6. An aircraft has 120 passenger seats. The number of seats occupied during 100 flights is given in the following table :

Number of seats 100-104 104-108 108-112 112-116 116-120

Frequency 15 20 32 18 15

Determine the mean number of seats occupied over the flights.

Solution:

Class Interval	**Class Marks (x_i)**	**Frequency (f_i)**	**Deviation ($d_i = x_i - a$)**	**$f_i d_i$**
100 – 104	102	15	– 8	– 120
104 – 108	106	20	– 4	– 80
108 – 112	110	32	0	0
112 – 116	114	18	4	72
116 – 120	118	15	8	120
		$N = \Sigma f_i = 100$		$\Sigma f_i d_i = -8$

∴ Assumed mean, a = 110

Class width, h = 4

And total observations, N = 100

Hence, finding mean,

$$\text{Mean}(\bar{x}) = a + \frac{\sum f_i d_i}{\sum f_i}$$

= 110 + (-8/100)

= 110 – 0.08

= 109.92

But we know that the seats cannot be in decimal.

Therefore, the number of seats = 109.