

Q no : 1

Construct a grouped distribution table for the following data.

421, 369, 387, 411, 393, 394, 371,  
 377, 384, 404, 342, 408, 431,  
 401, 363, 391, 405, 382, 400, 381, 399,  
 418, 428, 422, 396, 372, 410, 419, 386,  
 390.

Ans

① :-

Total number of data :- 30

Smallest Data = 360

Larger Data = 431

Range  $431 - 360 = 69$

class interval =  $1 + 3.33 \log 30$

$= 1 + 3.33 (1.47) =$

$S = 8951 = 6$

Class width

$$= R/k$$

$k =$  class interval

$R =$  Range

$h =$  class width

$$h = R/k$$

$$h = 69 = 11.5$$

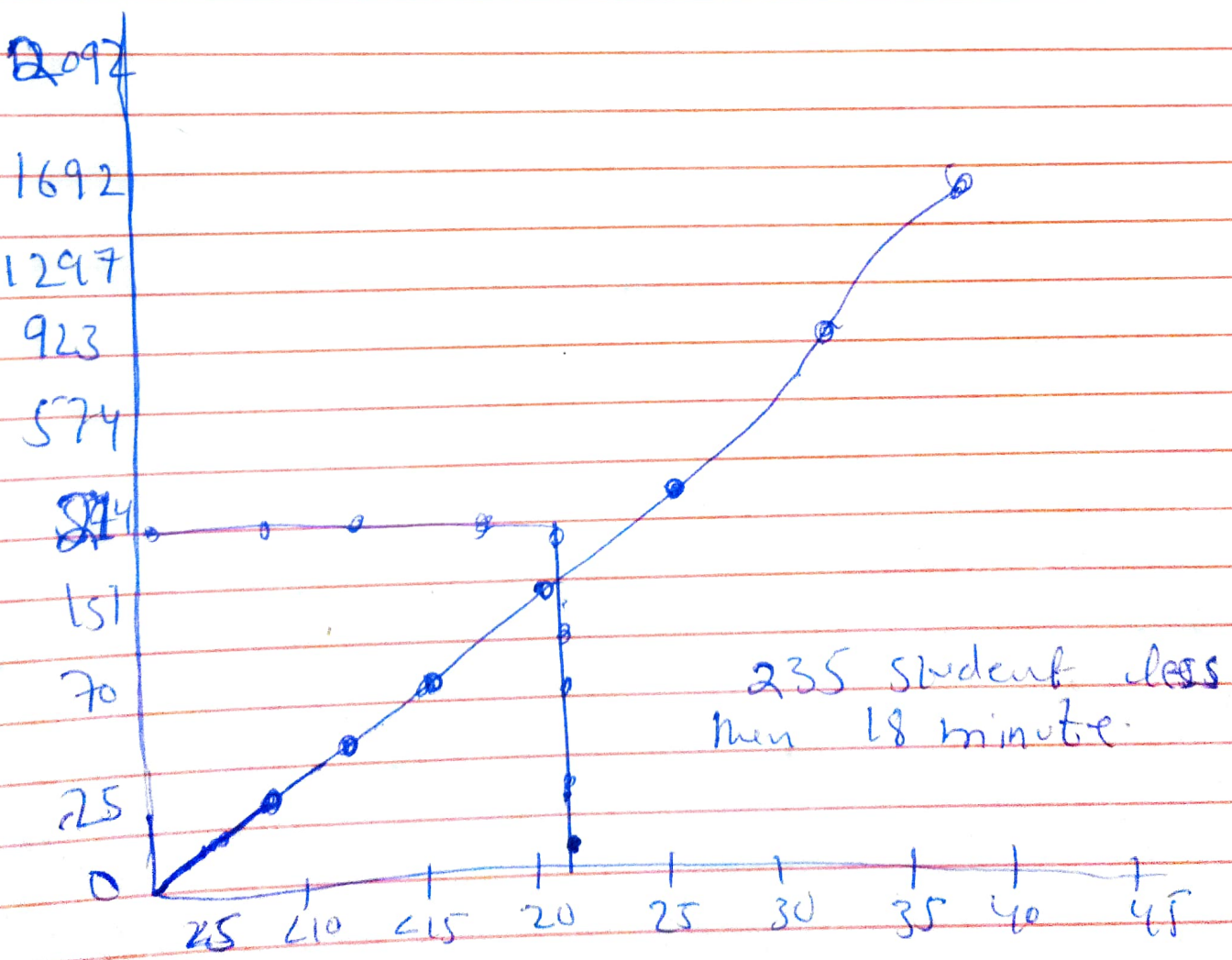
$$= 11.5$$

Q1:-

Time	< 5	< 10	< 15	< 20	< 25	< 30	< 35	< 40	< 45
frequency	25	45	61	143	280	379	374	395	400

Q1:- Draw a commulative frequency.

Ans:- commulative, 25, 70, 131, 274, 574, 923, 1297, 1692, 2092



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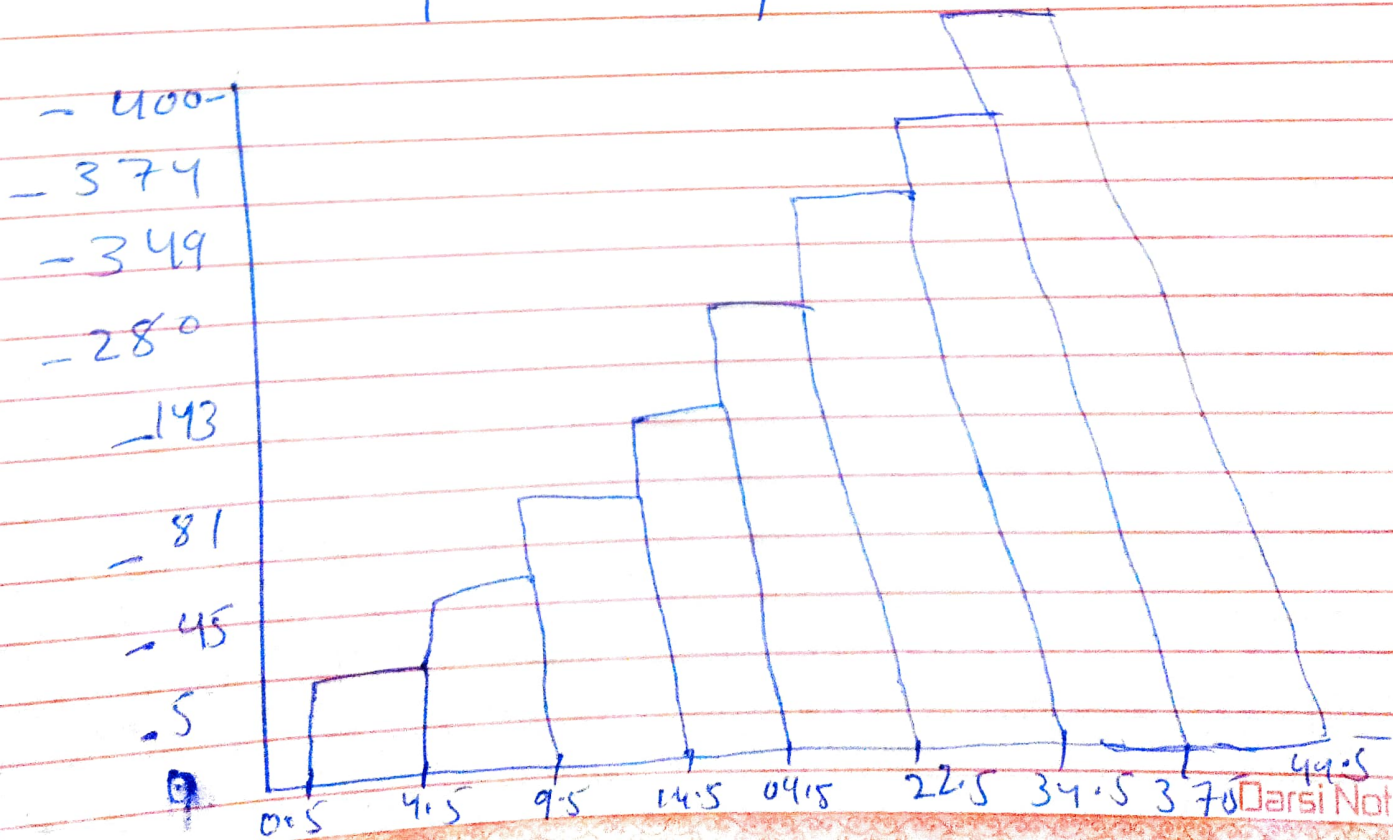
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Q4:- Total equal class interval of 0-5-10 etc construct frequency dist distribution. draw diagram.

Ans:-

Class interval	frequency	class boundary.
0-4	25	0.05 - 4.5
10-14	<del>85</del> 81	9.5 - 14.5
15-19	<del>87</del> 143	14.5 - 19.5
20-24	<del>143</del> 280	19.5 - 24.5
25-29	<del>280</del> 349	24.5 - 29.5
30-34	<del>349</del> 395	29.5 - 34.5
35-39	<del>395</del> 395	34.5 - 39.5
40-44	400	39.5 - 44.5



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362 - 372	4	361.5 - 372.5
373 - 383	3	372.5 - 383.5
384 - 394	8	<del>383.5 - 394.5</del>
395 - 405	5	394.5 - 405.5
406 - 416	5	405.5 - 416.5
417 - 427	3	416.5 - 427.5
428 - 431	7	427.5 - 431.5

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Q no 3 :-  
① :-

X	X <sup>2</sup>
3	9
6	36
2	4
1	1
7	49
5	25
<u>24</u>	<u>124</u>

$$\text{mean} = \frac{\sum X}{n} = \frac{24}{6}$$

$$\boxed{\text{mean} = 4}$$

$$S.D. = \sqrt{\frac{\sum X^2}{n} - \left(\frac{\sum X}{n}\right)^2}$$

$$\sqrt{\frac{124}{6} - \left(\frac{24}{6}\right)^2}$$

$$\sqrt{20.6 - 6 \cdot (4)^2}$$

$$\sqrt{920.6 - 16}$$

$$\sqrt{4.6} = \boxed{2.1}$$

X	X <sup>2</sup>
11	121
17	289
9	81
7	49
14	361
15	225
<u>78</u>	<u>1126</u>

$$\text{mean} = \frac{\sum X}{n} = \frac{78}{6} = 13$$

$$S.D. = \sqrt{\frac{1126}{6} - (13)^2}$$

$$\sqrt{187.6 - 169}$$

$$\sqrt{8.6}$$

$$\boxed{4.31}$$

Class	Frequency	C. matrix	fx
362 - 372	4	367	1468
373 - 383	3	378	1134
384 - 394	8	389	3112
395 - 405	5	400	2000
406 - 416	5	411	2055
417 - 427	3	422	1266
428 - 431	2	433	<del>866</del>
	$\Sigma f = 30$		11901

mean =

$$X = \text{mean} = \frac{\Sigma fx}{\Sigma f} = \frac{11901}{30} = 396.7$$

Mode

$$l + \frac{(f_m - f_1) \times h}{(f_m - f_1) + (f_m - f_2)}$$

$$383.5 + \frac{(8 - 3) \times 11}{(8 - 3) + (8 - 5)}$$

$$= 383.5 + 6.875$$

$$= 390.37$$

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Quarite: ~~1~~

$$\textcircled{a} \quad CV_1: \frac{v \cdot D}{4} = \frac{1 \times 30}{4} = 7.5$$

$$J = 384, \quad C\delta - 1 = 7, \quad fV = 8, \quad i = 10$$

$Q_2 =$

$$384 + \frac{7.5 - 7 \times 10}{8}$$

$$Q_2 = 389.6$$

$\textcircled{b}$

$$Q_2: J = 384, \quad C\delta = 1, \quad fV = 8, \quad i = 10$$

$$384 + \frac{15.7}{8} \times 10$$

$$Q = 394$$

$$\textcircled{c} \quad Q_3: \frac{vN}{4} = \frac{3 \times 30}{4} = 22.5$$

$$J = 406, \quad C\delta - 1 = 20, \quad fV = 5, \quad i = 10$$

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Class	F	X	$(X - \bar{X})$	$(X - \bar{X})^2$	$f(n-h)^2$
64-84	15	74	-49.14	2414.07	36220.5
85-104	18	94.5	-28.64	820.2	14763.6
105-124	27	110.5	-8.64	74.06	2015.02
125-144	10	134.5	11.36	129.00	1290
145-164	6	154.5	31.36	129	774
165-184	5	174.5	51.36	983.4	4914
185-204	13	194.5	71.36	5092.2	66198.6
					<u>126178.9</u>

$$\bar{X} = \frac{\sum fx}{\sum f}$$

$$\bar{X} = \frac{(15)(74) + (18)(94.5) + 27(110.5) + (10)(134.5) + 6(154.5) + 5(174.5) + 13(194.5)}{94}$$

$$\bar{X} = \frac{11575.5}{94} \quad \bar{X} = 123.14$$

Now

$$S^2 = \frac{\sum f(x - \bar{x})^2}{\sum f}$$

$$S^2 = \frac{126178.9}{94}$$

$$S^2 = 1342.3$$

take up root on both side

$$\sqrt{S^2} = \sqrt{1342.3}$$

$$S = 36.64$$



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Q no 5 :-

Comment on the following sentences

(a) Ans: As it can be observed from given data i.e. 2, 7, 5, 6 with the average 5 reflects all other points are different from average value show diperation.

(b) Ans: Reflect that an student average mark are 30 which reflect the Poor Performance of the whole class.

(c) Ans: Reflect direct correpation among average Income  
P:T:O

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of king family and Payment  
to their servants.

king family income  $\uparrow$  Payment  
servent