

Activity 32

OBJECTIVE

To draw histograms for classes of equal widths and varying widths.

MATERIAL REQUIRED

Graph paper, geometry box, sketch pens, scissors, adhesive, cardboard.

METHOD OF CONSTRUCTION

1. Collect data from day to day life such as weights of students in a class and make a frequency distribution table.

Case I : For classes of equal widths

| | | | | | |
|------------------|-------|-------|-------|-------|-------|
| Class | $a-b$ | $b-c$ | $c-d$ | $d-e$ | $e-f$ |
| Frequency | f_1 | f_2 | f_3 | f_4 | f_5 |

Case II : For classes of varying widths

Here : $d - f = 2(a - b)$

| | | | | |
|---------------------------|-----------------------|-----------------------|-----------------------|------------------------|
| Class | $a-b$ (width x) | $b-c$ (width x) | $c-d$ (width x) | $d-f$ (width $2x$) |
| Frequency | f_1 | f_2 | f_3 | f_4 |
| Modified frequency | f_1 | f_2 | f_3 | $F' = \frac{f_4}{2}$ |

2. Take a graph paper (20 cm \times 20 cm) and paste it on a cardboard.
3. Draw two perpendicular axes $X'OX$ and YOY' on the graph paper.
4. Mark classes on x -axis and frequencies on y -axis at equal distances as shown in Fig. 1.

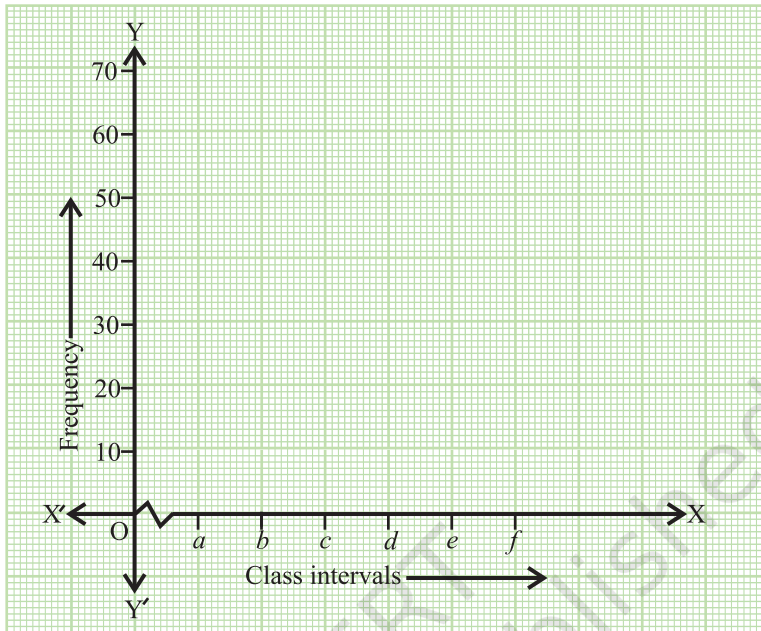


Fig. 1

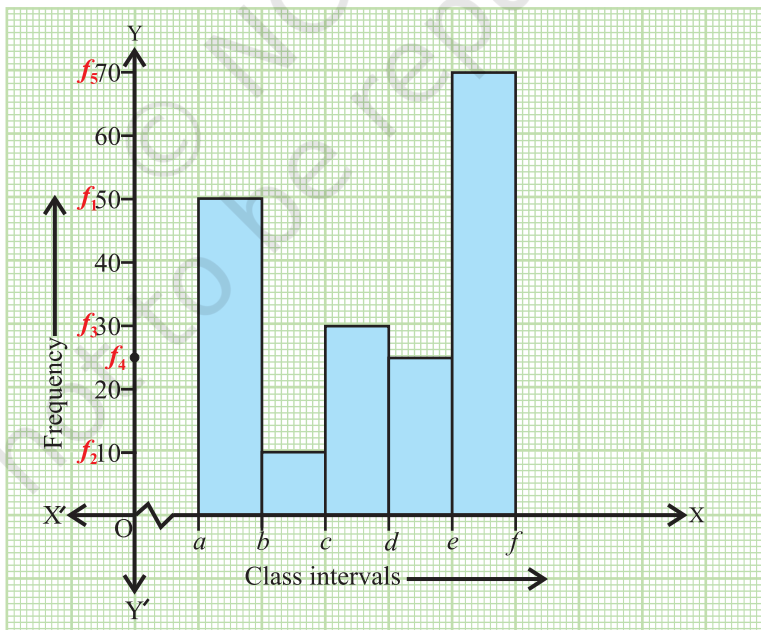


Fig. 2

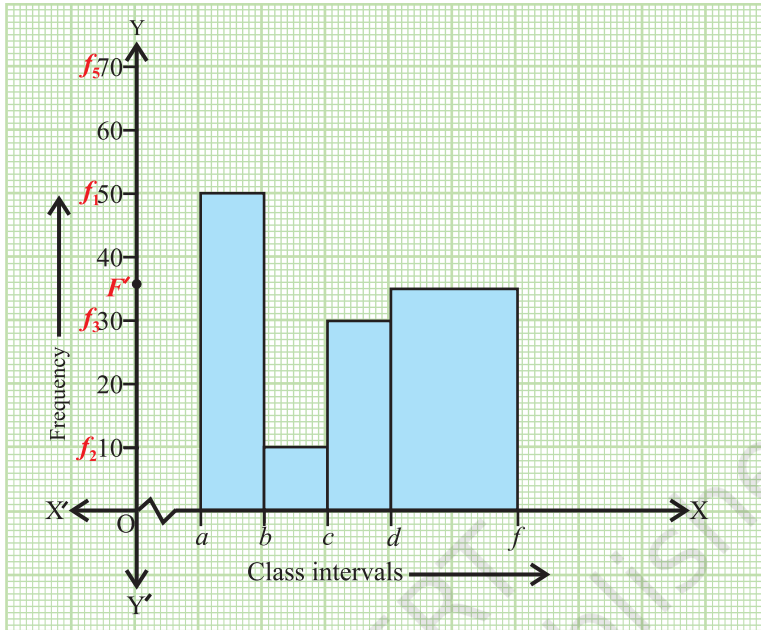


Fig. 3

5. On intervals $(a-b)$, $(b-c)$, $(c-d)$, $(d-e)$, $(e-f)$, draw rectangles of equal widths and of heights f_1, f_2, f_3, f_4 and f_5 , respectively, as shown in Fig. 2.
6. On intervals $(a-b)$, $(b-c)$, $(c-d)$, $(d-f)$, draw rectangles of heights f_1, f_2, f_3 , and F' as shown in Fig. 3.

DEMONSTRATION

1. Different numerical values can be taken for a, b, c, d, e and f .
2. With these numerical values, histograms of equal widths and varying widths can be drawn.

OBSERVATION

Case I

1. The intervals are

$$a-b = \dots\dots\dots, \quad b-c = \dots\dots\dots, \quad c-d = \dots\dots\dots,$$

$$d-e = \dots\dots\dots, e-f = \dots\dots\dots$$

$$2. f_1 = \dots\dots\dots, f_2 = \dots\dots\dots, f_3 = \dots\dots\dots,$$

$$f_4 = \dots\dots\dots, f_5 = \dots\dots\dots$$

Case II

$$1. a-b = \dots\dots\dots, b-c = \dots\dots\dots, c-d = \dots\dots\dots,$$

$$d-f = \dots\dots\dots,$$

$$2. f_1 = \dots\dots\dots, f_2 = \dots\dots\dots, f_3 = \dots\dots\dots,$$

$$f_4 = \dots\dots\dots, F' = \frac{f_4}{2} = \dots\dots\dots$$

APPLICATION

Histograms are used in presenting large data in a concise form pictorially.