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

$N = 51$

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.

$l = 150, f = 11, F = 29$ and $h = 5$

We know that

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

$$= 150 + \left\{\frac{25.5 - 29}{11}\right\} \times 5$$

$$= 150 - \frac{3.5 \times 5}{11}$$

$$= 150 - \frac{17.5}{11}$$

$$= 150 - 1.59$$

$$= 148.41$$

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

$N=100$

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

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

$$=35+\left\{\frac{50-45}{33}\right\}\times 5$$

$$=35+\frac{5\times 5}{33}$$

$$=35+\frac{25}{33}$$

$$=35+0.76$$

$$=35.76$$

Hence, the median age is 35.76 years.

********** END **********