



### Statistics Ex 7.4 Q18

**Answer :**

We prepare the cumulative frequency table, as given below.

lite time(in hours)	No. of lamps:	cumulative frequency (c.f.)
1500 – 2000	14	14
2000 – 2500	56	70
2500 – 3000	60	130
3000 – 3500	86	216
3500 – 4000	74	290
4000 – 4500	62	352
4500 – 5000	48	400
	N=400	

We have,  $N = 400$

$$\text{So, } \frac{N}{2} = 200$$

Now, the cumulative frequency just greater than 200 is 216 and the corresponding class is 3000 – 3500.

Therefore, 3000 – 3500 is the median class.

Here,  $l = 3000$ ,  $f = 86$ ,  $F = 130$  and  $h = 500$

We know that

$$\begin{aligned}
 \text{Median} &= l + \left\{ \frac{\frac{N}{2} - F}{f} \right\} \times h \\
 &= 3000 + \left\{ \frac{200 - 130}{86} \right\} \times 500 \\
 &= 3000 + \frac{70 \times 500}{86} \\
 &= 3000 + \frac{35000}{86} \\
 &= 3000 + 406.98 \\
 &= 3406.98
 \end{aligned}$$

Hence, the median life of the lamps is approximately 3406.98 hours.

### Statistics Ex 7.4 Q19

**Answer :**

We prepare the cumulative frequency table, as given below.

weight (in kg):	No. of students: ( $f_i$ )	cumulative frequency (c.f.)
40-45	2	2
45-50	3	5
50-55	8	13
55-60	6	19
60-65	6	25
65-70	3	28
70-75	2	30
	$N = 30$	

We have,  $N = 30$

$$\text{So, } \frac{N}{2} = 15$$

Now, the cumulative frequency just greater than 15 is 19 and the corresponding class is 55-60.

Therefore, 55-60 is the median class.

Here,  $l = 55$ ,  $f = 6$ ,  $F = 13$  and  $h = 5$

We know that

$$\begin{aligned}\text{Median} &= l + \left\{ \frac{\frac{N}{2} - F}{f} \right\} \times h \\ &= 55 + \left\{ \frac{15 - 13}{6} \right\} \times 5 \\ &= 55 + \frac{2 \times 5}{6} \\ &= 55 + \frac{10}{6} \\ &= 55 + 1.667 \\ &= 56.667\end{aligned}$$

Hence, the median weight of students is 56.67 kg.

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