Q10. The following number of goals were scored by a team in a series of 10 matches :

2, 3, 4, 5, 0, 1, 3, 3, 4, 3

Find the mean, rnedian and mode of these scores.

Sol. The data has 10 values. We arrange these values in the ascending order as below :

0,1,2,3,3,3,3,4,4,5.

(i) Mean $\dfrac{0+1+2+3+3+3+3+4+4+5}{10} = \dfrac{28}{10} = 2.8$

(ii) We have 5th and 6th values each equal to 3 as the two middle most values.

Therefore, median $= \dfrac{3+3}{2} = 3$

(iii) The value 3 has maximum frequency. Hence, we have mode = 3.

Q11. In a mathematics, test given to 15 students, the following marks (out of 100) are recorded:

41, 39, 48. 52, 46, 62, 54, 40, 96, 52, 98, 40, 42, 52, 60

Find the mean, median and mode of this data.

Sol. To find the mean :

here n = 15.

As, $\bar{x} = \sum\limits_{i=1}^{n=15} x_i = \dfrac{\begin{array}{c} 41+39+48+52+46+62+ \\ 54+40+96+52+98+40+ \\ 42+52+60 \end{array}}{15}$

$\therefore \quad \bar{x} = \dfrac{822}{15} = 54.8$

Thus, mean = 54.8

To find median :

Arranging the given data is an ascending orders, we have

39, 40, 40, 41, 42, 46, 48, 52, 52, 52, 54, 60, 62, 96, 98.

n = 15, an odd number.

$\therefore \quad$ Median $= \left(\dfrac{n+1}{2}\right)^{th}$ term $= \left(\dfrac{15+1}{2}\right)^{th}$ term $= 8^{th}$ term

Thus, Median = 52.

To find mode,

In the given data, the observation 52 occurs 3 times i.e; the maximum number of times.

Mode = 52.

Q12. The following observations have been arranged in ascending order. If the median of the data is 63. Find the value of x : 29, 32, 48, 50, x, x + 2, 72, 78, 84, 95

Sol. 63 is the median of the given data. The two middle most values of the arranged data (in the ascending order) are x and x + 2.

$$\Rightarrow \quad \frac{x + (x + 2)}{2} = 63 \Rightarrow x = 62$$

Q13. Find the mode of 14, 25, 14, 28, 18, 17, 18, 14, 23, 22, 14, 18.

Sol. We arrange the data in the ascending (or descending) order as below : 14, 14, 14, 14, 17, 18, 18, 18, 22, 23, 25, 28.
The value of 14 has maximum frequency. Therefore, the mode of the data is 14.

Q14. Find the mean salary of 60 workers of a factory from the following table:

Salary (in Rs.)	Number of workers
3000	16
4000	12
5000	10
6000	8
7000	6
8000	4
9000	3
10000	1
Total	60

Sol.

Salary (in `) (x_i)	Number of Workers (f_i)	$x_i f_i$
3000	16	48000
4000	12	48000
5000	10	50000
6000	8	48000
7000	6	42000
8000	4	32000
9000	3	27000
10000	1	10000
Total	$\Sigma f_i = 60$	$\Sigma x_i f_i = 305000$

$$\therefore \quad \overline{x} = \frac{\sum\limits_{i=1}^{8}(x_i f_i)}{\sum\limits_{i=1}^{8} f_i} = \frac{305000}{60} = 5083.3$$

Thus, the required mean salary = ` 5083.33

Q15. Give one example of a situation in which

  (i) The mean is an appropriate measure of central tendency.

  (ii) The mean is not an appropriate measure of central tendency but the median is an appropriate measure of central tendency.

Sol. (i) Marks award to a student in 5 weekly tests are

  7, 8, 8, 9, 10 (out of 10)

  Here, Median = 8, Mode = 8

  but we find mean = $\dfrac{7 + 8 + 8 + 9 + 10}{5}$ = 8.4.

  So, here we find that the mean value is more appropriate measure of central tendency.

  (ii) Median weight of a pen, a book, a match box, a rubber band and a chair.