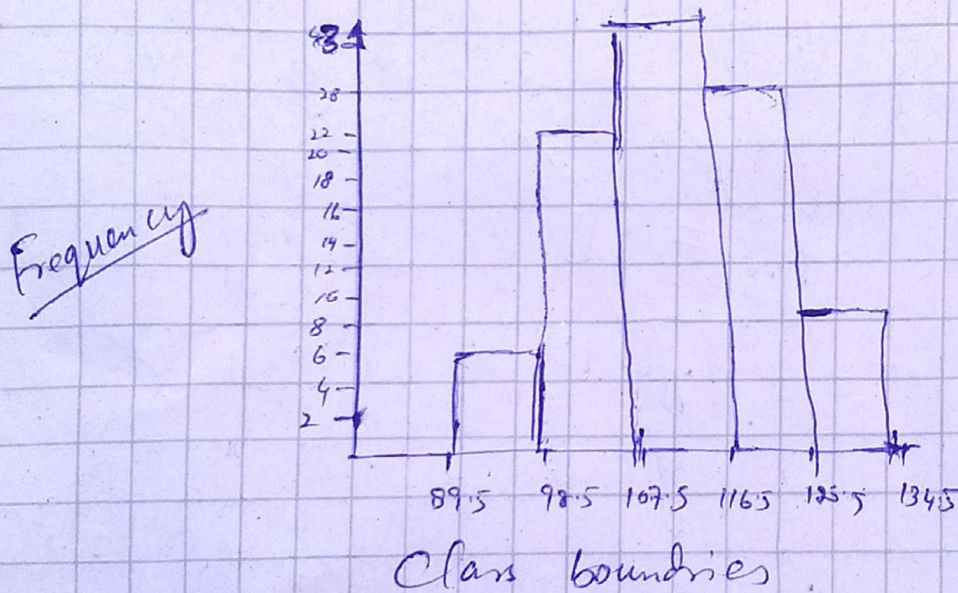


①

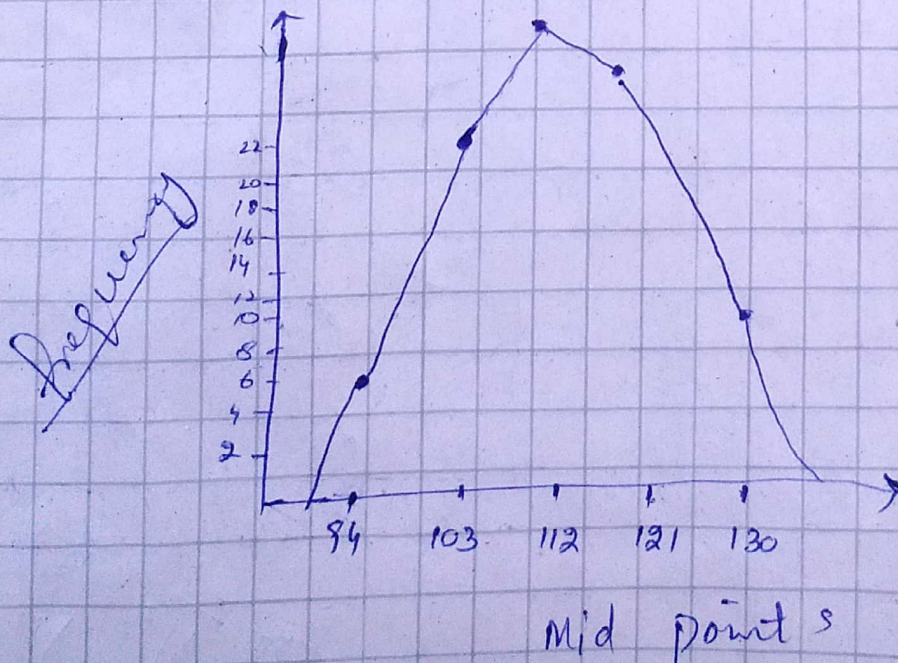
②

| Class limit | f  | C.F. |
|-------------|----|------|
| 90 - 98     | 6  | 6    |
| 99 - 107    | 22 | 28   |
| 108 - 116   | 43 | 71   |
| 117 - 125   | 28 | 99   |
| 126 - 134   | 9  | 108  |

① histogram :-



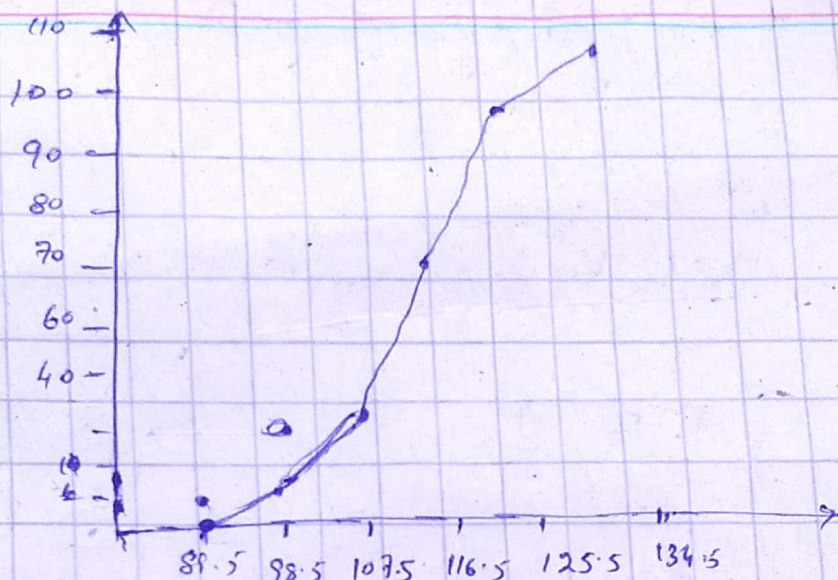
② Frequency polygon :-





③ is Ogive

Cumulative  
Frequency



Class boundaries

total students = 108

whose score above = ?

whose score below = 28

$$\Rightarrow 108 - 28 =$$

80

need not enrol



## STATISTICS 2-2 EXE

Q2 No of college faculties:

165, 221, 218, 206, 138, 135, 224, 204

70, 210, 207, 154, 155, 82, 120, 116

176, 162, 225, 214, 93, 389, 77, 135

221, 161, 128, 310

Sol

classes = 7, Highest Value = 389

lowest Value = 70

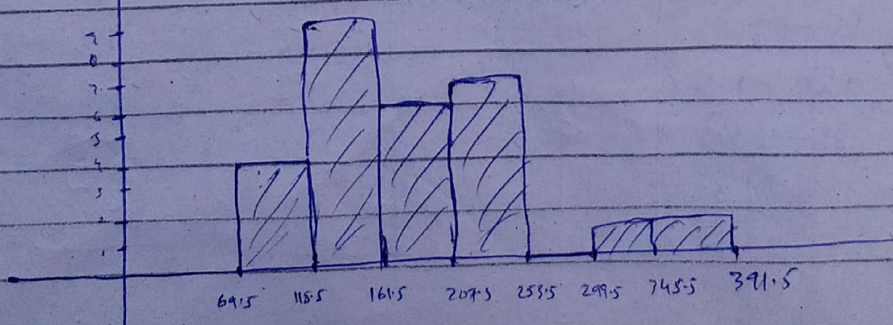
$$R = 389 - 70 = 319$$

$$C. width = \frac{319}{7} = 45.57 = 46$$

| S.No | Class limits | Class boundary | <del>Frequency</del> Tally | Frequency | C.F |
|------|--------------|----------------|----------------------------|-----------|-----|
| 1    | 70 - 115     | 69.5 - 115.5   |                            | 4         | 4   |
| 2    | 116 - 161    | 115.5 - 161.5  |                            | 9         | 13  |
| 3    | 162 - 207    | 161.5 - 207.5  |                            | 6         | 19  |
| 4    | 208 - 253    | 207.5 - 253.5  |                            | 7         | 26  |
| 5    | 254 - 299    | 253.5 - 299.5  |                            | 0         | 26  |
| 6    | 300 - 345    | 299.5 - 345.5  |                            | 1         | 27  |
| 7    | 346 - 391    | 345.5 - 391.5  |                            | 1         | 28  |
|      |              |                |                            | 28        |     |

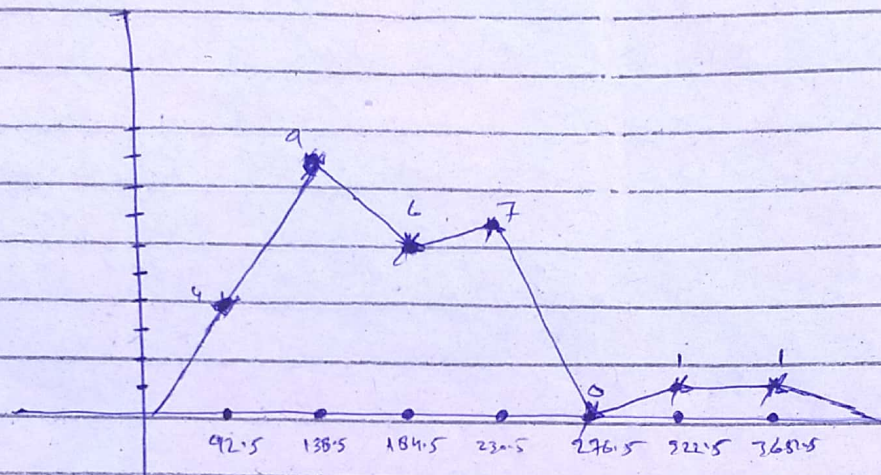
Histogram

(mid point) 92.5, 138.5, 184.5, 230.5, 276.5, 322.5, 368.5

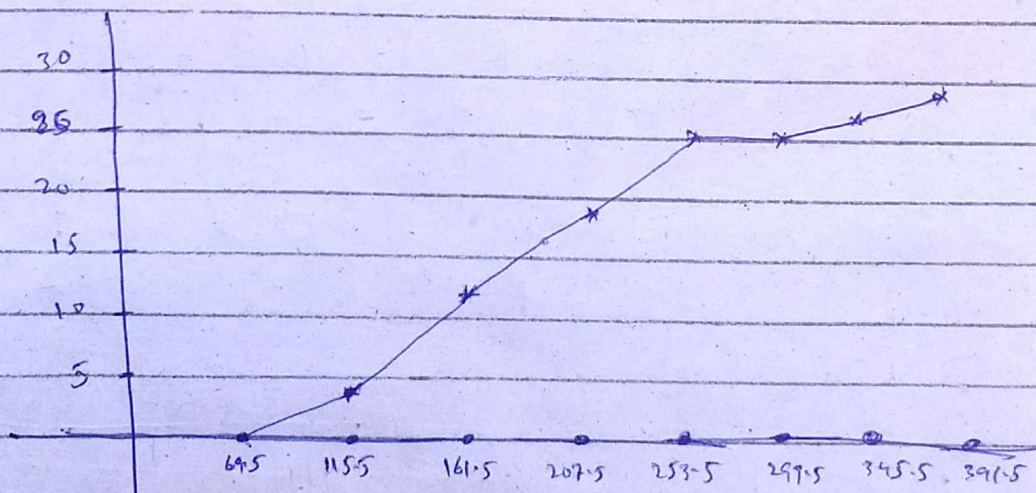




## ② Frequency Polygon



## The Ogive





#

Statistics

Q3:- No. of classes = 6.

Lower C.B = 3.

High C.B = 254.

$$R = \frac{\text{High C.B} - \text{L.C.B}}{1}$$

$$R = 254 - 3$$

$$R = 251$$

$$C.W = \frac{251}{6} \Rightarrow C.W = 41.8$$

$$C.W = 42$$

| S.No. | Class Limit | Class Boundary | Tally | freq. | C.F |
|-------|-------------|----------------|-------|-------|-----|
| 1     | 3 - 44      | 2.5 - 44.5     |       | 19    | 19  |
| 2     | 45 - 86     | 44.5 - 86.5    |       | 12    | 31  |
| 3     | 87 - 128    | 86.5 - 128.5   |       | 12    | 43  |
| 4     | 129 - 170   | 128.5 - 170.5  |       | 1     | 44  |
| 5     | 171 - 212   | 170.5 - 212.5  |       | 0     | 44  |
| 6     | 213 - 254   | 212.5 - 254.5  |       | 1     | 45  |

Tally

C.F

19

31

43

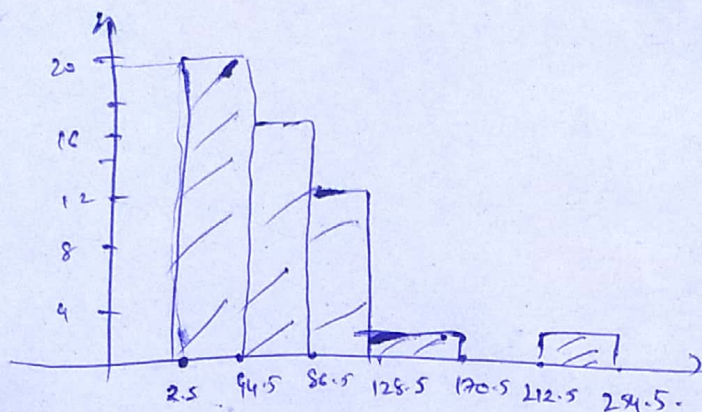
44

44

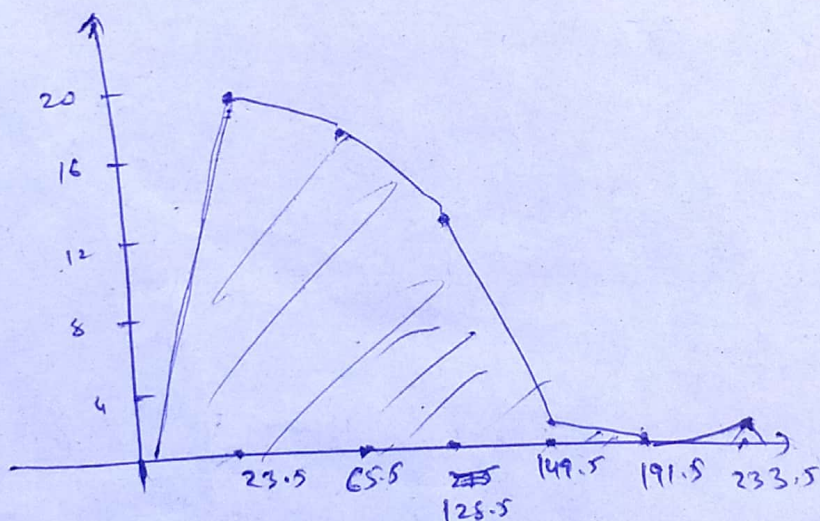
45



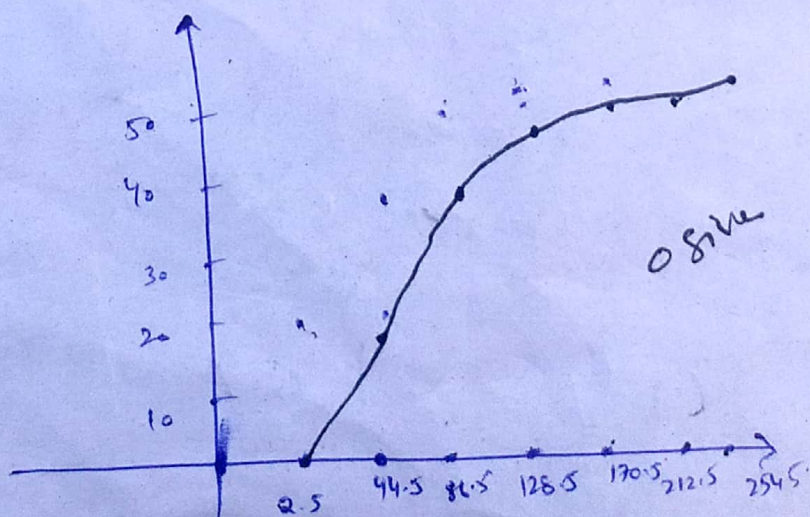
## Histogram :-



## ⑥ Frequency Polygon :-



## ⑦ Ogive :-





# Q4: Ex: 2.1

Class Limit

Frequency

39.9-42.8

2

42.9-45.8

2

45.9-48.8

5

48.9-51.8

5

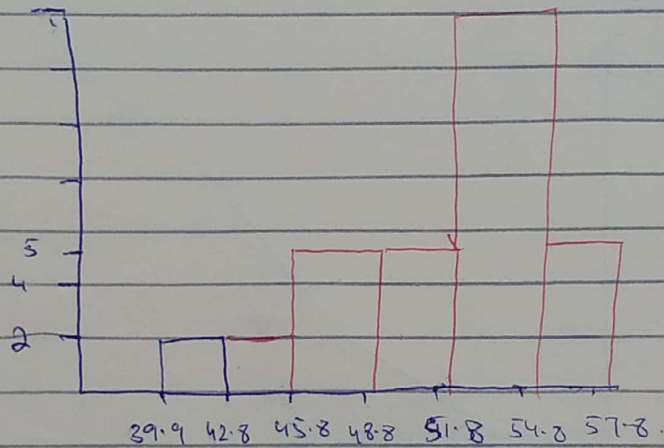
51.9-54.8

12

54.9-57.8

5

Histogram



Frequency polygon

now for c/s Boundaries subtract 0.05 from Lower limit and add 0.05 to upper limit

c/s Boundaries

mid point of c/s Boundaries

39.85-42.85

41.35

42.85-45.85

42.35

45.85-48.85

47.35

48.85-51.85

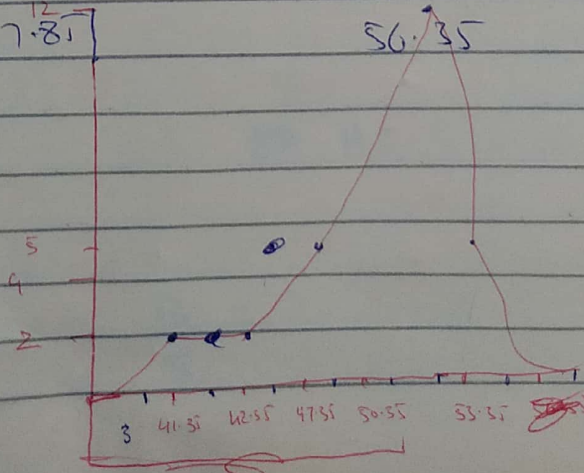
50.35

51.85-54.85

53.35

54.85-57.85

56.35

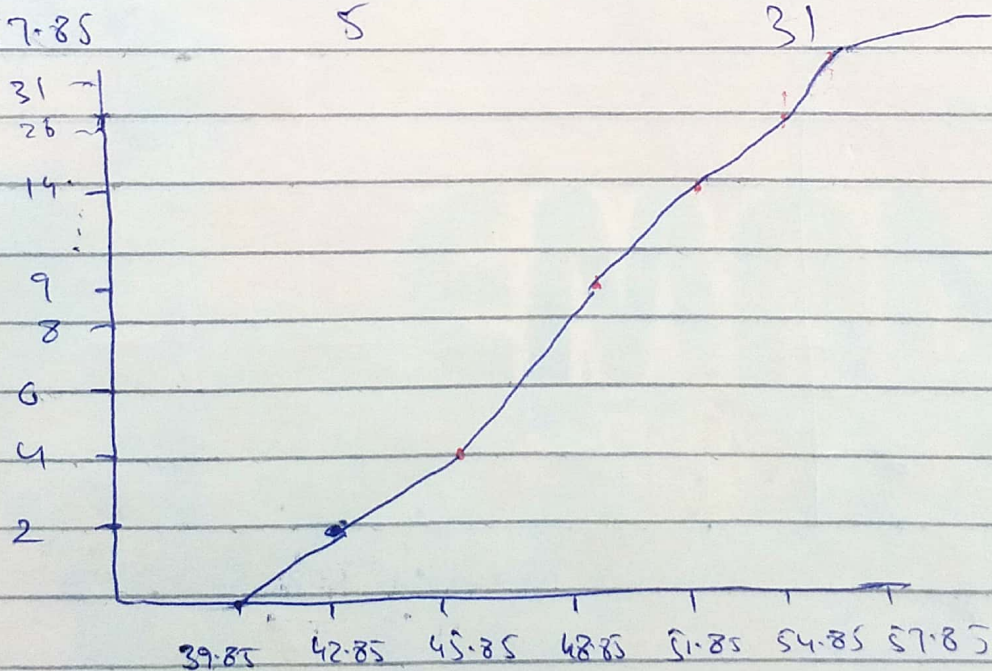




Q4: continue

Given

| CIS   | Boundaries | frequency | cumulative frequency |
|-------|------------|-----------|----------------------|
| 39.85 | 42.85      | 2         | 2                    |
| 42.85 | 45.85      | 2         | 4                    |
| 45.85 | 48.85      | 5         | 9                    |
| 48.85 | 51.85      | 5         | 14                   |
| 51.85 | 54.85      | 12        | 26                   |
| 54.85 | 57.85      | 5         | 31                   |





# Benevolent Public School Peshawar

Name: ..... R. No. ....

Class: ..... Section: .....

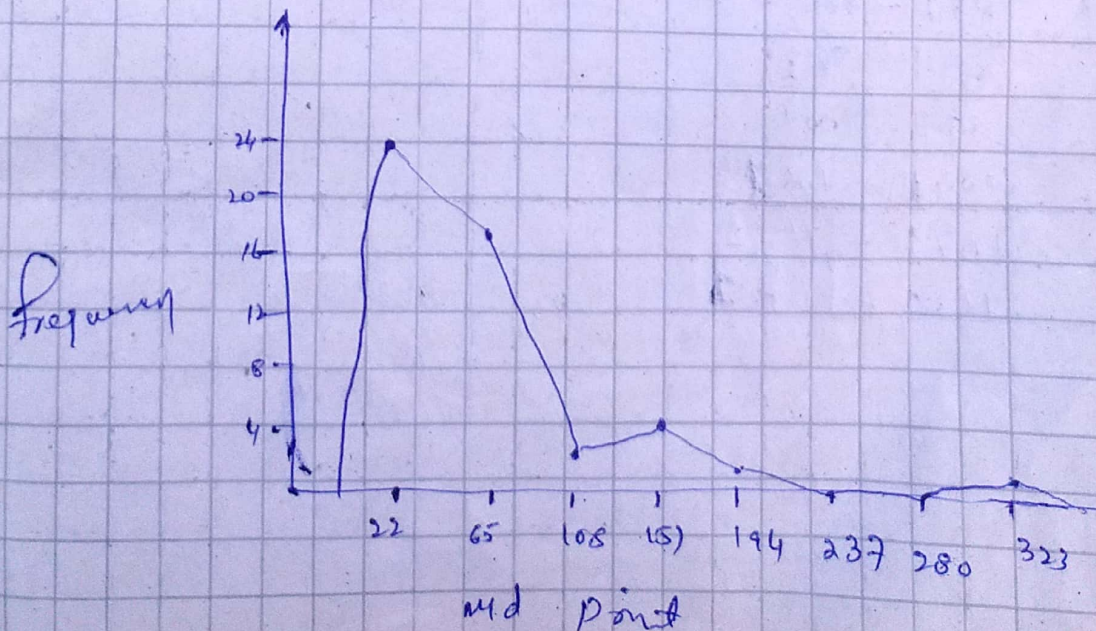
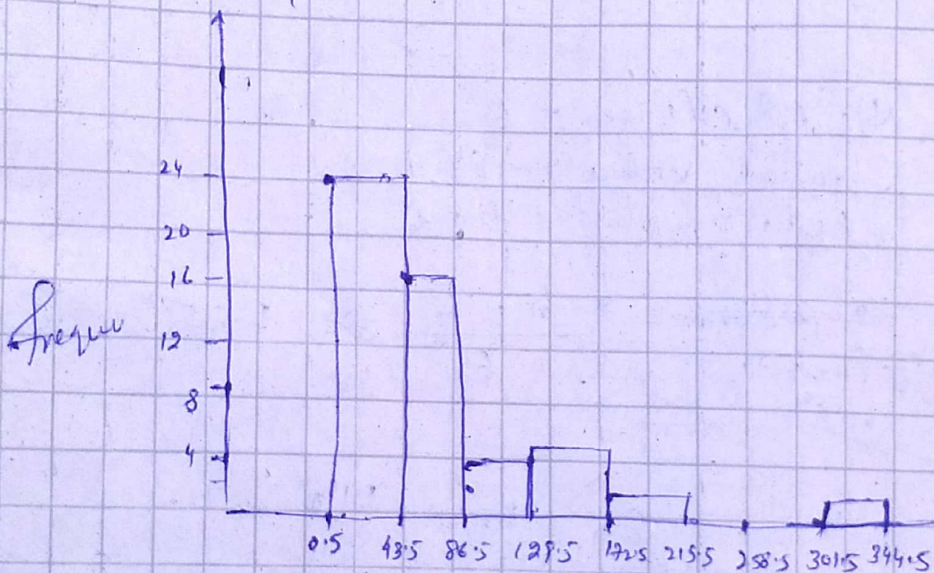
Examination: .....

Date: .....

Invigilator: .....

⑤ :-

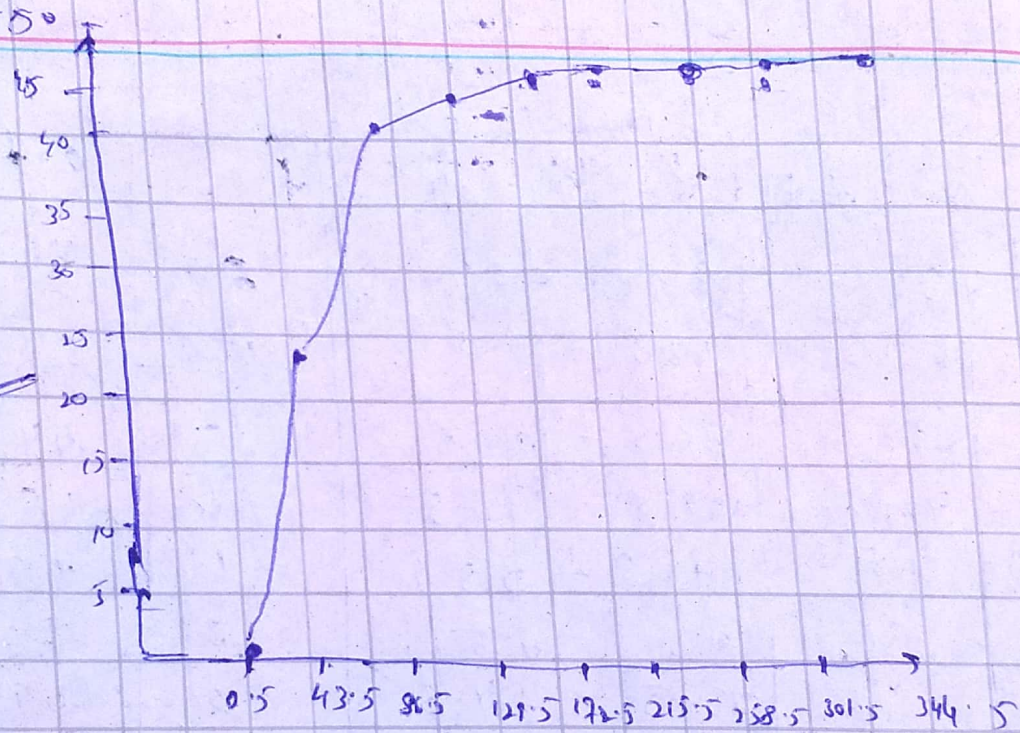
| <u>Class</u> | <u>limit</u> | <u>Class Boundary</u> | <u>f</u> | <u>c.f</u> |
|--------------|--------------|-----------------------|----------|------------|
| 1-43         |              | 0.5 - 43.5            | 24       | 24         |
| 44-86        |              | 43.5 - 86.5           | 17       | 41         |
| 87-129       |              | 86.5 - 129.5          | 3        | 44         |
| 130-172      |              | 129.5 - 172.5         | 4        | 48         |
| 173-215      |              | 172.5 - 215.5         | 1        | 49         |
| 216-258      |              | 215.5 - 258.5         | 0        | 49         |
| 259-301      |              | 258.5 - 301.5         | 0        | 49         |
| 302-344      |              | 301.5 - 344.5         | 1        | 50         |





Ogine

C.O.T.



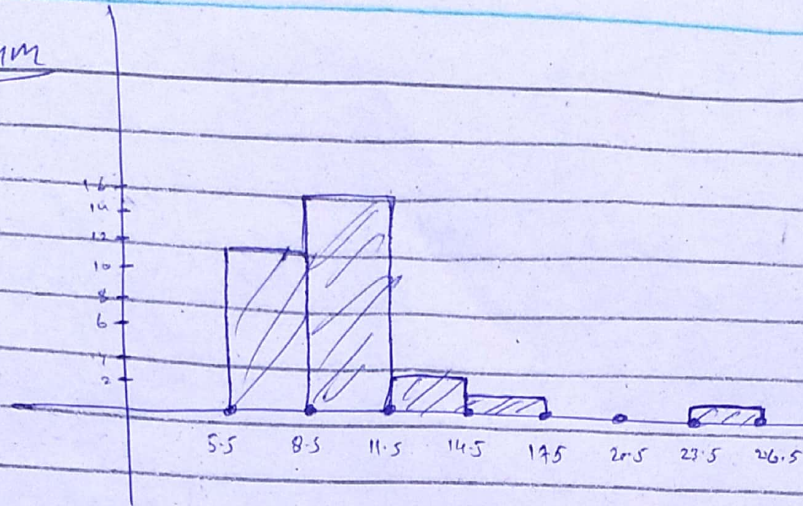


Q6 Cost of utilities.

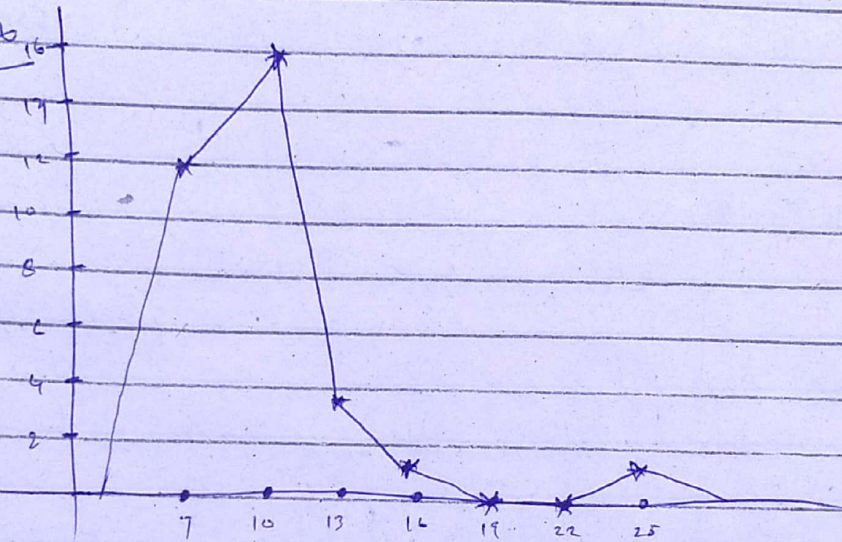
| Class - B   | class limits | frequency | C.F | mid point |
|-------------|--------------|-----------|-----|-----------|
| 5.5 - 8.5   | 6 - 8        | 12        | 12  | 7         |
| 8.5 - 11.5  | 9 - 11       | 16        | 28  | 10        |
| 11.5 - 14.5 | 12 - 14      | 3         | 31  | 13        |
| 14.5 - 17.5 | 15 - 17      | 1         | 32  | 16        |
| 17.5 - 20.5 | 18 - 20      | 0         | 32  | 19        |
| 20.5 - 23.5 | 21 - 23      | 0         | 32  | 22        |
| 23.5 - 26.5 | 24 - 26      | 1         | 33  | 25        |
|             |              |           |     |           |



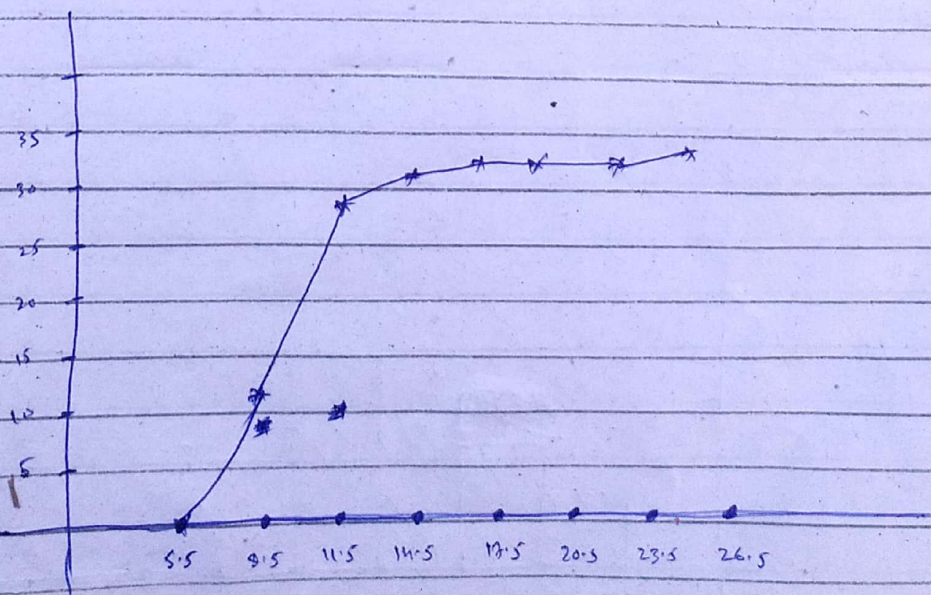
## Histogram



## Frequency polygon



## The Ogive





Q7:-  
2 No. of classes = 7  
For 1998:-

$$L.C.V = 0$$

$$H.C.V = 95$$

$$R = H.C.V - L.C.V$$

$$= 95 - 0$$

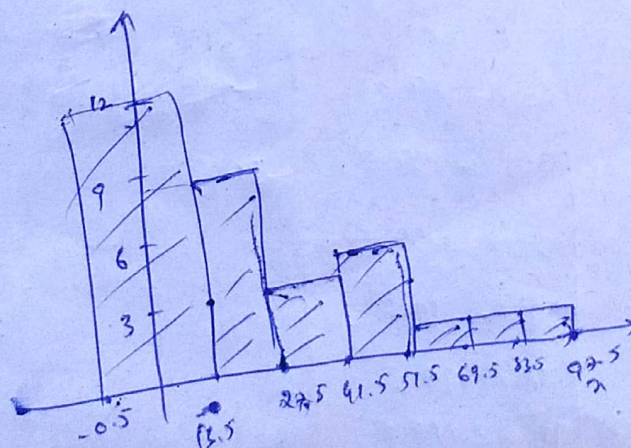
$$= 95$$

$$C.W = \frac{95}{7} = 13.57$$

$$C.W = 14$$

| S. No. | Class limit | Boundary    | Tally | freq | c. freq. |
|--------|-------------|-------------|-------|------|----------|
| 1      | 0 - 13      | -0.5 - 13.5 |       | 12   | 12       |
| 2      | 14 - 27     | 13.5 - 27.5 |       | 8    | 20       |
| 3      | 27 - 41     | 27.5 - 41.5 |       | 3    | 23       |
| 4      | 41 - 55     | 41.5 - 55.5 |       | 4    | 27       |
| 5      | 55 - 69     | 55.5 - 69.5 |       | 1    | 28       |
| 6      | 69 - 83     | 69.5 - 83.5 |       | 1    | 29       |
| 7      | 83 - 97     | 83.5 - 97.5 |       | 1    | 30       |

Histogram:-





For 2003.

$$L.L.V = 0$$

$$H.L.V = 138$$

$$C.W = \frac{138 - 0}{7} = ) C.W = 19.71$$

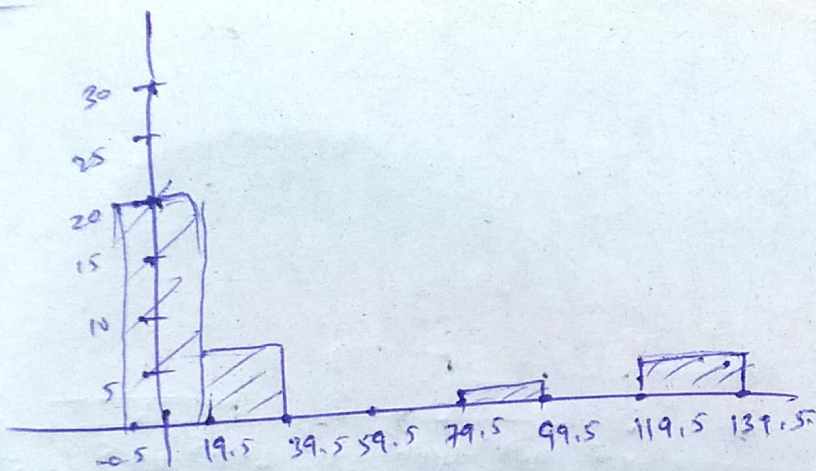
$$\boxed{C.W = 20}$$

|   | C. L    | C. W        | Tally                                           | f  | C. f. |
|---|---------|-------------|-------------------------------------------------|----|-------|
| 1 | 0-19    | 0.5-19.5    | <del>    </del> <del>    </del> <del>    </del> | 20 | 20    |
| 2 | 20-39   | 19.5-39.5   | <del>    </del>                                 | 7  | 27    |
| 3 | 40-59   | 39.5-59.5   |                                                 | 0  | 27    |
| 4 | 60-79   | 59.5-79.5   |                                                 | 0  | 27    |
| 5 | 80-99   | 79.5-99.5   |                                                 | 1  | 28    |
| 6 | 100-119 | 99.5-119.5  |                                                 | 0  | 28    |
| 7 | 120-139 | 119.5-139.5 |                                                 | 2  | 30    |



Histogram for 2003

Q7



Both the graphs are right skewed.

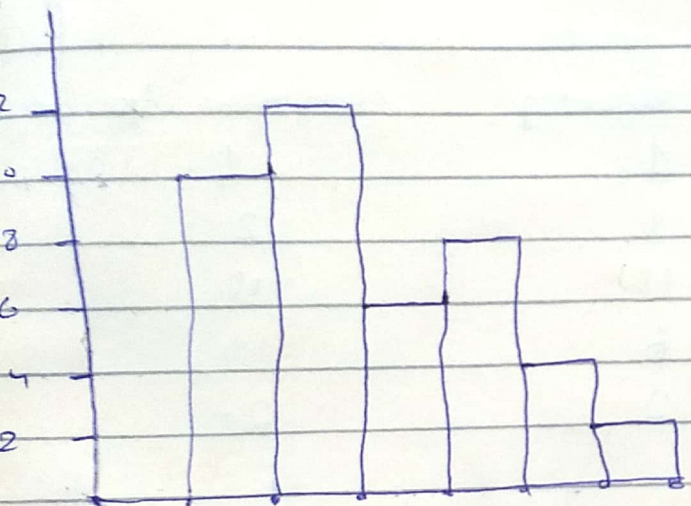


CL: 8: 2.2:

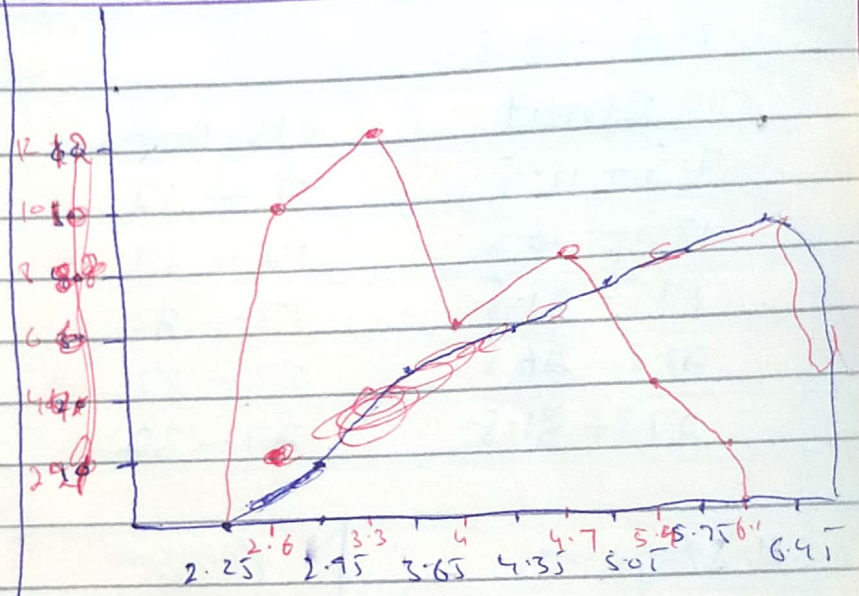
| Class Limit. | Frequency | commulative frequency | Class Boundary         |
|--------------|-----------|-----------------------|------------------------|
| 2.3 - 2.9    | 10        | 10                    | <del>2.25</del> - 2.95 |
| 3.0 - 3.6    | 12        | 22                    | 2.95 - 3.65            |
| 3.7 - 4.3    | 6         | 28                    | 3.65 - 4.35            |
| 4.4 - 5.0    | 8         | 36                    | 4.35 - 5.05            |
| 5.1 - 5.7    | 4         | 40                    | 5.05 - 5.75            |
| 5.8 - 6.4    | 2         | 42                    | 5.75 - 6.45            |



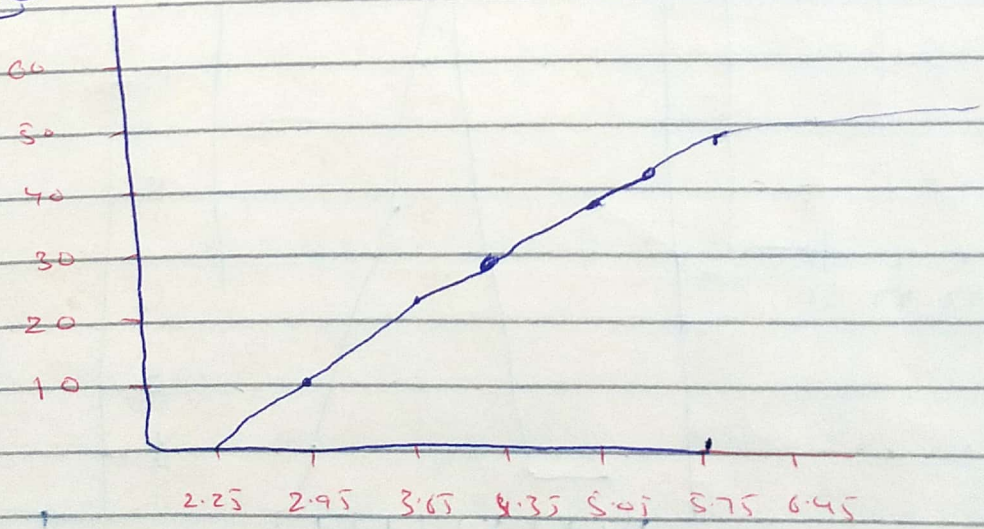
Histogram



Frequency Polygon



Ogive

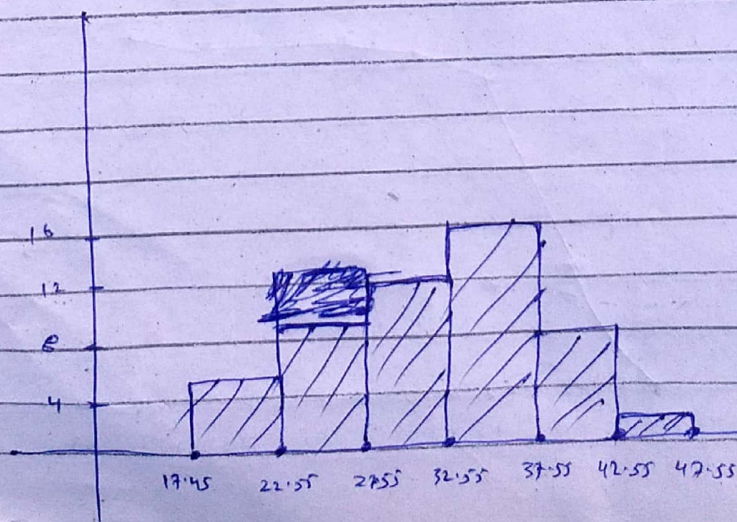
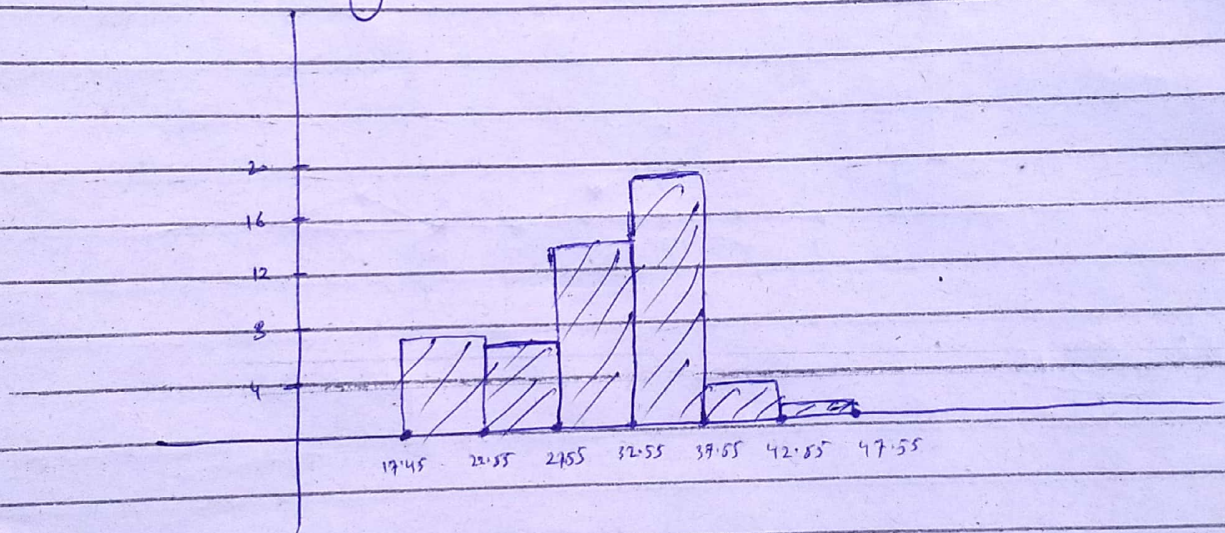




## Q10 Making the grade

| Class       | Reading frequency | Math frequency | Class Boundary |
|-------------|-------------------|----------------|----------------|
| 17.5 - 22.5 | 7                 | 5              | 17.45 - 22.55  |
| 22.5 - 27.5 | 6                 | 9              | 22.55 - 27.55  |
| 27.5 - 32.5 | 14                | 11             | 27.55 - 32.55  |
| 32.5 - 37.5 | 19                | 16             | 32.55 - 37.55  |
| 37.5 - 42.5 | 3                 | 8              | 37.55 - 42.55  |
| 42.5 - 47.5 | 1                 | 1              | 42.55 - 47.55  |

Histogram of Reading





Q<sub>112</sub>

$$L.V = 140$$

$$H.V = 857$$

$$R = 857 - 140 = 717$$

$$C.W = \frac{717}{8}$$

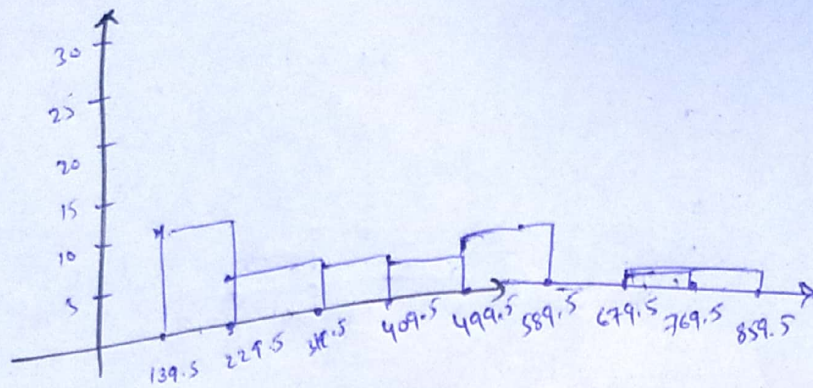
$$C.W = 89.625$$

$$\boxed{C.W = 90}$$

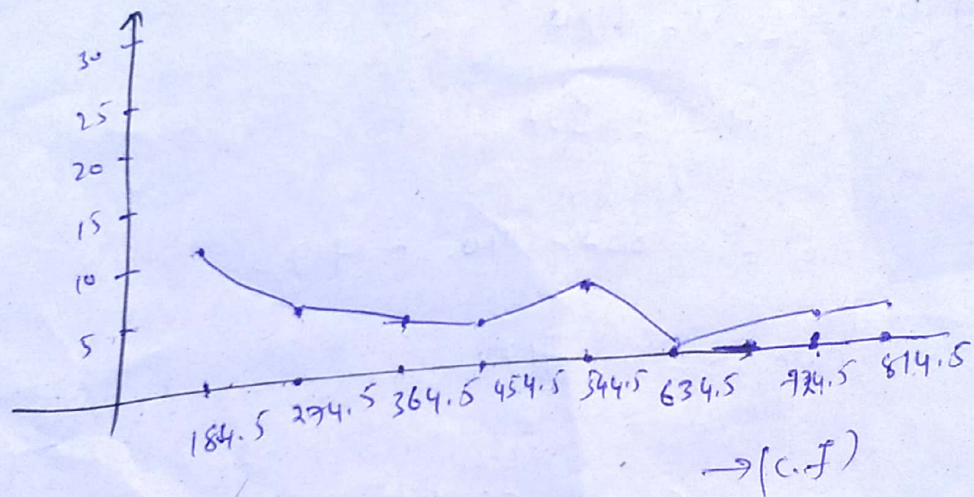
|   | C-L       | C.B           | Tally | f  | C-f |
|---|-----------|---------------|-------|----|-----|
| 1 | 140 - 229 | 139.5 - 229.5 |       | 11 | 11  |
| 2 | 230 - 319 | 229.5 - 319.5 |       | 5  | 16  |
| 3 | 320 - 409 | 319.5 - 409.5 |       | 4  | 20  |
| 4 | 410 - 499 | 409.5 - 499.5 |       | 3  | 23  |
| 5 | 500 - 589 | 499.5 - 589.5 |       | 5  | 28  |
| 6 | 590 - 679 | 589.5 - 679.5 |       | 0  | 28  |
| 7 | 680 - 769 | 679.5 - 769.5 |       | 1  | 29  |
| 8 | 770 - 859 | 769.5 - 859.5 |       | 1  | 30  |



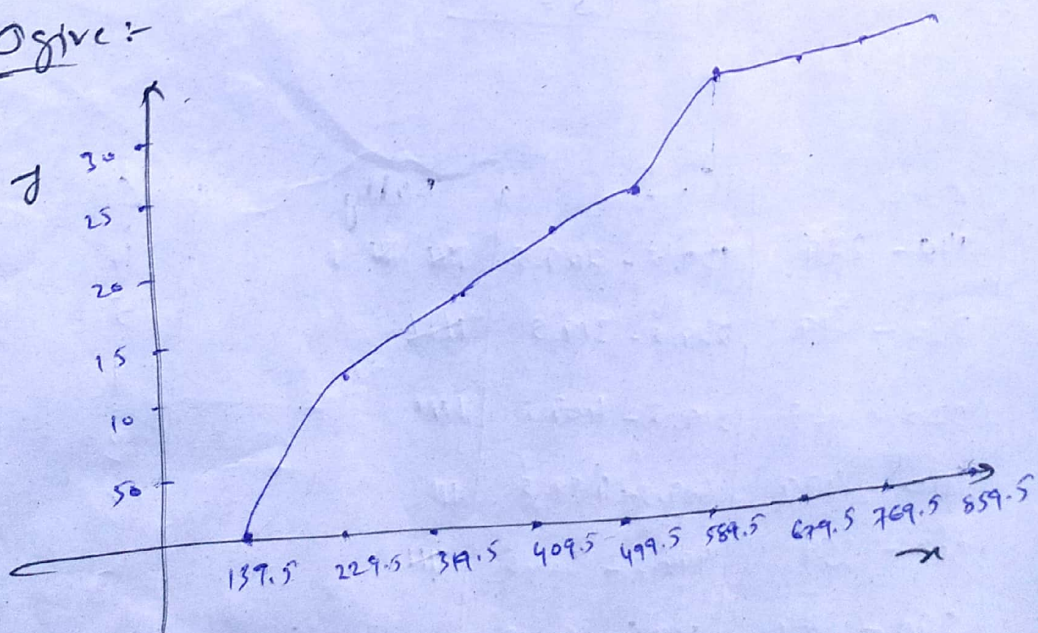
## Histogram:-



## ⑥ Frequency polygon:-



## ⑦ Ogive:-





Q: 12: → rank data 60 m Ex: 2.1.

|      |      |      |      |      |
|------|------|------|------|------|
| 7.5  | 76   | 23.5 | 17   | 22   |
| 21.5 | 19   | 20   | 27.1 | 20   |
| 22   | 20.7 | 17   | 28   | 20   |
| 23   | 18.5 | 25.3 | 24   | 31   |
| 14.5 | 25.9 | 18   | 30   | 31.5 |

Num of class = 5

$$L = 7.5$$

$$H = 31.5$$

$$R = H - L = 24$$

$$\text{cls width} = \frac{R}{5} = \frac{24}{5} = 4.8 \approx 5$$



Tail 5.

#1

1

1111111

11111

11

7.5, 12.5

CIS Binwidth

7.5 - 11.5

12.5 - 16.5

17.5 - 21.5

22.5 - 26.5

27.5 - 31.5

CIS Boundaries

7 - 12

12 - 17

17 - 22

22 - 27

27 - 32

Frequency

1

1

11

6

2

Cumulative frequency

1

2

13

19

21

Histogram

Polygon

Ogiva.

7 12 17 22 27 32

9.5 14.5 19.5 24.5 29.5

7 12 17 22 27 32



⑬ 2.

Class boundary

89.5 - 98.5

98.5 - 107.5

107.5 - 116.5

116.5 - 125.5

125.5 - 134.5

f

6

6

22

43

48

9

c.f

6

28

71

99

108

R.F

0.055

0.2

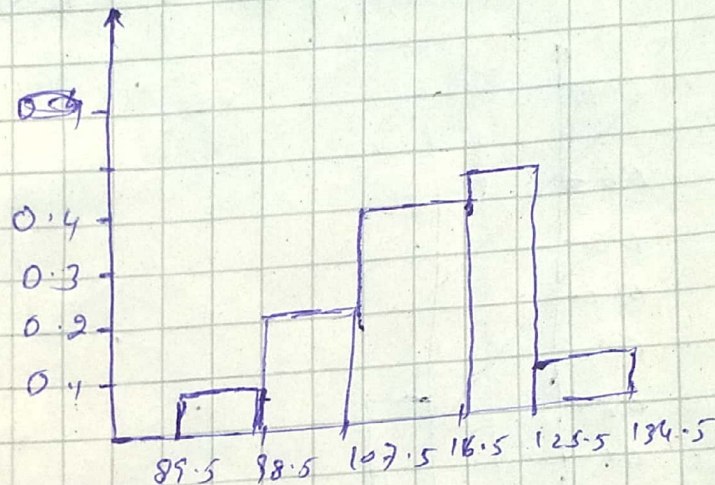
0.055

0.258

0.44

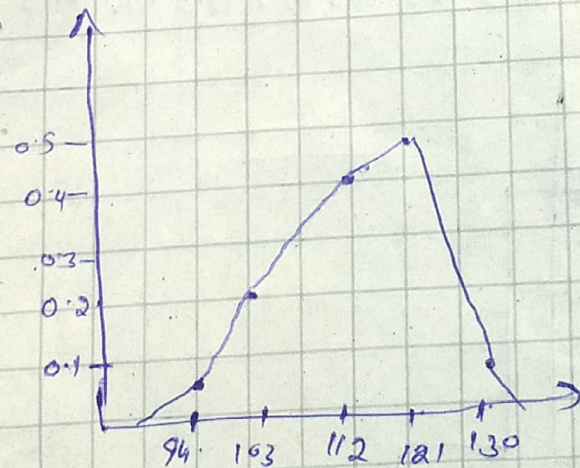
0.083

① Histogram

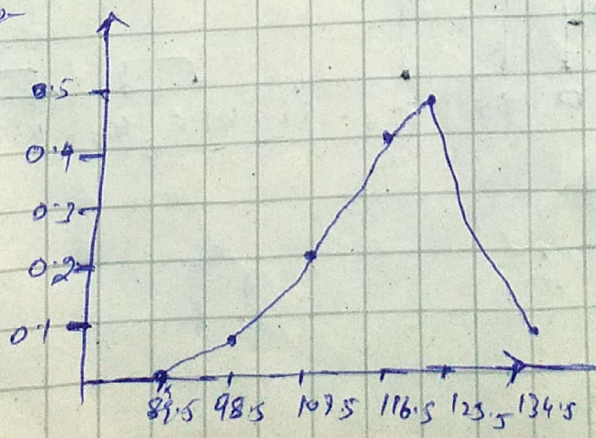


begin

②: polygon



③: Ogive





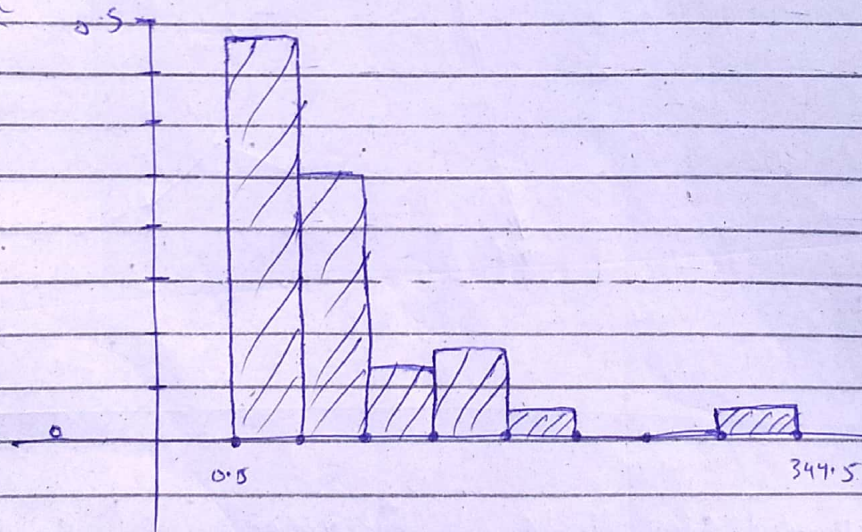
# STATISTICS

14

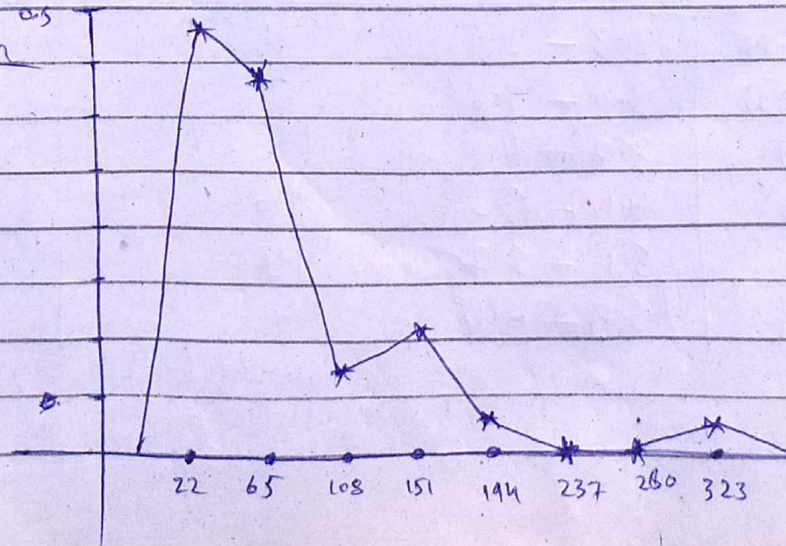
Draw Histogram, Frequency polygon & Ogive  
using relative frequency.

| e-Bound       | C. limit  | Frequency | Relative freq. |
|---------------|-----------|-----------|----------------|
| 0.5 - 43.5    | 1 - 43    | 24        | 0.48           |
| 43.5 - 86.5   | 44 - 86   | 17        | 0.34           |
| 86.5 - 129.5  | 87 - 129  | 3         | 0.06           |
| 129.5 - 172.5 | 130 - 172 | 4         | 0.08           |
| 172.5 - 215.5 | 173 - 215 | 1         | 0.02           |
| 215.5 - 258.5 | 216 - 258 | 0         | 0              |
| 258.5 - 301.5 | 359 - 301 | 0         | 0              |
| 301.5 - 344.5 | 302 - 344 | 1         | 0.02           |

Histogram

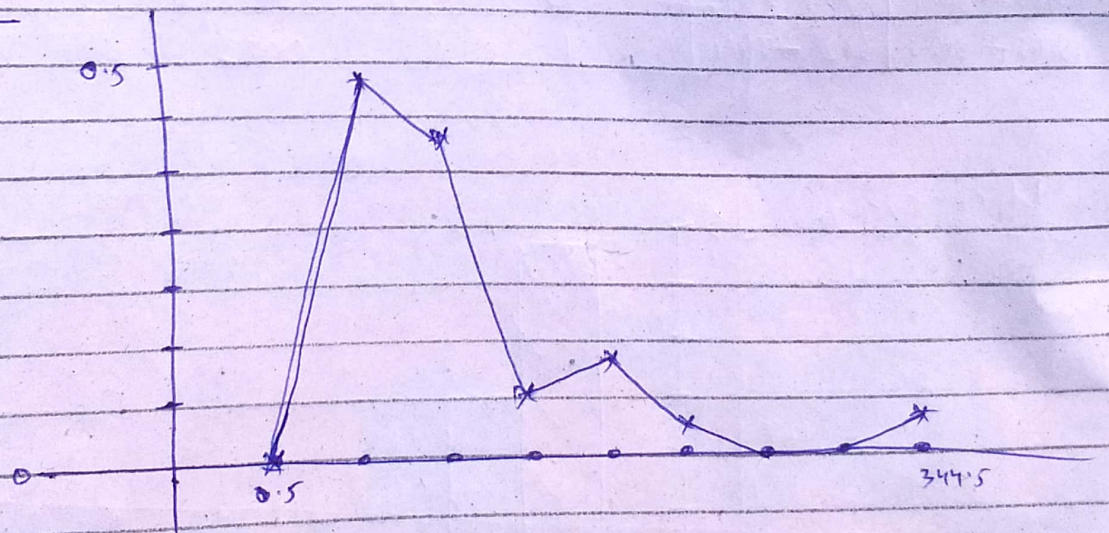


Frequency Polygon





Ogive





Q: 16:  $\Sigma x = 272$

23 30 20 27 47 46 35 20 39 29  
 25 15 18 27 19 22 12 26 34 15  
 27 35 26 43 35 14 24 12 23 31  
 40 35 38 57 22 42 24 21 27 33

Num of classes = 6

$U = 57$

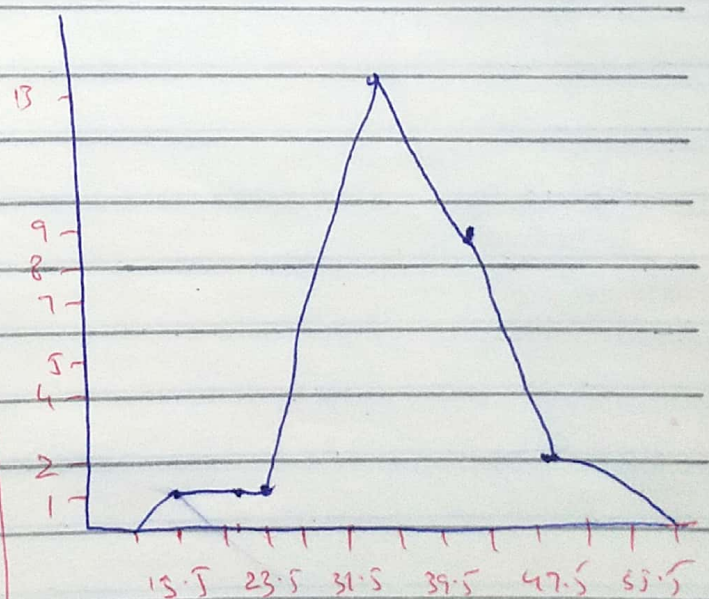
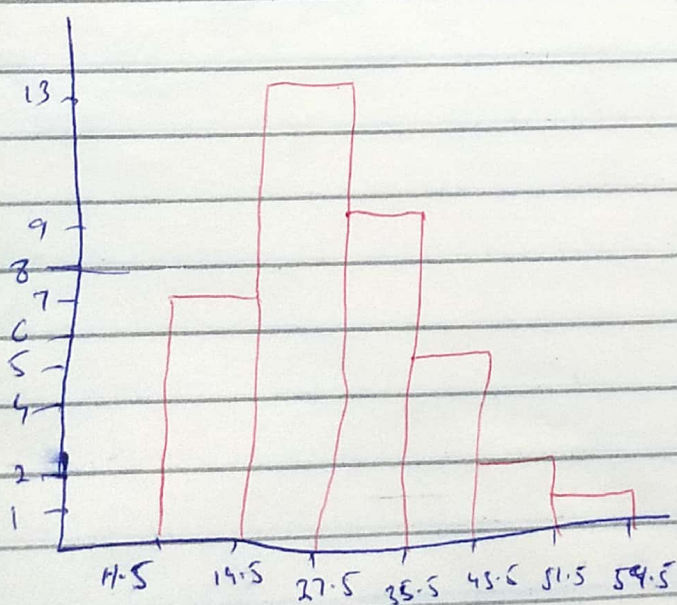
$L = 12$

$R = U - L = 57 - 12 = 45$

CLS width =  $\frac{R}{6} = 7.5 \approx 8$

12, 20

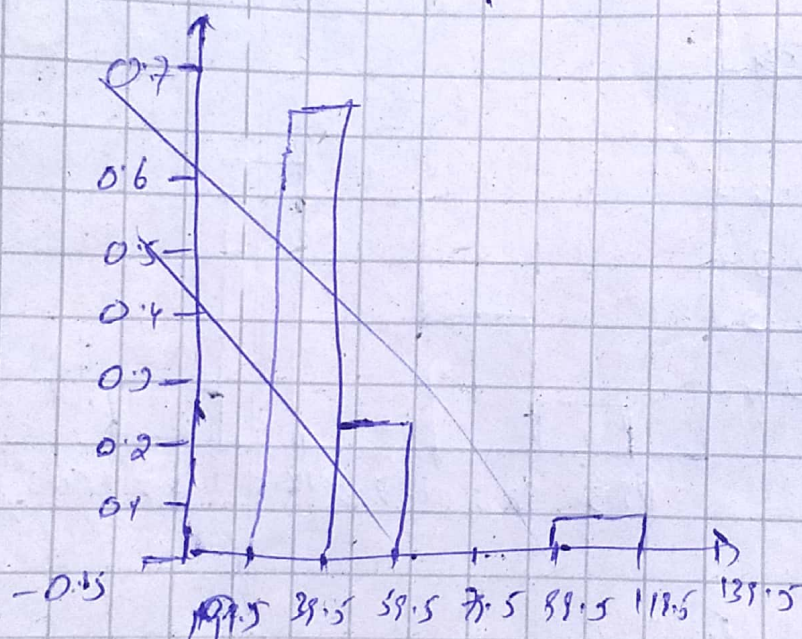
| CLS width | frequency | CLS Boundaries | commulative freq | Mid point | Tally |
|-----------|-----------|----------------|------------------|-----------|-------|
| 12-19     | 7         | 11.5 - 19.5    | 7                | 15.5      |       |
| 20-27     | 13        | 19.5 - 27.5    | 20               | 23.5      |       |
| 28-35     | 9         | 27.5 - 35.5    | 29               | 31.5      |       |
| 36-43     | 5         | 35.5 - 43.5    | 34               | 39.5      |       |
| 44-51     | 2         | 43.5 - 51.5    | 36               | 47.5      |       |
| 52-59     | 1         | 51.5 - 59.5    | 37               |           |       |



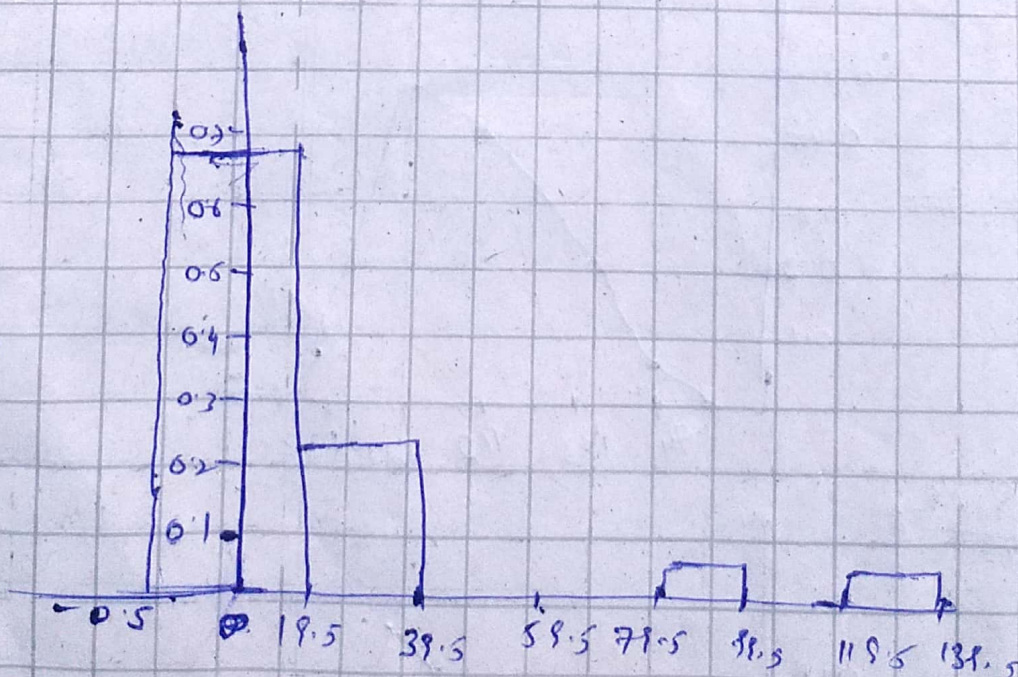


(17)

|               | f  | c.f | R.P   |
|---------------|----|-----|-------|
| -0.5 - 19.5   | 20 | 20  | 0.67  |
| 19.5 - 39.5   | 7  | 27  | 0.23  |
| 39.5 - 59.5   | 0  | 27  | 0     |
| 59.5 - 79.5   | 0  | 27  | 0     |
| 79.5 - 99.5   | 1  | 28  | 0.033 |
| 99.5 - 119.5  | 0  | 28  | 0     |
| 119.5 - 139.5 | 2  | 30  | 0.067 |



R.F





# Benevolent Public School Pashawar

Name..... R. No.....

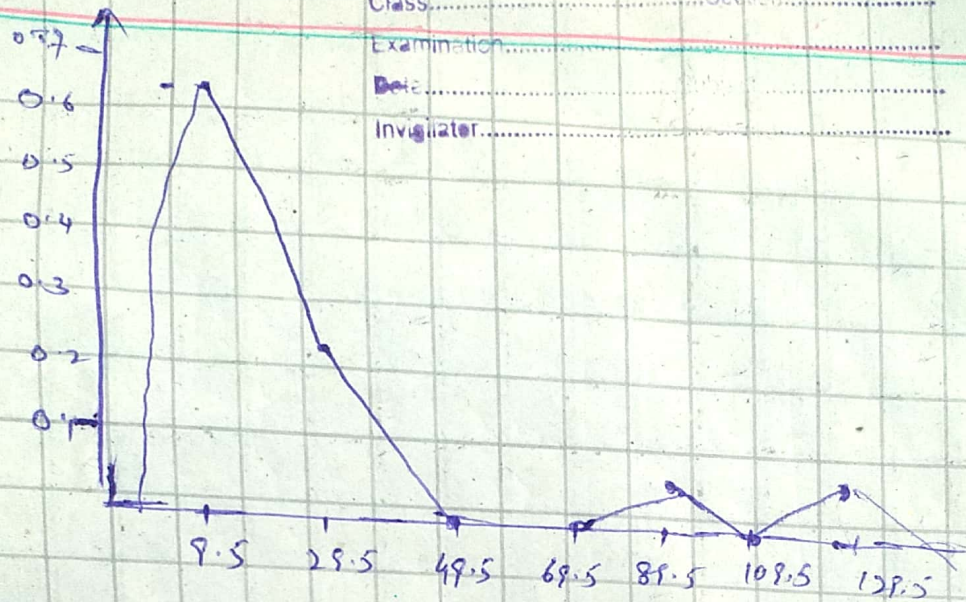
Class..... Section.....

Examination.....

Date.....

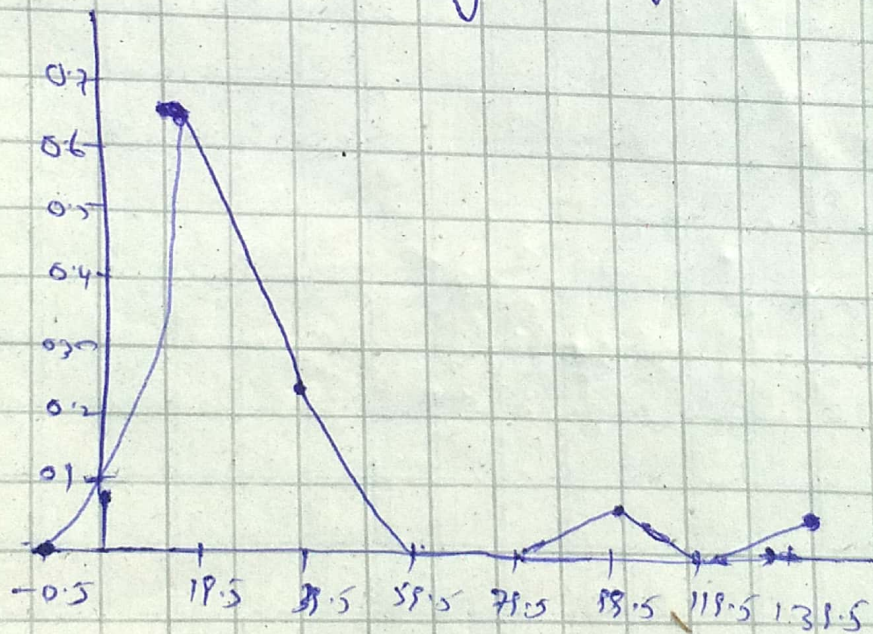
Inspector.....

C.F



~~His~~

Mid point  
frequency polygon



ogive

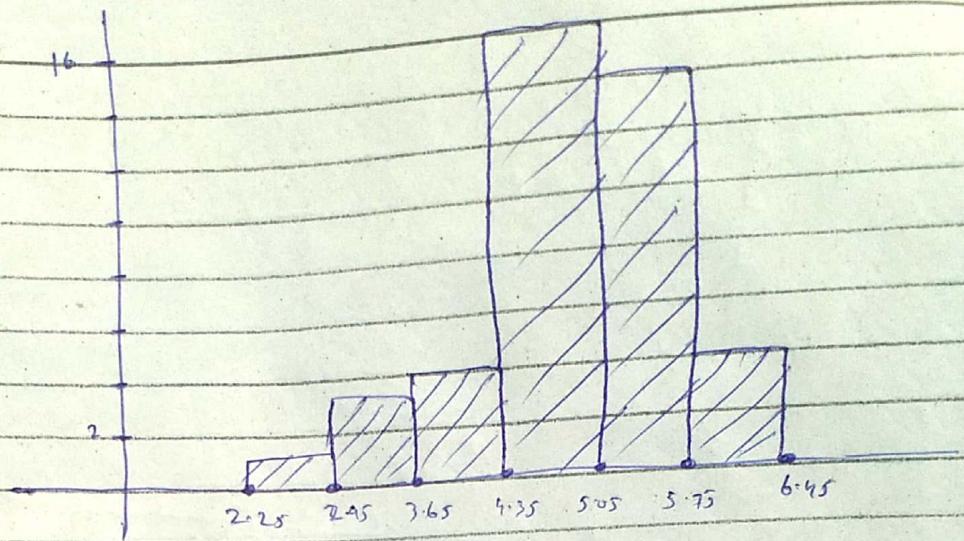


Q 18

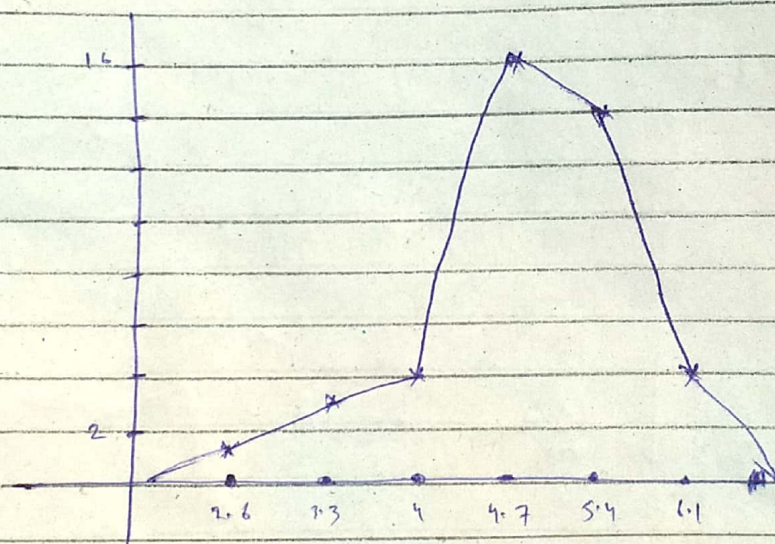
| C. Boundary | Class limits | Frequency | Cumulative frequency |
|-------------|--------------|-----------|----------------------|
| 2.25 - 2.95 | 2.3 - 2.9    | 1         | 1                    |
| 2.95 - 3.65 | 3.0 - 3.6    | 3         | 4                    |
| 3.65 - 4.35 | 3.7 - 4.3    | 4         | 8                    |
| 4.35 - 5.05 | 4.4 - 5.0    | 16        | 24                   |
| 5.05 - 5.75 | 5.1 - 5.7    | 14        | 38                   |
| 5.75 - 6.45 | 5.8 - 6.4    | 4         | 42                   |



Histogram



Frequency polygon



The ogive

