

Frequency Dataset

Consider the marks of 50 students of class VII obtained in an examination. The maximum marks of the exam are 50.

23, 8, 13, 18, 32, 44, 19, 8, 25, 27, 10, 30, 22, 40, 39, 17, 25, 9, 15, 20, 30, 24, 29, 19, 16, 33, 38, 46, 43, 22, 37, 27, 17, 11, 34, 41, 35, 45, 31, 26, 42, 18, 28, 30, 22, 20, 33, 39, 40, 32

Frequency Table:

Groups	Frequency (f_i)	Cumulative Frequency (c_f)	Class Mark (x_i)	$x_i f_i$
0-10	3	3	5	15
10-20	11	14	15	165
20-30	14	28	25	350
30-40	14	42	35	490
40-50	8	50	45	360
Total	50			

Statistical Parameters

Mean

$$\bar{x} = \frac{\sum_{i=1}^n x_i f_i}{\sum_{i=1}^n f_i}$$

Median

$$Median = l + \left(\frac{\frac{n}{2} - c_f}{f} \right) * h$$

where, l = lower limit of the median class

n = number of observations

f = is the frequency of median class

h = class size

c_f = cumulative frequency of class preceding the median

class

For the above case:

$$n = 50, l = 20, h = 10, c_f = 14, f = 14$$

Mode

$$Mode = l + [(f_1 - f_0)/(2f_1 - f_0 - f_2)] * h$$

where, l = lower class limit of modal class

h = class size

f_1 = frequency of modal class

f_0 = frequency of class proceeding to modal class

f_2 = frequency of class succeeding to modal class

For the above case:

$$l = 30, h = 10, f_1 = 14, f_0 = 14, f_2 = 8$$