

## Chapter – 3

# Data Handling

### Exercise 3.2

1. The scores in 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?

**Answer:**

Here,

According to the question,

At first,

We'll arrange the scores in ascending order as follows:

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

Now,

We know that,

Mode is termed as that value of observation which occurs for the maximum number of times.

And,

Median of any data is known as the middle observation when that data is arranged in ascending or descending order.

Now,

As we know,

There are total of 15 observations

Hence,

$$\text{Median} = \left( \frac{15+1}{2} \right) \text{th term}$$

$$= \frac{16}{2} \text{th term}$$

$$= 8^{\text{th}} \text{ term}$$

Thus,

$$\text{Median} = 20$$

And,

We can observe that,

20 occurs the maximum number of times (3 times) which is the maximum number of times

Hence,

We get,

$$\text{Mode of the given data} = 20$$

Therefore,

**Yes, both the values are the same.**

**2.** The runs scored in a cricket match by 11 players is 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?

**Answer:**

Here,

According to the question,

At first,

We'll arrange the scores in an ascending order as follows:

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

Now,

We know that,

$$\begin{aligned}
 \text{Mean score} &= \frac{\text{Sum of all observations}}{\text{Total number of observations}} \\
 &= \frac{6+8+10+10+15+15+15+50+80+100+120}{11} \\
 &= \frac{429}{11} \\
 &= 39
 \end{aligned}$$

Therefore,

Mean score is 39

Mode is termed as that value of observation which occurs for the maximum number of times.

And,

Median of any data is known as the middle observation when that data is arranged in ascending or descending order.

Now,

As we know that,

There are total 11 observations

Hence,

$$\begin{aligned}
 \text{Median} &= \frac{11+1}{2} \text{th term} \\
 &= \frac{12}{2} \text{th term} \\
 &= 6^{\text{th}} \text{ term}
 \end{aligned}$$

Thus,

Median = 15

And,

We can observe that,

15 occurs the maximum number of times which is three times

Hence,

We get,

Mode of the given data = 15

Therefore,

No, all the three values 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?

**Answer:**

**(i)** Here,

According to the question,

At first,

We'll arrange the weight in an ascending order as follows:

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

Now,

We know that,

Mode is termed as that value of observation which occurs for the maximum number of times.

And,

Median of any data is known as the middle observation when that data is arranged in ascending or descending order.

Now,

As we know that,

There are total 15 observations

Hence,

$$\text{Median} = \left(\frac{15+1}{2}\right) \text{th term}$$

$$= \frac{16}{2} \text{th term}$$

$$= 8^{\text{th}} \text{ term}$$

Thus,

$$\text{Median} = 40$$

And,

We can observe that,

38 and 43 both the observations occurs the maximum number of times which is three times.

Hence,

We get,

Mode of the given data = 38 and 43

**(ii)** Here,

We are asked,

If there is one or more than one mode in the given data

Hence,

We can observe that,

There is more than one mode.

And

There are two modes in the given data.

The two modes are 38 and 43

**4.** Find the mode and median of the data:

13, 16, 12, 14, 19, 12, 14, 13, 14

**Answer:**

Here,

According to the question,

At first,

We'll arrange the data in an ascending order as follows:

12, 12, 13, 13, 14, 14, 14, 16, 19

Now,

We know that,

Mode is termed as that value of observation which occurs for the maximum number of times.

And,

Median of any data is known as the middle observation when that data is arranged in ascending or descending order.

Now,

As we know that,

There are total 9 observations

Hence,

$$\text{Median} = \left(\frac{9+1}{2}\right) \text{th term}$$

$$= \frac{10}{2} \text{th term}$$

$$= 5^{\text{th}} \text{ term}$$

Thus,

$$\text{Median} = 14$$

And,

We can observe that,

14 occurs the maximum number of times which three number of times

Hence,

We get,

Mode of the given data = 14.

**5.** Tell whether the statement is true or false:

- (i) The mode is always one of the numbers in a data.
- (ii) The mean is one of the numbers in a data.
- (iii) The median is always one of the numbers in a data.
- (iv) The data 6, 4, 3, 8, 9, 12, 13, 9 has mean 9.

**Answer:**

**(i)** True

The given statement is true.

Since,

We know that,

Mode is termed as that value of observation which occurs for the maximum number of times.

Hence,

Mode will always be the one of the numbers in a data.

Therefore,

The statement is true.

**(ii)** False

The given statement is false

Since,

We know that,

Mean of a data is calculated as follows:

$$\text{Mean} = \frac{\text{sum of observations}}{\text{number of observations}}$$

Hence,

Mean may be or may not be one of the numbers in the data.

Therefore,

The statement is false.

**(iii) True**

The given statement is true.

Since,

We know that,

Median of any data is known as the middle observation when that data is arranged in ascending or descending order.

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

Therefore,

The statement is true.

**(iv) False**

Since,

We know that,

Mean of a data is calculated as follows:

$$\text{Mean} = \frac{\text{sum of observations}}{\text{number of observations}}$$

$$= \frac{6+4+3+8+9+12+13+9}{8}$$

$$= \frac{64}{8}$$

$$= 8$$

Hence,

Mean of the given data is 8 and not 9

Therefore,

The statement is false.