Statistics Ex 7.1 Q5

Answer :

Given:

x_i	8	12	15	p	20	25	30
f_i	12	16	20	24	16	8	4

Mean = 16.6

First of all prepare the frequency table in such a way that its first column consist of the values of the variate (x_i) and the second column the corresponding frequencies (f_i).

Thereafter multiply the frequency of each row with corresponding values of variable to obtain third column containing $(f_i x_i)$.

Then, sum of all entries in the column second and denoted by $\sum f_i$ and in the third column to obtain

$\sum f_i x_i$ -

x_i	f_i	$f_i x_i$
8	12	96
12	16	192
15	20	300
p	24	$24p$
20	16	320
25	8	200
30	4	120
	$\sum f_i = 100$	$\sum f_i x_i = 1228 + 24p$

We know that mean, $\overline{X} = \dfrac{\sum f_i x_i}{\sum f_i}$

$$16.6 = \frac{1228 + 24p}{100}$$

By using cross multiplication method

$$1228 + 24p = 16.6 \times 100$$

$$24p = 1660 - 1228$$

$$= \frac{432}{24}$$

$$= 18$$

Hence, $p = \boxed{18}$

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