

Question No. 1:

In a Rice Mill the weights (in Kilograms) of 50 packets are given below:

Observations	Frequency
10	4
15	5
20	9
40	16
60	8
80	5
100	3

Find the Mean and Mode. Also, find the Median using the Empirical Relationships of Mean, Median and Mode.

Answer; -

Observation	Frequency (y)
10	4
15	5
20	9
40	16
60	8
80	5
100	3

$$\text{Mean} = (10 + 15 + 20 + 40 + 60 + 80 + 100)/7 = 46.4$$

$$\text{Median} = (n + 1)/2 = (7 + 1) / 2 = 4 = 16 \text{ as number 4 value is 16}$$

$$\text{Mode} = 5 \text{ as 5 is coming 2 times}$$

Now we can find the Median using the Empirical Relationships of Mean, Median and Mode.

$$\text{Mean} - \text{Mode} = 3(\text{Mean} - \text{Median})$$

$$\text{Median} = 1/3[\text{mode} + 2 \text{ mean}]$$

$$= 1/3 [5 + 2(46.4)]$$

$$= 1/3 [97.8] = 32.6$$

Question No. 2:

Suppose that the manager of a company wants to know if there exists any correlation between the sales of the product A and the product B. Suppose that he selects a random sample of the total sales of these products in different days of the month. If you are a manager, then how will you calculate the correlation coefficient? (Use Manual Formula)

Days of the month	Total sale of the product A	Total sale of the product B
1 st day	15	16
4 th day	14	13
7 th day	10	11
10 th day	18	19
15 th day	15	13
18 th day	20	22
22 nd day	16	15
25 th day	15	17
27 th day	12	16
30 th day	13	17

Answer; -

Correlation Coefficient ☺

Visit page # 209 of MTH302 to see the formula there you can use A as X and B as Y.

Days of the month	Total sale of the product A	Total sale of the product B	AB	A ²	B ²
1 st day	15	16	240	225	256
4 th day	14	13	182	196	169
7 th day	10	11	110	100	121
10 th day	18	19	342	324	361
15 th day	15	13	195	225	169
18 th day	20	22	440	400	484
22 nd day	16	15	240	256	225
25 th day	15	17	255	225	289
27 th day	12	16	192	144	256
30 th day	13	17	221	169	289
Total	$\sum A = 148$	$\sum B = 159$	$\sum AB = 2417$	$\sum A^2 = 2264$	$\sum B^2 = 2620$

Formula

$$r = \frac{\sum XY - (\sum X)(\sum Y)/n}{\sqrt{[\sum X^2 - (\sum X)^2/n][\sum Y^2 - (\sum Y)^2/n]}}$$

209

Now please use A and B instead of X and Y in this equation you will get your answer.
Remember me in prayers thanks. Allah Hafiz and best of luck ☺

