

## Chapter 15: Graphical Representation

### Exercise 23

Draw histograms for the following frequency distributions:

(i)

Class Interval	0-10	10-20	20-30	30-40	40-50	50-60
Frequency	12	20	26	18	10	6

(ii)

Class Interval	10-16	16-22	22-28	28-34	34-40
Frequency	15	23	30	20	16

(iii)

Class Interval	30-39	40-49	50-59	60-69	70-79
Frequency	24	16	09	15	20

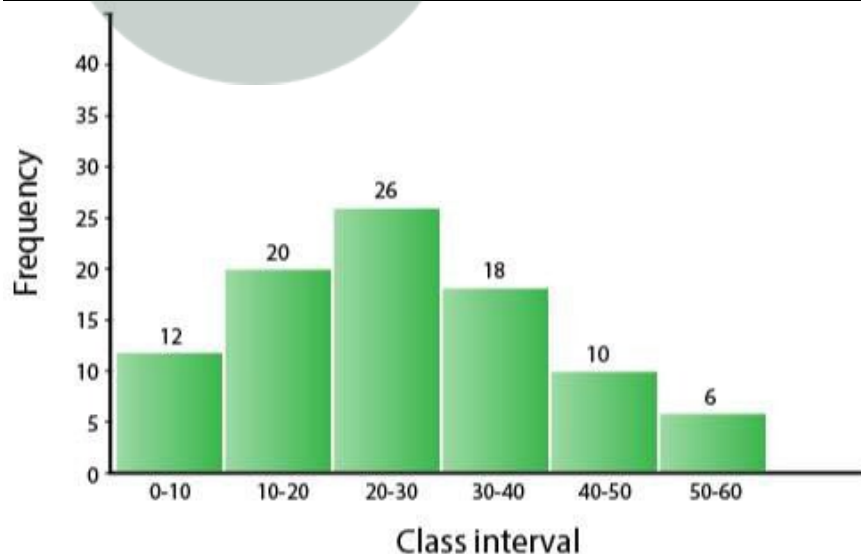
(iv)

Class Marks	16	24	32	40	48	56	64
Frequency	8	12	15	18	25	19	10

Solution:

(i)

Class Interval	Frequency
0-10	12
10-20	20
20-30	26
30-40	18
40-50	10
50-60	06



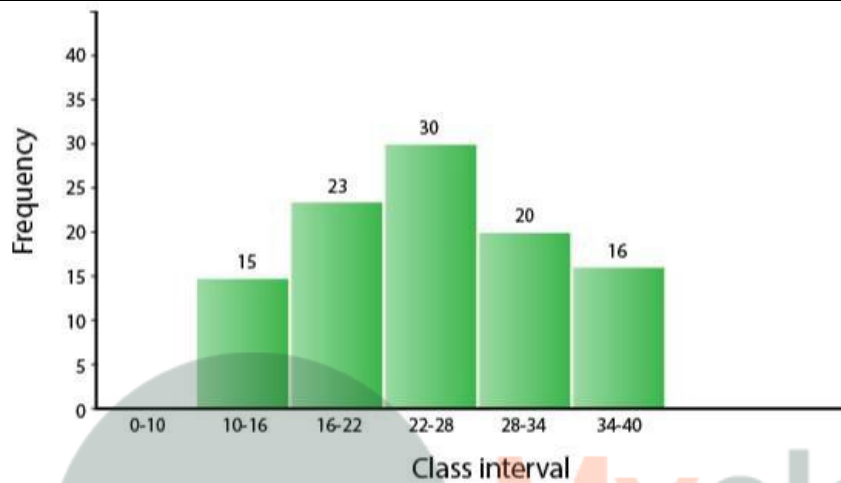
Steps of construction:

- Taking suitable scales, mark the class intervals on x-axis and the frequencies on y-axis.
- Construct rectangles with class intervals as bases and corresponding frequencies as heights.

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(ii)

Class Interval	Frequency
10-16	15
16-22	23
22-28	30
28-34	20
34-40	16

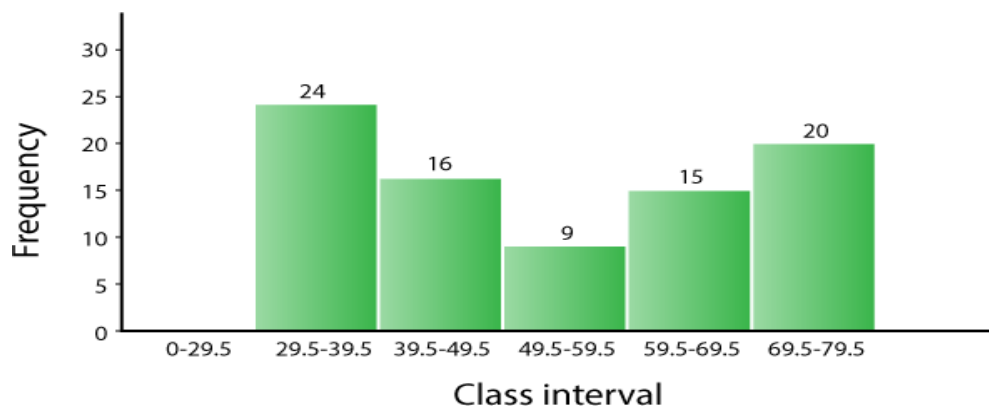


Steps of construction:

- Taking suitable scales, mark the class intervals on x-axis and frequency on y-axis.
- Construct rectangles with class intervals as bases and corresponding frequencies as heights.

(iii)

Class Interval (Inclusive form)	Class Interval (Exclusive Form)	Frequency
30-39	29.5-39.5	24
40-49	39.5-49.5	16
50-59	49.5-59.5	09
60-69	59.5-69.5	15
70-79	69.5-79.5	20



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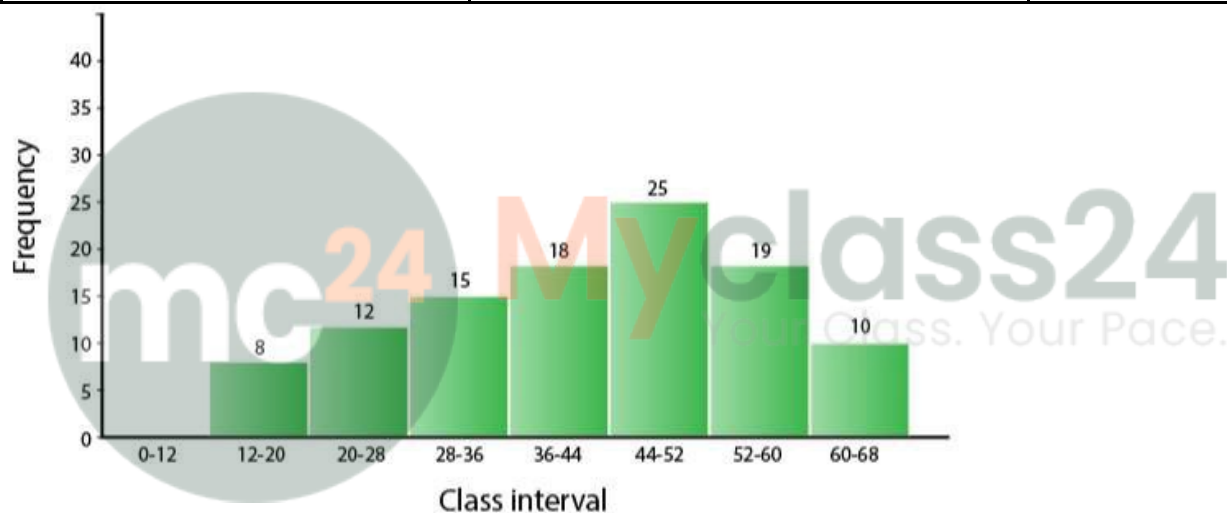
Steps of construction:

- (a) Convert the data into exclusive form. [Here, adjustment factor = 0.5]
- (b) Taking suitable scales, mark the class intervals on x-axis and the frequency on y-axis.
- (c) Construct rectangles with class intervals as bases and corresponding frequencies as heights.

(iv)

From the given data:

Class Marks	Class Intervals	
16	12-20	08
24	20-28	12
32	28-36	15
40	36-44	18
48	44-52	25
56	52-60	19
64	60-68	10



Steps of construction:

- (a) Convert the class marks into class intervals.
- (b) Taking suitable scales, mark class intervals on x-axis and frequency on y-axis.
- (c) Construct rectangles with class intervals as bases and corresponding frequencies as heights.

**2. Draw cumulative frequency curve (ogive) for each of the following distributions:**

(i)

<b>Class Interval</b>	10-15	15-20	20-25	25-30	30-45	35-40
<b>Frequency</b>	10	15	17	12	10	08

(ii)

<b>Class Interval</b>	10-19	20-29	30-39	40-49	50-59
<b>Frequency</b>	23	16	15	20	12

**Solution:**

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(i)

Class Interval	Frequency
10-15	10
15-20	15
20-25	17
25-30	12
30-35	10
35-40	8



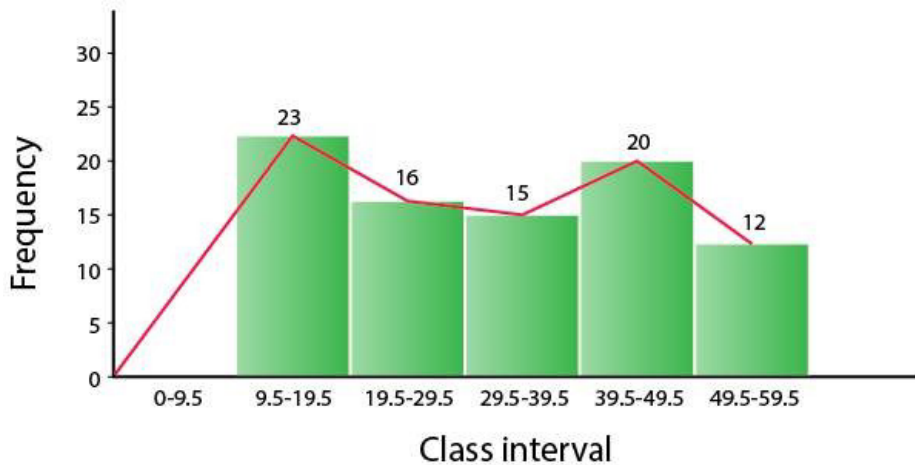
Steps of construction:

- (a) Taking suitable scales, mark the class intervals on x-axis and the frequencies on y-axis.
- (b) Construct rectangles with class intervals as bases and corresponding frequencies as heights.
- (c) Join the mid-points of the rectangle to obtain the ogive.

(ii)

Class Interval (Inclusive)	Class Interval (Exclusive)	Frequency	Cumulative Frequency
10-19	9.5-19.5	23	23
20-29	19.5-29.5	16	39
30-39	29.5-39.5	15	54
40-49	39.5-49.5	20	74
50-59	49.5-59.5	12	86
		Total	86

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Steps of construction:

- (a) Convert the data into exclusive form. [Here, adjustment factor = 0.5]
- (b) Taking suitable scales, mark the class intervals on x-axis and the frequencies on y-axis.
- (c) Construct rectangles with class intervals as bases and corresponding frequencies as heights.
- (d) Join the mid-points of the rectangle to obtain the ogive.

**3. Draw an ogive for each of the following distributions:**

(i)

Marks Obtained	less than 10	less than 20	less than 30	less than 40	less than 50
No. of Students	8	25	38	50	67

(ii)

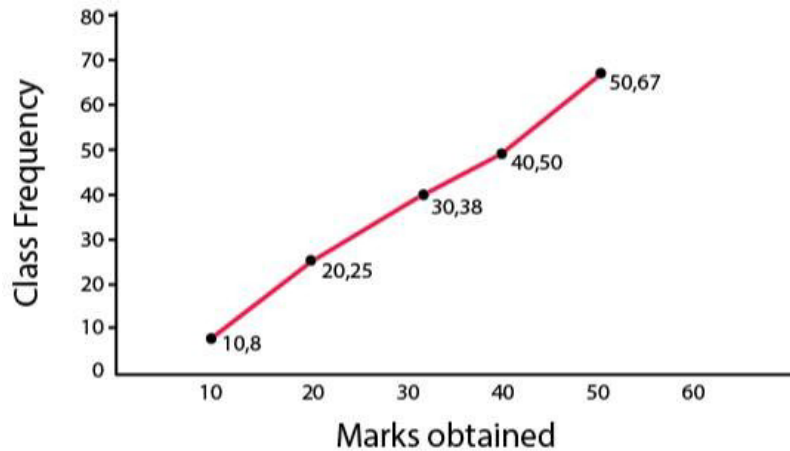
Age in years (less than)	10	20	30	40	50	60	70
Cumulative Frequency	0	17	32	37	53	58	65

**Solution:**

(i)

Marks Obtained	No. of students (c.f.)
less than 10	8
less than 20	25
less than 30	38
less than 40	50
less than 50	67

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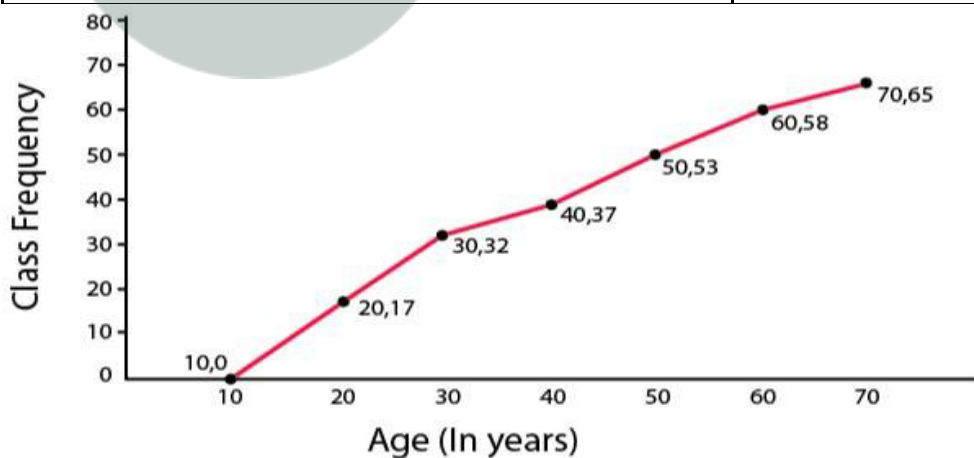


Steps Of construction:

- (a) Plot the points (10, 8), (20, 25), (30, 38), (40, 50) and (50, 67) on the graph.
- (b) Join them with free hand to obtain an ogive.

(ii)

Age in years (less than)	Cumulative Frequency
10	0
20	17
30	32
40	37
50	53
60	58
70	65



Steps Of construction:

- (a) Plot the points (10, 0), (20, 17), (30, 32), (40, 37), (50, 53), (60, 58) and (70, 65) on the graph.
- (b) Join them with free hand to obtain an ogive.

**4. Construct a frequency distribution table for the number given below, using the class intervals 21-30, 31-40 ... etc.**

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75, 67, 57, 50, 26, 33, 44, 58, 67, 75, 78, 43, 41, 31, 21, 32, 40, 62, 54, 69, 48, 47, 51, 38, 39, 43, 61, 63, 68, 53, 56, 49, 59, 37, 40, 68, 23, 28, 36, 47

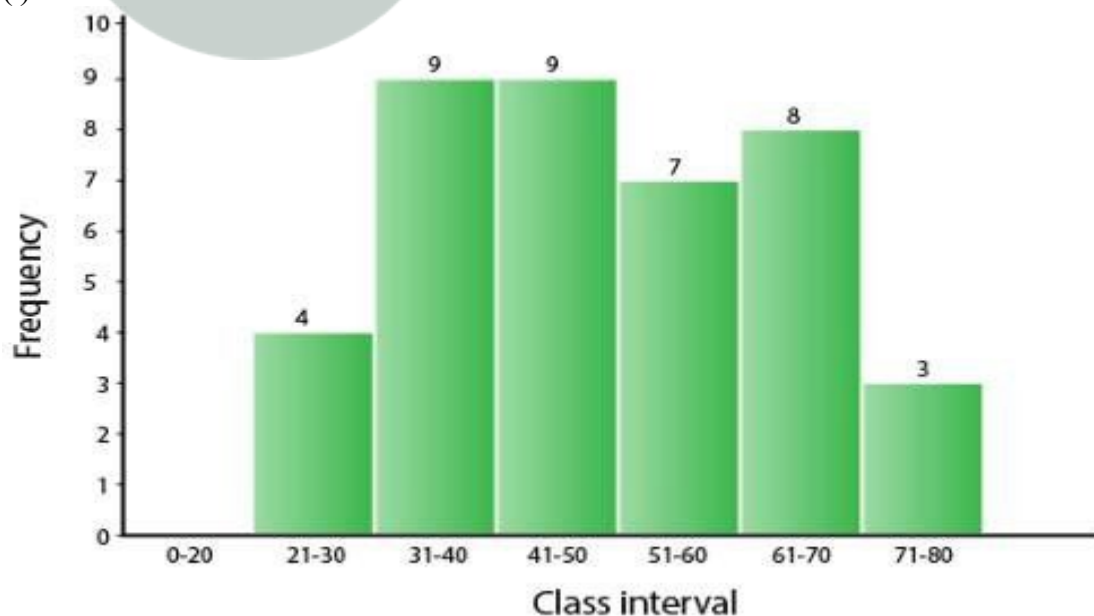
Use the table obtained to draw:

(i) a histogram (ii) an ogive

Solution:

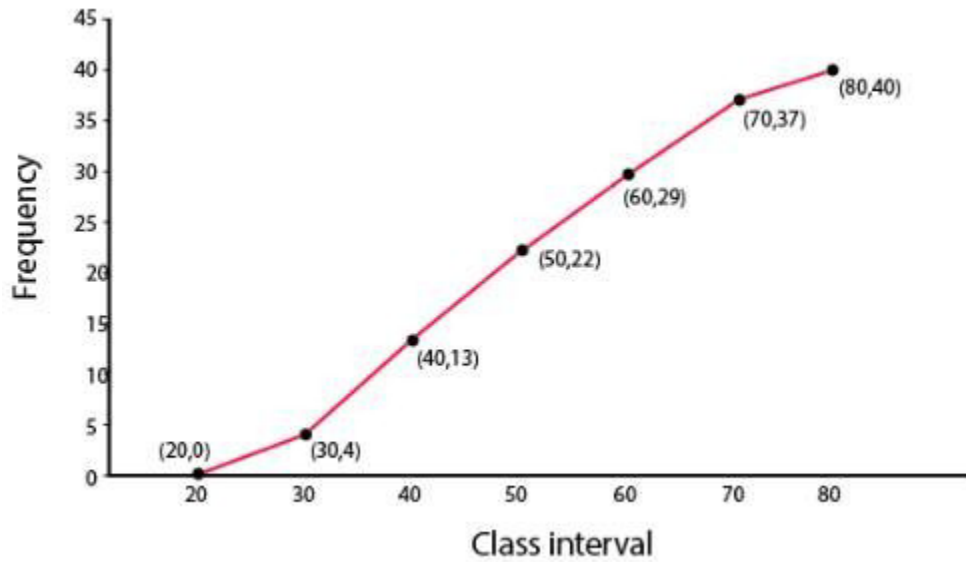
Class Interval	Tally	Frequency	c.f.
21 - 30		4	4
31 - 40	 /	9	13
41 - 50	 /	9	22
51 - 60	 /	7	29
61 - 70	 /	8	37
71 - 80		3	40

(i)



(ii)

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Plot the points (30,4), (40,13), (50,22), (60,29), (70,37) and (80,40) on the graph and join them with free hand to obtain an ogive.



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