Department of Computer Applications
23MX11 – MFCS
Calculation MODE of a grouped data

Already, this was discussed in a notes "23mx11 - Introduction to Statistics".

Formula to calculate MODE of a grouped Data.

MODE = l + $\left(\frac{(fm-f1)}{(fm-f1)+(fm-f2)}\right) x\ h$

l = Lower limit of the modal class

fm = Frequency value of the modal class

f1 = Frequency of class preceding the modal class

f2 = Frequency of class succeeding the modal class

h = width of the modal class

Class with maximum frequency is called the Modal Class.

A Sample problem:

Heights [in cm] of 50 students are recorded and the values are tabulated as below. Compute the MODE.

Height(cm)	125-130	130-135	135-140	140-145	145-150
Number of students	7	14	10	10	9
	↑ f1	↑ fm	↑ f2		

Solution:

"Class with maximum frequency is called the Modal Class"

So, the modal class here is 130-135 [Frequency is 14 > all other frequencies]

l = lower limit of the class = 130
h = width of the modal class = 5 [difference between limits]

f_m = Frequency of the modal class = 14

f_1 = Frequency of class preceding the modal class = 7

f_2 = Frequency of class succeeding the modal class = 10

Substituting all these values in the formula, you will get MODE.

$$\text{MODE} = l + \left(\frac{(fm-f1)}{(fm-f1)+(fm-f2)}\right) x\, h = 130 + \left(\frac{(14-7)}{(14-7)+(14-10)}\right) x\, 5$$

$$= 133.18$$

Exercise Problem

Compute the MODE for the given data.

Life times in hours	0-20	20-40	40-60	60-80	80-100	100-120
Frequency	10	35	52	61	38	29

Note:

Please note that, in all of these examples, the upper limit of the class is same as the lower limit of the succeeding class; like 0-20; 20-40; 40-60 and so on.

If the given grouped data is not in this format, convert it into the standard format before computing the MODE.

Example: [only the frequency interval is shown] – Here the upper limit of the class is not the same as lower limit of the succeeding class – so, need to convert the table.

1-10	11-20	21-30	31-40	41-50

Convert this into a standard format to compute the MODE.

Steps:

1. Find the difference between the upper limit of succeeding class and the lower limit of the preceding class. In this case it is 1.

2. Divide this number by 2: 0.5.

3. Subtract this 0.5 with every lower limit and add this with every upper limit.

   Now the revised frequency is ready to compute the MODE.

0.5-10.5	10.5-20.5	20.5-30.5	30.5-40.5	40.5-50.5

[Discussed in the notes already].
