

**EXERCISE 3.2****PAGE: 68**

1. The scores on the Mathematics test (out of 25) of 15 students are as follows:

19, 25, 23, 20, 9, 20, 15, 10, 5, 16, 25, 20, 24, 12, 20

Find the mode and median of this data. Are they the same?

**Solution:-**

Arranging the given scores in ascending order, we get

5, 9, 10, 12, 15, 16, 19, 20, 20, 20, 20, 23, 24, 25, 25

Mode

Mode is the value of the variable which occurs most frequently.

Clearly, 20 occurs a maximum number of times.

Hence, the mode of the given scores is 20.

Median

The value of the middle-most observation is called the median of the data.

Here,  $n = 15$ , which is odd.

Where  $n$  is the number of students.

$\therefore$  median = value of  $\frac{1}{2}(n + 1)^{\text{th}}$  observation

$$= \frac{1}{2}(15 + 1)$$

$$= \frac{1}{2}(16)$$

$$= 16/2$$

$$= 8$$

Then, the value of the 8<sup>th</sup> term = 20

Hence, the median is 20.

Yes, both values are the same.

2. The runs scored in a cricket match by 11 players are as follows:

6, 15, 120, 50, 100, 80, 10, 15, 8, 10, 15

Find the mean, mode and median of this data. Are the three same?

**Solution:-**

Arranging the runs scored in a cricket match by 11 players in ascending order, we get

6, 8, 10, 10, 15, 15, 15, 50, 80, 100, 120

Mean

Mean of the given data = Sum of all observations / Total number of observations

$$= (6 + 8 + 10 + 10 + 15 + 15 + 15 + 50 + 80 + 100 + 120) / 11$$

$$= 429 / 11$$

$$= 39$$

Mode,

Mode is the value of the variable which occurs most frequently.

Clearly, 15 occurs a maximum number of times.

Hence, the mode of the given scores is 15.

Median,

The value of the middle-most observation is called the median of the data.

Here  $n = 11$ , which is odd.

Where  $n$  is the number of players.

$\therefore$  median = value of  $\frac{1}{2}(n + 1)^{\text{th}}$  observation.

$$= \frac{1}{2}(11 + 1)$$

$$= \frac{1}{2}(12)$$

$$= 12/2$$

$$= 6$$

Then, the value of the 6<sup>th</sup> term = 15

Hence, the median is 15.

No, these three are not the same.

**3. The weights (in kg.) of 15 students of a class are:**

**38, 42, 35, 37, 45, 50, 32, 43, 43, 40, 36, 38, 43, 38, 47**

**(i) Find the mode and median of this data.**

**(ii) Is there more than one mode?**

**Solution:-**

Arranging the given weights of 15 students of a class in ascending order, we get

32, 35, 36, 37, 38, 38, 38, 40, 42, 43, 43, 43, 45, 47, 50

(i) Mode and Median

Mode

Mode is the value of the variable which occurs most frequently.

Clearly, 38 and 43 both occur 3 times.

Hence, the modes of the given weights are 38 and 43.

Median

The value of the middle-most observation is called the median of the data.

Here,  $n = 15$ , which is odd.

Where  $n$  is the number of students.

$\therefore$  median = value of  $\frac{1}{2}(n + 1)^{\text{th}}$  observation

$$= \frac{1}{2}(15 + 1)$$

$$= \frac{1}{2}(16)$$

$$= 16/2$$

$$= 8$$

Then, the value of the 8<sup>th</sup> term = 40

Hence, the median is 40.

(ii) Yes, there are 2 modes for the given weights of the students.

4. Find the mode and median of the data: 13, 16, 12, 14, 19, 12, 14, 13, 14

**Solution:-**

Arranging the given data in ascending order, we get

$$= 12, 12, 13, 13, 14, 14, 14, 16, 19$$

Mode

Mode is the value of the variable which occurs most frequently.

Clearly, 14 occurs the maximum number of times.

Hence, the mode of the given data is 14.

Median

The value of the middle-most observation is called the median of the data.

Here,  $n = 9$ , which is odd.

Where  $n$  is the number of students.

$$\therefore \text{median} = \text{value of } \frac{1}{2} (9 + 1)^{\text{th}} \text{ observation}$$

$$= \frac{1}{2} (9 + 1)$$

$$= \frac{1}{2} (10)$$

$$= 10/2$$

$$= 5$$

Then, the value of the 5<sup>th</sup> term = 14

Hence, the median is 14.

5. Tell whether the statement is true or false.

(i) The mode is always one of the numbers in a data.

**Solution:-**

The statement given above is true.

Because Mode is the value of the variable which occurs most frequently in the given data.

Hence, a mode is always one of the numbers in the data.

(ii) The mean is one of the numbers in the data.

**Solution:-**

The statement given above is false.

Because mean may or may not be one of the numbers in the data.

**(iii) The median is always one of the numbers in a data.**

**Solution:-**

The statement given above is true.

Because the median is the value of the middle-most observation in the given data while arranged in ascending or descending order.

Hence, the median is always one of the numbers in a data

**(iv) The data 6, 4, 3, 8, 9, 12, 13, and 9 have the mean 9.**

**Solution:-**

Mean = Sum of all given observations / Number of observations

$$= (6 + 4 + 3 + 8 + 9 + 12 + 13 + 9)/8$$

$$= (64/8)$$

$$= 8$$

Hence, the given statement is false.

