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2. Median –

Its the middle observation of a Statistical data if arranged in ascending or descending order. Thus if there are n observations, $x_1, x_2, x_3 \cdots x_n$; arranged in ascending or descending order, then

$$\text{median} = \begin{cases} \frac{n+1}{2}\text{th observation}; & \text{if } n \text{ is odd} \\ \frac{n}{2}\text{th observation} + \left[\frac{n}{2}+1\right]\text{th observation}; & \text{if } n = \text{even} \end{cases}$$

Example 2 -

[i] Find Median of the following data –

3, 5, 0, 4, 9, 7, 6, 2, 8

Ans. On arranging ascending orderwise, we get

0, 2, 3, 4, 5, 6, 7, 8, 9

Here $n = 9$; which is odd

$\therefore$ Median $= \frac{n+1}{2}$ th observation $= 5^{th}$ observation

The median is 5

[ii] Find median of the following data –

3, 5, 1, 2, 4, 6, 0, 2, 2, 3

Ans. Arranging in ascending order → 0, 1, 2, 2, 2, 3, 3, 4, 5, 6

$n = 10$ which is even

$$\therefore \text{Median} = \frac{n/2^{th} \text{ observation} + [n/2+1]^{th} \text{observation}}{2} = \frac{5^{th}\text{ ob} + 6^{th}\text{ ob}}{2} = \frac{2+3}{2}$$

$$\text{Median} = \frac{5}{2} = 2.5$$

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