

## Statistics Ex 7.4 Q10

## Answer:

Here, the frequency table is given in inclusive form. So, we first transform it into exclusive form by subtracting and adding h/2 to the lower and upper limits respectively of each class, where h denotes the difference of lower limit of a class and upper limit of the previous class.

Class Intervals	Frequency	Cumulative Frequency	
14.5 – 19.5	53	53	
19.5 – 24.5	140	193	
24.5 – 29.5	98	291	
29.5 – 34.5	32	323	
34.5 – 39.5	12	335	
39.5 – 44.5	9	344	
44.5 – 49.5	5	349	
49.5 - 54.5	3	352	
54.5 – 59.5	3	355	
59.5 – 64.5	2	357	
	N = 357		

We have, N = 357So, N/2 = 178.5

Thus, the cumulative frequency just greater than 178.5 is 193 and the corresponding class is 19.5-24.5.

Therefore, 19.5-24.5 is the median class.

Here, I = 19.5, f = 140, F = 193 and h = 5

We know that

Median = 
$$l + \left\{ \frac{N}{2} - F \right\} \times h$$
  
=  $19.5 + \left( \frac{178.5 - 53}{140} \right) \times 5$   
=  $19.5 + \frac{125.5}{140} \times 5$   
=  $19.5 + \frac{125.5}{28}$   
=  $\frac{546 + 125.5}{28}$   
=  $23.98$ 

Hence, the median age 23.98 years.

Thus, nearly half the women were married between the age of 19.5 years and 24.5 years.

Statistics Ex 7.4 Q11

## Answer:

Given: Median = 28.5

We prepare the cumulative frequency table, as given below.

Class interval:	Frequency:	Cumulative frequency		
	$(f_i)$	(c.f.)		
0-10	5	5		
10-20	$f_1$	$5 + f_1$		
20-30	20	$25 + f_1$		
30-40	15	$40 + f_1$		
40-50	$f_2$	$40 + f_1 + f_2$		
50-60	5	$45 + f_1 + f_2$		
1	$V = 60 = 45 + f_1 + f_2$	$f_2$		

Now, we have

$$N = 60$$

$$45 + f_1 + f_2 = 60$$

$$f_2 = 15 - f_1$$
 ....(1)

Also, 
$$\frac{N}{2} = 30$$

Since the median = 28.5 so the median class is 20-30.

Here, 
$$I = 20$$
,  $f = 20$ ,  $F = 5 + f_1$  and  $h = 10$ 

## We know that

$$Median = I + \left\{ \frac{\frac{N}{2} - F}{f} \right\} \times h$$

$$28.5 = 20 + \left\{ \frac{30 - (5 + f_1)}{20} \right\} \times 10$$

$$8.5 = \frac{(25 - f_1) \times 10}{20}$$

$$8.5 \times 20 = 250 - 10 f_1$$

$$10f_1 = 250 - 170$$

$$=80$$

$$f_1 = 8$$

Putting the value of  $f_1$  in (1), we get

$$f_2 = 15 - 8$$

Hence, the missing frequencies are 7 and 8.

\*\*\*\*\*\*\*\*\* END \*\*\*\*\*\*\*