

Mode:- value of variable that occurs most frequently

Individual Series:- 11.1, 10.9, 10.7, 11.1, 10.6, 11.3, 10.6

10.7, 10.6, 10.9, 10.6, 10.5, 10.4, 10.5

mode 10.6 - occurs 5 times

Discrete Series:-

x	f
110	2
120	4
130	8
140	10
150	5
160	4

mode = 140

Continuous Series:-

step I - find modal class - most f
step II - find mode

x	f
0-5	3

5-10	7
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10-15	15
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15-20	30
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20-25	20
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25-30	10
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30-35	5
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$$\text{mode} = l + \frac{f_1 - f_0}{2f_1 - f_0 - f_2} \times i$$

$$2f_1 - f_0 - f_2$$

f_0 = freq of preceding modal class

f_1 = freq of modal class

f_2 = freq of post modal class

i = size

l = lower limit of modal class

$$\text{mode} = l + \frac{f_1 - f_0}{2f_1 - f_0 - f_2} \times i$$

$$\times 1 \quad l = 15 \quad f_1 = 30 \quad f_0 = 15$$

$$2f_1 - f_0 - f_2 \quad f_2 = 20 \quad i = 5$$

$$= 15 + \frac{30 - 15}{2(30) - 15 - 20} \times 5$$

$$\text{mode} = 18 \text{ ans}$$

Note \rightarrow If first class is modal class then $f_0 = 0$

\rightarrow If last class is modal class then $f_2 = 0$

\rightarrow If mode value lies outside modal class, the following formula is used to calculate the mode

$$\text{mode} = l + \frac{f_2 \times i}{f_0 + f_2}$$

\rightarrow If mode is ill defined, max freq occurs more than once

$$\text{mode} = 3 \text{ Median} - 2 \text{ Mean}$$

class	freq	continuous interval
20-24	3	19.5-24.5
25-29	5	24.5-29.5
30-34	10 f_0	29.5-34.5
35-39	20 f_1	34.5-39.5 \checkmark
40-44	12 f_2	39.5-44.5
45-49	6	44.5-49.5
50-54	3	49.5-54.5
55-59	1	54.5-59.5

$$l = 34.5$$

$$\text{mode} = 34.5 + \frac{20-10 \times 5}{40-10-12}$$

$$= 37.27$$