



Exercise 9B

Question 5:

We prepare the cumulative frequency table as given below:

Consumption	Frequency f_i	C.F
65 - 85	4	4
85 - 105	5	9
105 - 125	13	22
125 - 145	20	42
145 - 165	14	56
165 - 185	7	63
185 - 205	4	67
	$N = \sum f_i = 67$	

$$\text{Now, } N = 67 \Rightarrow \left(\frac{N}{2}\right) = \frac{67}{2} = 33.5$$

The cumulative frequency just greater than 33.5 is 42 and the corresponding class 125 - 145.

Thus, the median class is 125 - 145

$$\therefore l = 125, h = 20, f_i = 20 \text{ and } c = \text{CF preceding the median class} = 22, \frac{N}{2} = 33.5$$

$$\begin{aligned} \text{Median} = m_e &= l + \left[h \times \frac{\left(\frac{N}{2} - c\right)}{f} \right] = 125 + \left[20 \times \frac{(33.5 - 22)}{20} \right] \\ &= (125 + 11.5) = 136.5 \end{aligned}$$

Hence median of electricity consumed is 136.5

Question 6:

Frequency table is given below:

Height	Frequency f_i	C.F
135 - 140	6	6
140 - 145	10	16
145 - 150	18	34
150 - 155	22	56
155 - 160	20	76
160 - 165	15	91
165 - 170	6	97
170 - 175	3	100
	$N = \sum f_i = 100$	

$$N = 100, \left(\frac{N}{2}\right) = 50$$

The cumulative frequency just greater than 50 is 56 and the corresponding class is 150 - 155

Thus, the median class is 150 - 155

$l = 150$, $h = 5$, $f = 22$, $c = \text{C.F. preceding median class} = 34$

$$\begin{aligned}
 \text{Median } m_e &= l + \left[h \times \frac{\left(\frac{N}{2} - c\right)}{f} \right] \\
 &= 150 + \left(5 \times \frac{(50 - 34)}{22} \right) \\
 &= 150 + 3.64 = 153.64
 \end{aligned}$$

Hence, Median = 153.64

***** END *****