

Locating Median graphically

Consider the following data of monthly wages of a group of people. We would like to locate median graphically using OGIVES.

Wages(Rs 1000)	f	less than cf	More than cf
0-10	4	4	100
10-20	6	10	96
20-30	10	20	90
30-40	10	30	80
40-50	25	55	70
50-60	22	77	45
60-70	18	95	23
70-80	5	100	5

Less than OGIVE: Plot upper limit and cf (less than cf)

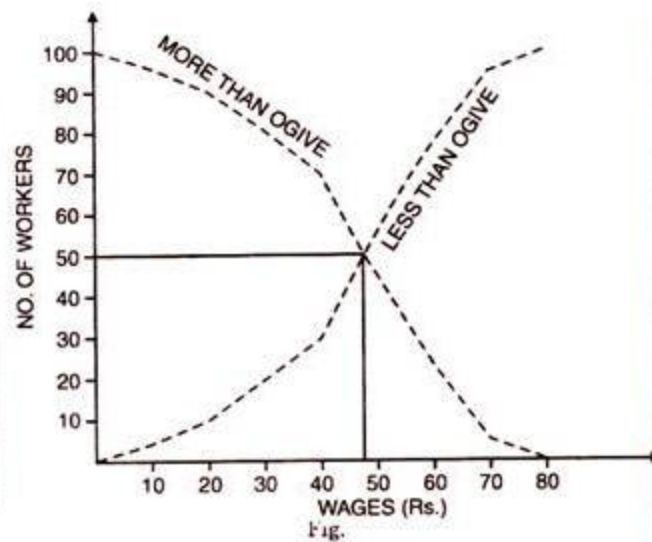
More than Ogive : Plot lower limit and more-than-cf

Wages (Rs.) Less than	C_f	Wages	C_f
10	4	0	100
20	10	10	96
30	20	20	90
40	30	30	80
50	55	40	70
60	77	50	45
70	95	60	23
80	100	70	5
		80	0

Numerically

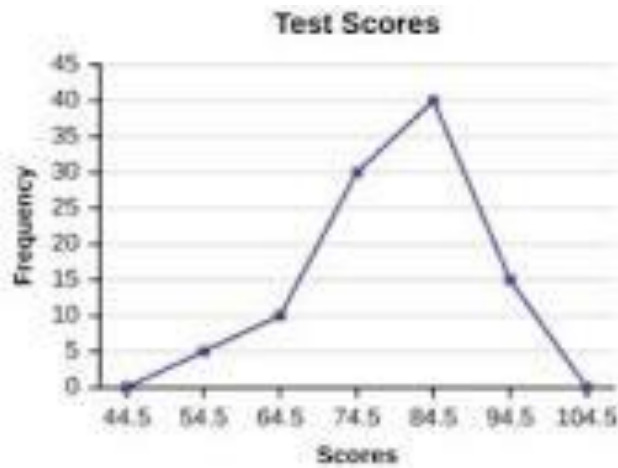
$$\therefore N_1 = \frac{100}{2} = 50; C_f = 30; f = 25, i = 10 L = 40$$

$$\therefore M = 40 + \frac{50 - 30}{25} \times 10 = 40 + 8 = 48 \text{ (Verified).}$$



We can locate all positional averages with the help of any Ogive . : 3 Quartiles, 9 Deciles and 99 percentiles.

Practice questions for the Chapter on Measures of Central Tendency : posted in whats app group of the class.



The above image is an example of a frequency polygon. If it drawn as a smooth curve, it becomes a frequency curve. The peak of the curve represents mode of ths Unimodakl data.

We can locate Mode with the help of HISTOGRAMS as discussed below with the help of an example.

GRAPHICAL METHOD

Example 1. Find mode for the following data Graphically

X :	0-50	50-100	100-150	150-200	200-250	250-300	300-350
f :	41	171	287	497	382	211	87

and verify numerically.

Solution

Numerically ; By Inspection,
Modal Interval is 150 - 200

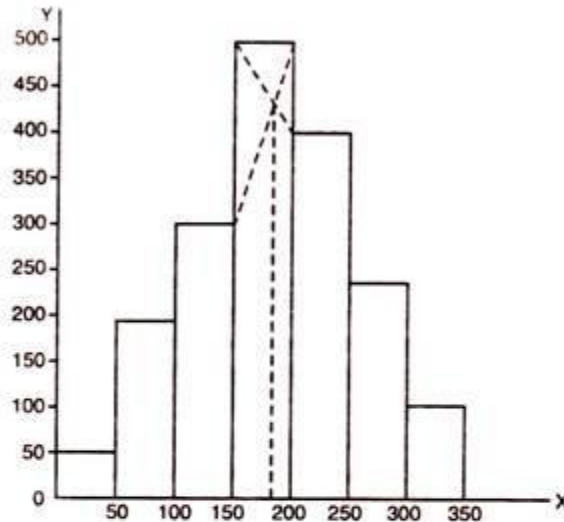
$$\therefore L = 150 \quad i = 50$$

$$D_1 = 497 - 287 = 210 ;$$

$$D_2 = 497 - 382 = 115$$

$$\text{As } Z = L + \frac{D_1}{D_1 + D_2} \times i$$

$$\begin{aligned} \therefore Z &= 150 + \frac{210}{210 + 115} \times 50 \\ &= 150 + \frac{10500}{325} \\ &= 150 + 32.3 = \mathbf{182.3}. \end{aligned}$$



Graphical Representation :

1. Draw Histogram
2. Draw Two lines diagonally inside Modal interval rectangle to upper corner of adjacent rectangles.
3. Draw line from intersection of two diagonals on X-axis.
4. It gives value of Mode.
5. Mode = 182 (Approx.) in the present example.

EXERCISE I

1. Find Z graphically and verify your result numerically also. (1-2)

X :	0-10	10-20	20-30	30-40	40-50	50-60	60-70
f :	4	17	21	44	37	18	3

(Ans. 37.7)

2.

X :	0-50	50-100	100-150	150-200	200-250	250-300	300-350	350-400
f :	27	84	189	296	242	143	77	34

(Ans. 183.2)

Q2. Consider this data of marks of students in a class of 95 students.

We have to find mode in this data. Graphically, we draw a histogram for the data.

In this data modal class is 30-40 and highest frequency is 25.

Marks	No. of students
0 - 10	5
10 - 20	10
20 - 30	20
30 - 40	25
40 - 50	20
50 - 60	10
60 - 70	5

