



SpeedLabs

MATHS

CBSE 9th

TEEVRA EDUTECH PVT. LTD.

Q.1 The following number of goals was scored by a team in a series of 10 matches:

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

Find the mean, median and mode of these scores.

Ans. The number of goals scored by the team is

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

$$\text{Mean of data} = \frac{\text{Sum of all observation}}{\text{Total number of observation}}$$

$$\text{Mean score} = \frac{2+3+4+5+0+1+3+3+4+3}{10}$$

$$= \frac{28}{10} = 2.8$$

$$= 2.8 \text{ goals}$$

Arranging the number of goals in ascending order,

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

The number of observations is 10, which is an even number. Therefore, median score will be the mean of

$\frac{10}{2} + 1$ i.e., 5th and i.e., $\frac{10}{2} + 1$ 6th observation while arranged in ascending or descending order.

$$\text{Median score} = \frac{5^{\text{th}} \text{ observation} + 6^{\text{th}} \text{ observation}}{2}$$

$$= \frac{3+3}{2}$$

$$= \frac{6}{2}$$

$$= 3$$

Mode of data is the observation with the maximum frequency in data.

Therefore, the mode score of data is 3 as it has the maximum frequency as 4 in the data.

Q.2 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.

Ans. The marks of 15 students in mathematics test are

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

$$\text{Mean of data} = \frac{\text{Sum of all observations}}{\text{Total number of observations}}$$

$$= 41 + 39 + 48 + 52 + 46 + 62 + 54 + 40 + 96 + 52 + 98 + 40 + 42 + 52 + 60$$

$$\frac{822}{15} = 54.8$$

Arranging the scores obtained by 15 students in an ascending order,

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

As the number of observations is 15 which is odd, therefore, the median of data will be $\frac{15+1}{2} = 8^{\text{th}}$

observation

whether the data is arranged in an ascending or descending order. Therefore, median score of data = 52

Mode of data is the observation with the maximum frequency in data. Therefore, mode of this data is 52 having the highest frequency in data as 3.

Q.3 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

Ans. It can be observed that the total number of observations in the given data is 10 (even number). Therefore, the median of this data will be the mean $\frac{10}{2}$ of i.e., 5th and $\frac{10}{2}$ i.e., 6th observation.

$$\text{Therefore, median of data} = \frac{5^{\text{th}} \text{ observation} + 6^{\text{th}} \text{ observation}}{2}$$

$$\Rightarrow 63 = \frac{x + x + 2}{2}$$

$$\Rightarrow 63 = \frac{2x + 2}{2}$$

$$\Rightarrow 63 \times 2 = 2x + 2$$

$$\Rightarrow 126 = 2x + 2$$

Q.4 Find the mode of 14, 25, 14, 28, 18, 17, 18, 14, 23, 22, 14, 18.

Ans. Arranging the data in an ascending order,

14, 14, 14, 14, 17, 18, 18, 18, 22, 23, 25, 28

It can be observed that 14 has the highest frequency, i.e. 4, in the given data. Therefore, mode of the given data is 14.

Salary (in Rs)	Number of workers
3000	16
4000	12
5000	10
6000	8
7000	6
8000	4
9000	3
1000	1
Total	60

Q.5 Find the mean salary of 60 workers of a factory from the following table:

Ans. We know that

$$\text{Mean} = \frac{\sum f_i x_i}{\sum f_i}$$

The value of $\sum f_i x_i$ and $\sum f_i$ can be calculated as follows.

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

$$\text{Mean salary} = \frac{305000}{60}$$

$$= 5083.33$$

Therefore, mean salary of 60 workers is Rs 5083.33.

Q.6 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.

Ans. When any data has a few observations such that these are very far from the other observations in it, it is better to calculate the median than the mean of the data as median gives a better estimate of average in this case.

(i) Consider the following example – the following data represents the heights of the members of a family.
154.9 cm, 162.8 cm, 170.6 cm, 158.8 cm, 163.3 cm, 166.8 cm, 160.2 cm

In this case, it can be observed that the observations in the given data are close to each other. Therefore, mean will be calculated as an appropriate measure of central tendency.

(ii) The following data represents the marks obtained by 12 students in a test.

48, 59, 46, 52, 54, 46, 97, 42, 49, 58, 60, 99

In this case, it can be observed that there are some observations which are very far from other observations. Therefore, here, median will be calculated as an appropriate measure of central tendency.