



### Statistics Ex 7.4 Q15

**Answer :**

We prepare the cumulative frequency, table as given below.

Height (in cm):	No. of girls: ( $f_i$ )	cumulative frequency ( $c.f.$ )
135–140	4	4
140–145	7	11
145–150	18	29
150–155	11	40
155–160	6	46
160–165	5	51
	$N = 51$	

Now, we have

$$N = 51$$

$$\text{So, } \frac{N}{2} = 25.5$$

Now, the cumulative frequency just greater than 25.5 is 40 and the corresponding class is 150–155.

Therefore, 150–155 is the median class.

$$l = 150, f = 11, F = 29 \text{ and } h = 5$$

We know that

$$\begin{aligned}
 \text{Median} &= l + \left\{ \frac{\frac{N}{2} - F}{f} \right\} \times h \\
 &= 150 + \left\{ \frac{25.5 - 29}{11} \right\} \times 5 \\
 &= 150 - \frac{3.5 \times 5}{11} \\
 &= 150 - \frac{17.5}{11} \\
 &= 150 - 1.59 \\
 &= 148.41
 \end{aligned}$$

Hence, the median height is 148.41 cm.

### Statistics Ex 7.4 Q16

**Answer :**

We prepare the cumulative frequency, table as given below.

Age (in years) below:	No. of policy holders: ( $f_i$ )	cumulative frequency ( $c.f.$ )
15–20	2	2
20–25	4	6
25–30	18	24
30–35	21	45
35–40	33	78
40–45	11	89
45–50	3	92
50–55	6	98
55–60	2	100
	$N = 100$	

Now, we have

$$N = 100$$

$$\text{So, } \frac{N}{2} = 50$$

Now, the cumulative frequency just greater than 50 is 78 and the corresponding class is 35–40.

Therefore, 35–40 is the median class.

Here,  $l = 35$ ,  $f = 33$ ,  $F = 45$  and  $h = 5$

We know that

$$\begin{aligned}\text{Median} &= l + \left\{ \frac{\frac{N}{2} - F}{f} \right\} \times h \\ &= 35 + \left\{ \frac{50 - 45}{33} \right\} \times 5 \\ &= 35 + \frac{5 \times 5}{33} \\ &= 35 + \frac{25}{33} \\ &= 35 + 0.76 \\ &= 35.76\end{aligned}$$

Hence, the median age is 35.76 years.

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