



Name

IkrumulLah.khan

ID#

15072

QUESTION#1

ANSWER#1

Class interval	F	C.B	C.F _c	C.F _{>}
0 - 4	25	0-4.5	25	2092
5 - 9	45	4.5-9.5	70	2067
10 - 14	81	9.5-14.5	151	2022
15 - 19	143	14.5-19.5	294	1941
20 - 24	280	19.5-24.5	574	1798
25 - 29	349	24.5-29.5	923	1518
30 - 34	374	29.5-34.5	1247	1169
35 - 39	395	34.5-39.5	1692	795
40 - 44	400	39.5-44.5	2092	400

C.B = $A = \text{LCL of 2nd class} - \text{UCL of 1st class}$

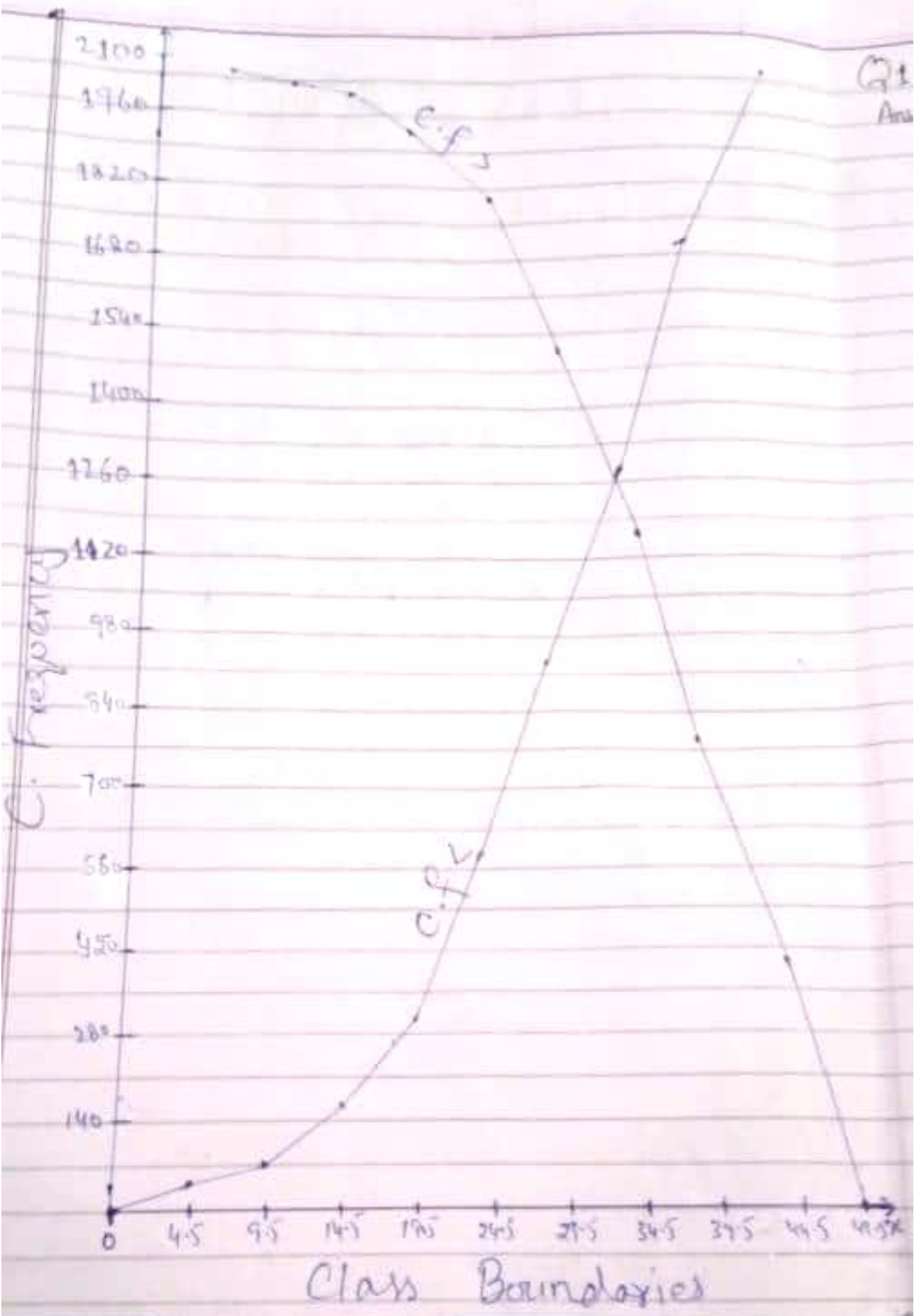
C.B = $5 - 4$

C.B = 1

C.B = $A/2 \Rightarrow 1/2$

C.B = 0.5

②



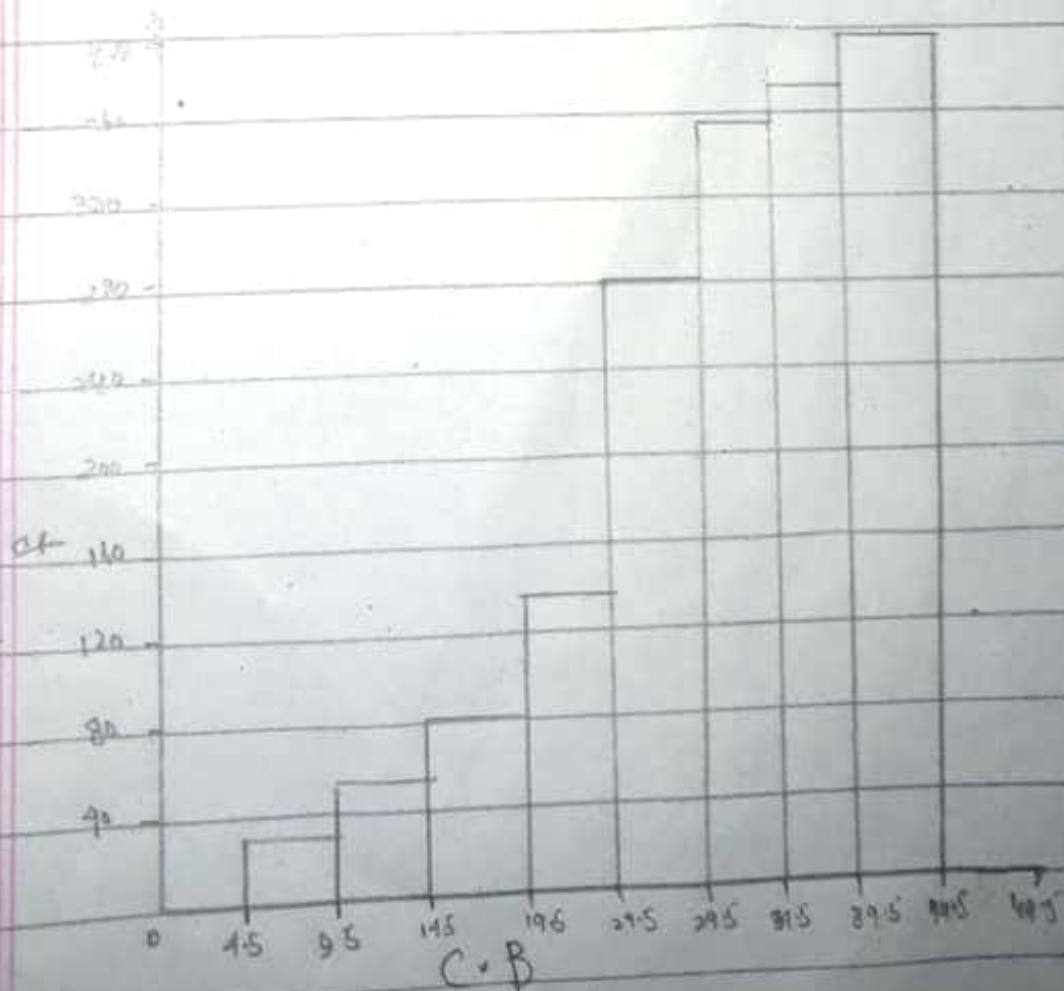
Q1
Ans

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B

Class intervals Frequency class Boundaries

0 - 4	25	0.5 - 4.5
5 - 9	45	4.5 - 9.5
10 - 14	81	9.5 - 14.5
15 - 19	143	14.5 - 19.5
20 - 24	280	19.5 - 24.5
25 - 29	349	24.5 - 29.5
30 - 34	374	29.5 - 34.5
35 - 39	395	34.5 - 39.5
40 - 44	400	39.5 - 44.5



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QUESTION#2

ANSWERS#2

Grouped Distribution Tables

STEP 1

Count the numbers of observations; $N = 30$

STEP 2

Largest value; $X_m = 431$

Smallest value; $X_o = 363$

STEP 3

Range; $R = X_m - X_o$

$$= 431 - 363$$

$$= 68$$

STEP 4

$$K = 1 + 3.33 \log N$$

$$K = 1 + 3.33 \log (30)$$

$$K = 1 + 3.33 (1.477)$$

$$K = 1 + 4.92$$

$$K = 6$$

STEP 5

$$h = \frac{R}{K}$$

$$h = 68/6$$

$$h = 11.33$$

$$h = 12$$

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Classes	Frequency (f)
363 - 374	4
375 - 386	4
387 - 398	8
399 - 410	7
411 - 422	4
423 - 434	3

By Tally Column

Classes	Class boundaries	C.M	F	C.F	Tally
363-374	362.5-374.5	368.5	4	4	
375-386	374.5-386.5	380.5	4	8	
387-398	386.5-398.5	392.5	8	16	
399-410	398.5-410.5	404.5	7	23	
411-422	410.5-422.5	416.5	4	27	
423-434	422.5-434.5	428.5	3	30	

Mean

$$\bar{x} = \frac{423 + 369 + 387 + 411 + 393 + 394 + 371 + 377 + 389 + 409 + 392 + 408 + 431 + 401 + 363 + 391 + 405 + 382 + 406 + 381 + 399 + 415 + 428 + 422 + 396 + 372 + 416 + 419 + 386 + 396}{30}$$

$$\bar{x} = \frac{11914}{30} \Rightarrow 397$$

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Mode

$$\text{Mode} = L + \frac{f_m - f_1}{(f_m - f_1) + (f_m - f_2)} \times h$$

$$L = 387, f_m = 8, f_1 = 4, f_2 = 7, h = 12$$

$$\text{Mode} = 387 + \frac{8 - 4}{(8 - 4) + (8 - 7)} \times 12$$

$$\text{Mode} = 387 + \frac{4}{4 + 1} \times 12$$

$$\text{Mode} = 387 + \frac{4}{5} \times 12$$

$$\text{Mode} = 387 + \frac{48}{5}$$

$$\text{Mode} = 387 + 9.6$$

$$\text{Mode} = 396.6$$

$$\text{Mode} = 397$$

Quartiles

$$Q_1 = \frac{n}{4} = \frac{30}{4}$$

$Q_1 = 7.5$ which corresponds to

value in class

375 - 386 therefore

$$Q_1 = L + \frac{h}{f} (\frac{n}{4} - c)$$

$$Q_1 = 375 + \frac{12}{4} (7.5 - 4) \quad \therefore c = 4$$

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$$Q_1 = 375 + 3(3.5)$$

$$Q_1 = 375 + 10.5$$

$$Q_1 = 385.5$$

$$Q_1 = 386$$

Now

$$Q_3 = \frac{3n}{4} = \frac{3 \times 30}{4}$$

$$Q_3 = \frac{90}{4} = 22.5$$

Which corresponds to value
in class 399-410

Therefore,

$$Q_3 = l + \frac{h}{f} \left(\frac{3n}{4} - c \right)$$

$$Q_3 = 399 + \frac{12}{7} (22.5 - 16) \therefore C = 16$$

$$Q_3 = 399 + \frac{12}{7} (6.5)$$

$$Q_3 = 399 + \frac{78}{7}$$

$$Q_3 = 399 + 11 = 410$$

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Question# 5

ANSWER# 5

a) Comment :-

No, its is not obviously that all the people have height 5-feet can easily cross it. If he did not know swimming and river is not deep uniformly. It is 2-feet at some points while 7-feet on other points, so he will cross it.

b) Comments

No its does not mean every students in hopes. Those students whose marks are less than 30, some have 30 marks and some students have greater than 30 marks. There can be few students whose marks may be 60 or more.

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c) Comments

No it not true that all the household servants must be paid. Average pay dose not mean everyone get paid same. The King income will be much more than servants.

Question # 4ANSWER # 4

Solution :-

Classes	f_i	x	x^2	fix	fix^2
64-84	15	74	5476	1110	82140
85-104	18	94.5	8930.25	1701	160744.5
105-124	27	114.5	13110.25	3091.5	353976.75
125-144	10	134.5	18090.25	1345	180902.5
145-164	6	154.5	23870.25	927	143221.05
165-184	5	174.5	30450.25	872.5	152251.25
185-204	13	194.5	37830.25	2528.5	491793.25
	$\Sigma = 94$			$\Sigma = 11575.5$	$\Sigma = 1565029.75$

Variance :-

$$S^2 = \frac{\Sigma fix^2}{n} - \left(\frac{\Sigma fix}{n} \right)^2$$

$$S^2 = \frac{1565029.75}{94} - \left(\frac{11575.5}{94} \right)^2$$

$$S^2 = 16649.26 - 1564.35$$

$$S^2 = 1484.9 \approx 1485$$

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$$S^2 = 1485$$

Standard Deviation:

Taking square root
of eqn (1),
we have

$$\sqrt{S^2} = \sqrt{1485}$$

$$S = 38.5$$

Question # 3

ANSWER # 3

Solution:

First data:-

3, 6, 2, 1, 7, 5

Mean = 3 + 6 + 2 + 1 + 7 + 5

mean = $\frac{24}{6}$

mean = 4

x	x ²	S.D. Deviation = $\sqrt{\frac{\sum x^2}{N} - \left(\frac{\sum x}{N}\right)^2}$
3	9	S. Deviation = $\sqrt{\frac{124}{6} - \frac{576}{36}}$
6	36	
2	4	S. Deviation = $\sqrt{\frac{744 - 576}{36}}$
1	1	
7	49	S. Deviation = $\sqrt{\frac{168}{36}}$
5	25	
$\sum = 24$	$\sum = 124$	

S.D = $\sqrt{4.7}$

S.D = 2.2

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Second data

$$\text{Mean} = \frac{11, 17, 9, 7, 19, 15}{6}$$

$$\text{Mean} = \frac{11+17+9+7+19+15}{6}$$

$$\text{Mean} = \frac{78}{6}$$

Mean = 13

$$\text{S. Deviation} = \sqrt{\frac{\sum x^2}{N} - \left(\frac{\sum x}{N}\right)^2}$$

x	x^2	S.D = #26 $\sqrt{\frac{\sum x^2}{N} - \left(\frac{\sum x}{N}\right)^2}$
11	121	S.D = $\sqrt{\frac{1126}{6} - \frac{6084}{36}}$
17	289	
9	81	S.D = $\sqrt{\frac{6756}{36} - \frac{6084}{36}}$
7	49	
19	361	S.D = $\sqrt{\frac{672}{36}}$
15	225	

$$\sum = 78 \quad \sum = 1126$$

$$\text{S.D} = \sqrt{18.7}$$

S.D = 4.3

1st data mean = 4

1st data S.D = 2.2

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2nd data mean = 13

2nd data S.D = 4.3

The required relation is that mean of 2nd data is greater than mean of 1st data and standard deviation of 2nd data is double the standard deviation of 1st data.