**MODE (Mo)**

Definition: Mode is defined as the size of a variable/ score which occurs most frequently. It is the value of the item which is most characterize or common in a series and is usually repeated maximum number of times.

1. **COMPUTATION OF MODE FOR UNGROUPED DATA.**

**Q1.** Find out the value of the mode from the following scores of students.

 95, 29, 24, 25, 27, 25, 28, 25, 29, 24, 20.

Solution:

The score 25 is repeated maximum number of times and thus the value of mode is 25.

**Exercise.**

1. 15, 14, 8, 14, 11, 14, 9, 9, 11.

Solution:

The score 14 is repeated maximum number of times and thus the value of mode is 14.

1. 3, 3, 6, 4, 4, 5, 7, 7, 9, 12, 7, 10, 7.

Solution:

The score 7 is repeated maximum number of times and thus the value of mode is 7.

**2. COMPUTATION OF MODE FOR GROUPED DATA**

 **A) Computation of mode when mean and median are available.**

 **Formula used: Mo = 3Md -2M**

**Problem 1**

Mean = 93.15 Median = 92.833

SOLUTION:

Mo = 3Md – 2M

 = 3 x 92.833 – 2 x 93.15

 = 278.499 – 186.3

 = 92.199

The Mode is 92.199

**Problem 2**

Mean = 44.6 Median = 44.045

SOLUTION:

Mode = 3Md – 2M

 = 3 x 44.045 – 2 x 44.6

 = 132.135 – 89.2

 = 42.935

The Mode is 42.935

**B) Direct method of calculating mode when mean and median is unavailable.**

Formula: **Mo =**$L+\left(\frac{f1}{f1+f-1}\right)i$

Where L is lower limit of mode class,

i is the size of class interval,

f1 is frequency of class interval above the modal class,

f -1 is frequency of the class interval below the model class.

**Problem 1: Calculate mode for the given distribution.**

|  |  |
| --- | --- |
| **Class Interval** | **Frequency (f)** |
| 65-69 | 1 |
| 60-64 | 3 |
| 55-59 | 4 |
| 50-54 | 7 |
| 45-49 | 9 |
| 40-44 | 11 | **MODAL CLASS** |
|  35-39 | 8 |
| 30-34 | 4 |
| 25-29 | 2 |
| 20-24 | 1 |
|  |  **N =** 50 |

SOLUTION:

L = 39.5, f1= 9, f-1 = 8, i = 5

Mo =$ L+\left(\frac{f1}{f1+f-1}\right)i$

 = 39.5+$\left(\frac{9}{9+8}\right)5$

 = 39.5+$\left(\frac{9}{17}\right)5$

 = 39.5+$\frac{45}{17}$

 = 39.5+2.647

 = 42.147

Therefore the mode for above grouped data is 42.147

**Problem no: 2**

|  |  |
| --- | --- |
| **Class Interval** | **Frequency (f)** |
| 120-122 | 2 |
| 117-119 | 2 |
| 114-116 | 2 |
| 111-113 | 4 |
| 108-110 | 5 |
| 105-107 | 9 | **MODAL CLASS** |
|  102-104 | 6 |
| 99-101 | 3 |
| 96-98 | 4 |
| 93-95 | 2 |
|  90-92 |  1 |
|  | **N =** 40 |

SOLUTION:

L = 104.5, f1 = 5, f-1=6, i = 3

Mo =$L+\left(\frac{f1}{f1+f-1}\right)i$

= 104.5+$\left(\frac{5}{5+6}\right)3$

= 104.5+$\left(\frac{5}{11}\right)3$

= 104.5+$\frac{15}{11}$

= 104.5+1.363

 = 105.863

Therefore the mode for above grouped data is 105.863

**Problem no: 3**

|  |  |
| --- | --- |
| **Class Interval** | **Frequency (f)** |
| 45-49 | 2 |
| 40-44 | 3 |
|  35-39 |  2 |
| 30-34 | 17 |
| 25-29 | 30 | **MODAL CLASS** |
| 20-24 | 25 |  |
|  15-19 | 15 |
| 10-14 | 3 |
| 5-9 | 2 |
| 0-4 | 1 |
|  | **N =** 100 |

SOLUTION:

L = 24.5, f1 =17, f-1 =25, i = 5

Mo =$L+\left(\frac{f1}{f1+f-1}\right)i$

= 24.5+$\left(\frac{17}{17+25}\right)5$

 = 24.5+$\left(\frac{17}{42}\right)5$

= 24.5+$\frac{85}{42}$

= 24.5+2.02

= 26.523

Therefore the mode for above grouped data is 26.523