

→ Let us arrange the data in ascending order:-

31, 35, 36, 37, 44, 44, 51, 60, 86, 86.

The number of data = 10 [which is even]

$$\text{median} = \left(\frac{10}{2}\right)^{\text{th}} \text{ data}$$

$$= 5^{\text{th}} \text{ data}$$

$$= 44$$

Thus, the median of the given data is 44.

③ The median of observation 11, 12, 14, 18, $x+2$, $x+4$, 30, 32, 35, 41 arranged in ascending order is 24. Find the values of x .

→ Given the observation in ascending order.
11, 12, 14, 18, $x+2$, $x+4$, 30, 32, 35, 41

The number of observation = 10 [which is even]

$$\text{median} = \left(\frac{10}{2}\right)^{\text{th}} \text{ observation}$$

$$= 5^{\text{th}} \text{ observation}$$

$$= x+2$$

Now, median = 24 [given]

$$x+2 = 24$$

$$x = 24 - 2 = 22$$

Thus, the value of $x = 22$.

④ A researcher studying the behavior of mice has recorded the time (in seconds) taken by each mouse to locate its food by considering 13 different mice as 31, 33, 63, 33, 28, 29, 33, 27, 27, 34, 35, 28, 32. Find the median time that mice spent in searching its food.

⇒ Let us arrange the given data in ascending order.

27, 27, 28, 28, 29, 31, 32, 33, 33, 33, 34, 35, 36

The number of values = 13 [which is odd]

$$\text{median} = \left(\frac{13+1}{2}\right)^{\text{th}} \text{ data}$$

$$= 7^{\text{th}} \text{ data}$$

$$= 32$$

Thus, the median of the given data is 32.

⑤ The following are the marks scored by the students in the summative Assessment Exam

class	0-10	10-20	20-30	30-40	40-50	50-60
No. of Students	2	7	15	10	11	5

calculate the median.

⇒

class	NO. of students (f)	cumulative frequency (cf)
0-10	2	2
10-20	7	9
20-30	15	24
30-40	10	34
40-50	11	45
50-60	5	50
$N = 50$		

$$\text{Median class} = \left(\frac{N}{2}\right)^{\text{th}} \text{ value}$$

$$= \left(\frac{50}{2}\right)^{\text{th}} \text{ value}$$

= 25th value

Median class = ~~20-30~~ 30-40

$$\frac{N}{2} = 50 \quad \frac{N}{2} = 25, \quad l = 30$$

$$m = 24, \quad c = 10, \quad f = 10$$

$$\begin{aligned} \text{Median} &= l + \left(\frac{\frac{N}{2} - m}{f} \right) \times c \\ &= 30 + \frac{(25 - 24)}{10} \times 10 \\ &= 30 + 1 = 31 \end{aligned}$$

Thus, the median of the given data is 31.

⑥ The mean of five positive integers is twice their median. If four of the integers are 3, 4, 6, 9 and median is 6, then find the fifth integer.

⇒ Let the fifth integer is x .

$$\begin{aligned} \text{Sum of five positive integers} &= 3 + 4 + 6 + 9 + x \\ &= 22 + x. \end{aligned}$$

$$\begin{aligned} \therefore \text{mean of five integers} &= \frac{\text{Sum of all integers}}{\text{No. of integers}} \\ &= \frac{22 + x}{5} \end{aligned}$$

Given that the mean of five positive integers is twice their median.

$$\text{mean} = 2 \times 6 \quad [\text{median} = 6 \text{ (given)}]$$

$$\frac{22 + x}{5} = 12$$

$$22 + x = 60$$

$$x = 60 - 22$$

$$x = 38$$

Therefore, the fifth positive integer is 38.