Provincial Department of Education - Sabaragamuwa – Week School

Subject: Mathematics

Week: 37

Grade -10

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Unit 26 - Frequency Distribution (ii)

- ## Calculating the mean of grouped data

Calculating the mean using the assumed mean

The class intervals of a grouped frequency distribution may sometimes contain large mid-values. In such situations, finding the mean using the method what you have already learnt may not be easy. Let us consider a more suitable method of finding the mean of a distribution of this type, through an example.

Given below is the information about tourists who have arrived in a hotel.

Number of tourists	8 - 12	13 - 17	18 - 22	23 - 27	28 - 32	33 - 37	38 - 42
Number of days	5	23	22	16	10	7	7

Let us first find the mid-values which represent each of the class intervals.
Let us now assume that the mid-value 25 of the class interval 23 – 27 is the mean. That is, let us take 25 to be the assumed mean. Now let us find the **deviation** of each mid-value from the assumed mean by subtracting the assumed mean from each mid-value. We denote the deviation by (d).

That is, **Deviation = mid-value – assumed mean**

Class Interval	Mid - Value	Deviation(d)	Frequency(f)	(fd)	
8 - 12	10	-15	5	-75	-315
13 - 17	15	-10	13	-130	
18 - 22	20	-5	22	-110	
23 - 27	25	0	16	0	+225
28 - 32	30	+5	10	50	
33 - 37	35	+10	7	70	
38 - 42	40	+15	7	105	
			$\Sigma f = 80$	$\Sigma fd = -90$	

Here $\boldsymbol{\Sigma f}$ denotes the total number of families, $\boldsymbol{fd}$ denotesthe product of the deviation and the corresponding frequency, and $\boldsymbol{\Sigma fd}$ denotes the sum of the values in the $\boldsymbol{fd}$ column.

The mean is obtained by,   **Mean = Assumed Mean + Mean of the Deviations**

$$\text{Mean} = A \ + \frac{\Sigma fd}{\Sigma f}$$
$$= 25 + \frac{(-90)}{80}$$

$$= 25 + (-1.125)$$
$$= 23.875$$

- Solve the problems **1,2,3,4,5 and 6 in** E**xcersice 26.3** from the pages **95** and **96** in your Mathematics Text Book.