

Exercise 24.3

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Question 1: Find the median of the following data:

83 , 37 , 70 , 29 , 45 , 63 , 41 , 70 , 34 , 54

Solution:

Arranging given numbers in ascending order:

29 , 34 , 37 , 41 , 45 , 54 , 63 , 70 , 70 , 83

Here, Total number of terms = $n = 10$ (even)

$$\begin{aligned}\therefore \text{median} &= \frac{\frac{n}{2} \text{th value} + \left(\frac{n}{2} + 1\right) \text{th value}}{2} \\ &= \frac{\frac{10}{2} \text{th value} + \left(\frac{10}{2} + 1\right) \text{th value}}{2} \\ &= \frac{5\text{th value} + 6\text{th value}}{2} \\ &= \frac{45 + 54}{2} \\ &= \frac{99}{2} = 49.5\end{aligned}$$

Question 2: Find the median of the following data:

133 , 73 , 89 , 108 , 94 , 104 , 94 , 85 , 100 , 120

Solution:

Arranging given numbers in ascending order:

73 , 85 , 89 , 94 , 94 , 100 , 104 , 108 , 120 , 133

Here, total number of terms = $n = 10$ (even)

$$\begin{aligned}\therefore \text{median} &= \frac{\frac{n}{2} \text{th value} + \left(\frac{n}{2} + 1\right) \text{th value}}{2} \\ &= \frac{\frac{10}{2} \text{th value} + \left(\frac{10}{2} + 1\right) \text{th value}}{2} \\ &= \frac{5 \text{th value} + 6 \text{th value}}{2} \\ &= \frac{94 + 100}{2} \\ &= \frac{194}{2} = 97\end{aligned}$$

Question 3: Find the median of the following data:
31, 38, 27, 28, 36, 25, 35, 40

Solution:

Arranging given numbers in ascending order

25, 27, 28, 31, 35, 36, 38, 40

Here, total number of terms = $n = 8$ (even)

$$\begin{aligned}\therefore \text{median} &= \frac{\frac{n}{2} \text{th value} + \left(\frac{n}{2} + 1\right) \text{th value}}{2} \\ &= \frac{\frac{8}{2} \text{th value} + \left(\frac{8}{2} + 1\right) \text{th value}}{2} \\ &= \frac{4 \text{th value} + 5 \text{th value}}{2} \\ &= \frac{31 + 35}{2} \\ &= \frac{66}{2} = 33\end{aligned}$$

Question 4: Find the median of the following data:
15, 6, 16, 8, 22, 21, 9, 18, 25

Solution:

Arranging given numbers in ascending order

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

Here, total number of terms = $n = 9$ (odd)

$$\begin{aligned}\therefore \text{Median} &= \left(\frac{n+1}{2}\right) \text{th term} \\ &= \left(\frac{9+1}{2}\right) \text{th term} \\ &= 5\text{th term} = 16\end{aligned}$$

Question 5: Find the median of the following data:

41, 43, 127, 99, 71, 92, 71, 58, 57

Solution:

Arranging given numbers in ascending order

41, 43, 57, 58, 71, 71, 92, 99, 127

Here, total number of terms = $n = 9$ (odd)

$$\begin{aligned}\therefore \text{Median} &= \left(\frac{n+1}{2}\right) \text{th term} \\ &= \left(\frac{9+1}{2}\right) \text{th term} \\ &= 5\text{th term} = 71\end{aligned}$$

Question 6: Find the median of the following data:

25, 34, 31, 23, 22, 26, 35, 29, 20, 32

Solution:

Arranging given numbers in ascending order

20, 22, 23, 25, 26, 29, 31, 32, 34, 35

Here, total number of terms = $n = 10$ (even)

$$\begin{aligned}\therefore \text{median} &= \frac{\frac{n}{2} \text{th value} + \left(\frac{n}{2} + 1\right) \text{th value}}{2} \\ &= \frac{\frac{10}{2} \text{th value} + \left(\frac{10}{2} + 1\right) \text{th value}}{2} \\ &= \frac{5 \text{th value} + 6 \text{th value}}{2} \\ &= \frac{26 + 29}{2} \\ &= \frac{55}{2} = 27.5\end{aligned}$$

Question 7: Find the median of the following data:
12, 17, 3, 14, 5, 8, 7, 15

Solution:

Arranging given numbers in ascending order
3, 5, 7, 8, 12, 14, 15, 17

Here, total number of terms = n = 8 (even)

$$\begin{aligned}\therefore \text{median} &= \frac{\frac{n}{2} \text{th value} + \left(\frac{n}{2} + 1\right) \text{th value}}{2} \\ &= \frac{\frac{8}{2} \text{th value} + \left(\frac{8}{2} + 1\right) \text{th value}}{2} \\ &= \frac{4 \text{th value} + 5 \text{th value}}{2} \\ &= \frac{8 + 12}{2} \\ &= \frac{20}{2} = 10\end{aligned}$$

Question 8: Find the median of the following data:
92, 35, 67, 85, 72, 81, 56, 51, 42, 69

Solution:

Arranging given numbers in ascending order

35, 42, 51, 56, 67, 69, 72, 81, 85, 92

Here, total number of terms = n = 10 (even)

$$\begin{aligned}\therefore \text{median} &= \frac{\frac{n}{2} \text{th value} + \left(\frac{n}{2} + 1\right) \text{th value}}{2} \\ &= \frac{\frac{10}{2} \text{th value} + \left(\frac{10}{2} + 1\right) \text{th value}}{2} \\ &= \frac{5 \text{th value} + 6 \text{th value}}{2} \\ &= \frac{67 + 69}{2} \\ &= \frac{136}{2} = 68\end{aligned}$$

