EXERCISE 3.2 PAGE: 68

1. The scores in mathematics test (out of 25) of 15 students is 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 same?
Solution:-
Arranging the given scores in an 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 maximum number of times.
Hence, mode of the given sores 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 the students.
∴median = value of ½ $(n + 1)^{th}$ observation.
= ½ (15 + 1)
= ½ (16)
= 16/2
= 8
Then, value of 8^{th} term = 20
Hence, the median is 20.
Yes, both the values are 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?
Solution:-
Arranging the runs scored in a cricket match by 11 players in an 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 maximum number of times.
Hence, mode of the given sores 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 the students.
∴median = value of ½ $(n + 1)^{th}$ observation.
= ½ (11 + 1)
= ½ (12)
= 12/2
= 6
Then, value of 6^{th} term = 15
Hence, the median is 15.
No, these three are not 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 15 students of a class in an 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 occurs 3 times.
Hence, mode 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 the students.
∴median = value of ½ $(n + 1)^{th}$ observation.
= ½ (15 + 1)
= ½ (16)
= 16/2
= 8

Then, value of 8^{th} 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 an 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 maximum number of times.
Hence, 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 the students.
∴median = value of ½ $(9 + 1)^{th}$ observation.
= ½ (9 + 1)
= ½ (10)
= 10/2
= 5
Then, value of 5^{th} 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 is given above is true.
Because, Mode is the value of the variable which occurs most frequently in the given data.
Hence, mode is always one of the numbers in a data.

(ii) The mean is one of the numbers in a data.
Solution:-
The statement is given above is false.
Because, mean is may be or may not be one of the number in a data.

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

Solution:-

The statement is given above is true.

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

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

(iv) The data 6, 4, 3, 8, 9, 12, 13, 9 has 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.