RS Aggarwal Solutions for Class 7 Maths chapter 21
Collection and Organization of Data (Mean, Median and Mode)

EXERCISE 21A   PAGE: 263

1. Define the terms:
(i) Data
Definition:-
A collection of numerical figures giving some particular type of information is called data.

(ii) Raw data
Definition:-
Data obtained in the original form is called raw data.

(iii) Array
Definition:-
Arranging the numerical figures of a data in ascending or descending order is called an array.

(iv) Tabulation of data
Definition:-
Arranging the data in a systematic form in the form of a table is called tabulation of data.

(v) Observation
Definition:-
Each numerical figure in a data is called an observation.

(vi) Frequency of an observation
Definition:-
The number of times a particular observation occurs is called its frequency.

(vii) Statistics
Definition:-
It is the subject that deals with the collection, presentation, analysis and interpretation of numerical data.

2. A die was thrown 20 times and the following outcomes were recorded:
5, 2, 1, 3, 4, 4, 5, 6, 2, 2, 4, 5, 5, 6, 2, 2, 4, 5, 5, 1.
Arrange the above data in ascending order and prepare the frequency table.
Solution:-
Arranging the data in ascending order, we get
1, 1, 2, 2, 2, 2, 2, 3, 4, 4, 4, 4, 5, 5, 5, 5, 5, 5, 6, 6.
Now, we may prepare the frequency table of the given data, as shown below.

Outcomes of Die	Number of Outcomes (Frequency)
1	2
2	5
3	1
4	4
5	6
6	2

3. The daily wages (in ₹) 0f 15 workers in a factory are given below:
400, 360, 300, 300, 260, 360, 360, 400, 300, 260, 360, 360, 400, 300, 360
Arrange the above data in ascending order and prepare the frequency table.
Solution:-
Arranging the data in ascending order, we get
260, 260, 300, 300, 300, 300, 360, 360, 360, 360, 360 360, 400, 400, 400.
Now, we may prepare the frequency table of the given data, as shown below.

Daily wages in ₹	Frequency
260	2
300	4
360	6
400	3

4. Write the data given below in ascending order and prepare the frequency table.
7, 8, 7, 10, 6, 8, 9, 7, 10, 5, 7, 6, 8, 5, 6, 7, 8, 9, 7, 6, 7, 8
Solution:-
Arranging the data in ascending order, we get
5, 5, 6, 6, 6, 6, 7, 7, 7, 7, 7, 7, 7, 8, 8, 8, 8, 8, 9, 9, 10, 10

Observation	Frequency
5	2
6	4
7	7
8	5
9	2
10	2

5. Fill in the blanks:
(i) Data means information in the form of …… figures.
Solution:-

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Numerical
According to the definition, a collection of numerical figures giving some particular type of information is called data.

(ii) Data obtained in the ……… form is called raw data.
Solution:-
Original
According to the definition, Data obtained in the original form is called raw data.

(iii) Arranging the numerical figures in ascending or descending order is called an ……..
Solution:-
Array
According to the definition, arranging the numerical figures of a data in ascending or descending order is called an array.

(iv) The number of times a particular observation occurs is called its ……….
Solution:-
Frequency
According to the definition, the number of times a particular observation occurs is called its frequency.

(v) Arranging the data in the form of a table is called ……… of data.
Solution:-
Tabulation
According to the definition, arranging the data in a systematic form in the form of a table is called tabulation of data.

6. Find the mean of first five natural numbers.
Solution:-
The first five natural number are 1, 2, 3, 4 and 5.
∴mean = (sum of the given numbers)/ (number of the given numbers)
Then,
Sum of the five natural numbers,
= 1 + 2 + 3 + 4 + 5
= 15
Number of the given number = 5
Now,
mean = 15 / 5
     = 3
Hence, the mean of the five natural numbers is 3.

7. Find the mean of first six odd natural numbers.
Solution:-
The first six odd natural number are 1, 3, 5, 7, 9 and 11.

∴mean = (sum of the given numbers)/ (number of the given numbers)

Then,

Sum of the six odd natural numbers,

= 1 + 3 + 5 + 7 + 9 + 11

= 36

Number of the given number = 6

Now,

mean = 36 / 6

= 6

Hence, the mean of the six odd natural numbers is 6.

EXERCISE 21B   **PAGE: 266**

1. Find the median of:
(i) 3, 11, 7, 2, 5, 9, 9, 2, 10
Solution:-
The value of the middle-most observation is called the median of the data.
First arrange the given numbers in ascending order,

     2, 2, 3, 5, 7, 9, 9, 10, 11

Here n = 9, which is odd.
Where, n is the number of the given number.
∴median = value of ½ (n + 1)th observation.

       = ½ (9 + 1)
       = ½ (10)
       = 10/2
       = 5

Then, value of 5th term = 7
Hence, the median is 7.

(ii) 9, 25, 18, 15, 6, 16, 8, 22, 21
Solution:-
The value of the middle-most observation is called the median of the data.
First arrange the given numbers in ascending order,

     6, 8, 9, 15, 16, 18, 21, 22, 25

Here n = 9, which is odd.
Where, n is the number of the given number.
∴median = value of ½ (n + 1)th observation.

       = ½ (9 + 1)
       = ½ (10)
       = 10/2
       = 5

Then, value of 5th term = 16
Hence, the median is 16.

(iii) 21, 15, 6, 25, 18, 13, 20, 9, 16, 8, 22
Solution:-
The value of the middle-most observation is called the median of the data.
First arrange the given numbers in ascending order,

     6, 8, 9, 13, 15, 16, 18, 20, 21, 22, 25

Here n = 11, which is odd.
Where, n is the number of the given number.
∴median = value of ½ (n + 1)th observation.

       = ½ (11 + 1)
       = ½ (12)

= 12/2

= 6

Then, value of 6th term = 16

Hence, the median is 16.

2. Find the median of:

(i) 10, 32, 17, 19, 21, 22, 9, 35

Solution:-

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

First arrange the given numbers in ascending order,

9, 10, 17, 19, 21, 22, 32, 35

Here n = 8, which is even.

Where, n is the number of the given number.

∴median = ½ {(n/ 2)th term + ((n/2) + 1)th term}

= ½ {(8/ 2)th term + ((8/2) + 1)th term}

= ½ {(4)th term + ((4) + 1)th term}

= ½ {(4)th term + (5)th term}

= ½ (19 + 21)

= ½ (40)

= (40/2)

= 20

Hence, the median is 20.

(ii) 55, 60, 35, 51, 29, 63, 72, 91, 85, 82

Solution:-

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

First arrange the given numbers in ascending order,

29, 35, 51, 55, 60, 63, 72, 82, 85, 91

Here n = 10, which is even.

Where, n is the number of the given number.

∴median = ½ {(n/ 2)th term + ((n/2) + 1)th term}

= ½ {(10/ 2)th term + ((10/2) + 1)th term}

= ½ {(5)th term + ((5) + 1)th term}

= ½ {(5)th term + (6)th term}

= ½ (60 + 63)

= ½ (123)

= (123/2)

= 61.5

Hence, the median is 61.5.

3. Find the median of first 15 odd numbers.

Solution:-

The first 15 odd numbers are 1, 3, 5, 7, 9, 1, 13, 15, 17, 19, 21, 23, 25, 27 and 29

Here n = 15, which is odd.

Where, n is the number of the given number.

∴median = value of ½ (n + 1)th observation.

$\qquad$ = ½ (15 + 1)

$\qquad$ = ½ (16)

$\qquad$ = 16/2

$\qquad$ = 8

Then, value of 8th term = 15

Hence, the median of first 15 odd numbers is 15.

4. Find the median of first 10 even numbers.

Solution:-

The first 10 even numbers are 2, 4, 6, 8, 10, 12, 14, 16, 18 and 20

Here n = 10, which is even.

Where, n is the number of the given number.

∴median = ½ {(n/ 2)th term + ((n/2) + 1)th term}

$\qquad$ = ½ {(10/ 2)th term + ((10/2) + 1)th term}

$\qquad$ = ½ {(5)th term + ((5) + 1)th term}

$\qquad$ = ½ {(5)th term + (6)th term}

$\qquad$ = ½ (10 + 12)

$\qquad$ = ½ (22)

$\qquad$ = (22/2)

$\qquad$ = 11

Hence, the median of first 10 even numbers is 11.

5. Find the median of first 50 whole numbers.

Solution:-

The first 50 whole numbers are 0, 1, 2, 3, 4, …, 49.

Here n = 50, which is even.

Where, n is the number of the given number.

∴median = ½ {(n/ 2)th term + ((n/2) + 1)th term}

$\qquad$ = ½ {(50/ 2)th term + ((50/2) + 1)th term}

$\qquad$ = ½ {(25)th term + ((25) + 1)th term}

$\qquad$ = ½ {(25)th term + (26)th term}

$\qquad$ = ½ (24 + 25)

$\qquad$ = ½ (49)

$\qquad$ = (49/2)

$\qquad$ = 24.5

Hence, the median of first 50 whole numbers is 24.5.

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EXERCISE 21C   PAGE: 269

1. Find the mode of the data:
(i) 10, 8, 4, 7, 8, 11, 15, 8, 6, 8
Solution:-
Mode is the value of the variable which occurs most frequently.
Arranging the given numbers in ascending order, we get
        4, 6, 7, 8, 8, 8, 8, 10, 11, 15
Clearly, 8 occurs maximum number of times.
Hence, mode of the given number is 8

(ii) 27, 23, 39, 18, 27, 21, 27, 27, 40, 36, 27
Solution:-
Mode is the value of the variable which occurs most frequently.
Arranging the given numbers in ascending order, we get
        18, 21, 23, 27, 27, 27, 27, 27, 36, 39, 40
Clearly, 27 occurs maximum number of times.
Hence, mode of the given number is 27

2. The ages (in years) of 11 cricket players are given below:
28, 34, 32, 41, 36, 32, 32, 38, 32, 40, 31
Find the mode of the ages.
Solution:-
Mode is the value of the variable which occurs most frequently.
Arranging the given numbers in ascending order, we get
        28, 31, 32, 32, 32, 32, 34, 36, 38, 40, 41
Clearly, 32 occurs maximum number of times.
Hence, mode of the ages (in years) of 11 cricket players is 32 years