the null & alternative hypothesis.

b) At a 10% significance level, is there enough evidence to support the idea that vehicle owner in ABC city is 60% or less

a) $H_0 : p = 0.60$ $X = 170$ $n = 250$ $p = 0.68$

b) $H_a : p \neq 0.60$ $p_0 = 0.60$ $q_0 = 0.40$

$\alpha = 0.10$ $C = 0.90$



$$= \frac{0.68 - 0.60}{\sqrt{0.60(0.4)}/250}$$

$$= 0.08 / 0.03098$$

$$= 2.58$$

Therefore null hypothesis is rejected. At a 10% significance level there is enough evidence to reject the idea that the vehicle ownership in city ABC is more than 60%.

que4) what is the value of 99 percentile?

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

99percentile = $99(20+1)/100$

Percentile = 11

```
import numpy as np
import math
B = (2,2,3,4,5,5,5,6,7,8,8,8,8,8,9,9,10,11,11,12)
print(B)
np.percentile(B,99)
```

Out : 11.809999999999999

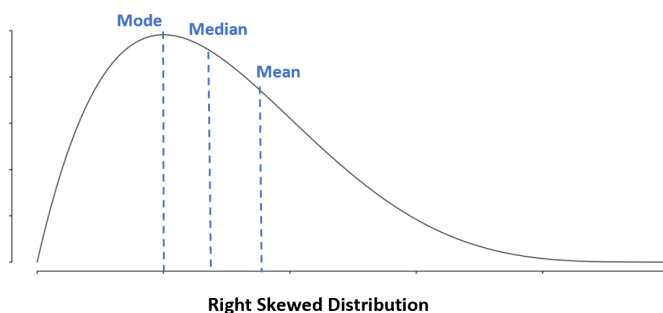
que5) In left and right-skewed data, what is the relationship between mean, median and mode?

Draw the graph to represent the same

In Right Skewed(positive skew) Distribution

- Mean is greater than Median
- Median is greater than mode

Eg :- Wealth distribution of people (Mean>Median>Mode)



In Left Skewed(Negative skew) Distribution

- Mean is lesser than Median
- Median is lesser than mode

Eg :- Lifespan of people (Mean<Median<Mode)

