

Median - (3).

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* Discrete Series or Frequency Array and the Median.

Calculation of median in case of Discrete or frequency array involves the following steps:

- (1) Arrange the data into ascending or descending order.
- (2) Convert the simple frequencies of a series into cumulative frequencies.
- (3) Determine the $\left(\frac{N+1}{2}\right)^{\text{th}}$ item of the series, N being equal to Σf .
- (4) Find the median value corresponding to the $\left(\frac{N+1}{2}\right)^{\text{th}}$ item.

Illustration

Find the median of the following series.

S_i	2	3	4	5	6	7	8	9	10
frequency	2	3	8	10	12	16	10	8	6

Solution :-

Estimation of the Median

<u>Size</u>	<u>frequency</u>	<u>Cumulative frequency</u>
	2	2
2	3	$2+3=5$
3	8	$5+8=13$
4	10	$13+10=23$
5	12	$23+12=35$
6	16	$35+16=51$ (M)
7	10	$51+10=61$
8	8	$61+8=69$
9	6	$69+6=75$
10		

Median or $M =$ size of $\left(\frac{N+1}{2}\right)^{\text{th}}$ item.

$$= \frac{75+1}{2} = \frac{76}{2} = 38.$$

Size of 38th item.

It shows that median value corresponds to the 38th item in the series. This item appears first of all in 51st cumulative frequency of the series. Therefore, median shall be the value corresponding to the 51st cumulative frequency, which is 7.
Median = 7. Ans.