Median

18 June 2024 07:09 AM

Median

1. Median is used for find middle value of the dataset.

CI : Median

10 < 20

many terms are inside this

2. There are two steps for find median.

(i) Find median class

(ii) Apply main form — use for finding median

Even Odd

Even Odd median

1. Even :- (i:) If total sum of your frequency is even number, so apply this formulae

(i:) $\dfrac{\left(\frac{n}{2}\right)^{th}\text{term} + \left(\frac{n}{2}+1\right)^{th}\text{term}}{2}$

2. Odd :- (i:) If your freq. is in odd number, so apply this formulae:

(i:) $\left(\dfrac{n+1}{2}\right)^{th}\text{term}$

(2) Class

3. Main formulae

Symbol

M = M is used median

$$M = l_1 + \left[\frac{\frac{N}{2} - cf}{f}\right] \times i/h$$

↳ apply on Median class

M = Median

l_1 = Lowest term of CI (lowest limit)

N = Total Addition of frequency

CF = Cumulative frequency

(CI + F)

1 :- Given in Question

i/h = Upper limit - Lower limit

or

D/W the range/CI of MC.

Q.1 :- CT f CF (CI + f)

10-20	2	2	
20-30	3	2+3=5	
30-40	4	5+4=9	

$\frac{N+1}{2}$ th $\frac{N=f}{2}$

$\frac{N+1}{2}$ th term

$N = f$

$\frac{9+1}{2}$ th term $\Rightarrow \frac{10}{2} \Rightarrow 5$ th term

$M = l_1 + \left[\frac{N}{2} - cf\right] \times i$

f

$l_1 = 20$

$N = 9$

$f = 3$

$i/h = 10$

$cf = 2$

$= 20 + \left[\frac{9}{2} - 2\right] \times 10$

$= 20 + \left[\frac{9-4}{2}\right] \times 10$

$= 20 + \frac{5}{2} \times 10$

$20 + 25$

4 S = Ans

Q2 CI F Cf

10-20	3	3	
20-30	1	4	
30-40	1	5	
			$\Sigma f = 5$

$$\left(\frac{N+1}{2}\right)^{th} term = \frac{5+1}{2} = \frac{6}{2} = 3$$

3 th term

$$M = l_1 + \left[\frac{\frac{N}{2} - cf}{f}\right] \times i$$

$$= 10 + \frac{5}{7} - 6$$

$= 10 + \frac{\frac{n}{2} - cf}{f} \times c$

$= 10 + \frac{5}{21} \times 30$

$10 + 75$

$\boxed{85}$ Ans

Q3

CI	F	CF
10-20	2	25
20-30	3	55
30-40	4	59
	$\Sigma f = 9$	

$\left(\frac{N}{2}\right)^{th}$ term $+ \left(\frac{N}{2} + 1\right)^{th}$ term

$$\left(\frac{4}{2}+\left(\frac{4}{2}+1\right)\right)\Big/2 \Rightarrow \frac{2+3}{2}=\frac{5}{2}=2.5$$

$$m = l_1 + \left(\frac{N}{2} - cf\right) \times i$$

$$= 20 + \frac{4-2}{2} \times 10$$

$$= 20 + \frac{0}{1} \times 10$$

$$= 20 + 0 \times 10$$

$$= 20 + 0$$

= 20 Ans