



NCERT Solutions For Class 10 Maths Chapter 14 Statistics Exercise 14.1

Exercise 14.1

1. A survey was conducted by a group of students as a part of their environment awareness programme, in which they collected the following data regarding the number of plants in 20 houses in a locality. Find the mean number of plants per house.

Number of plants	0-2	2-4	4-6	6-8	8-10	10-12	12-14
Number of houses	1	2	1	5	6	2	3

Which method did you use for finding the mean and why?

Ans. Since, number of plants and houses are small in their values, so we use direct method.

Number of plants	Number of houses (f_i)	Class Marks (x_i)	$f_i x_i$
0-2	1	1	1
2-4	2	3	6
4-6	1	5	5
6-8	5	7	35
8-10	6	9	54
10-12	2	11	22
12-14	3	13	39
Total	$\sum f_i = 20$		$\sum f_i x_i = 162$

$$\text{Mean } (\bar{x}) = \frac{\sum f_i x_i}{\sum f_i} = \frac{162}{20} = 8.1$$

Hence mean number of plants per house is 8.1.

2. Consider the following distribution of daily wages of 50 workers of a factory.

Daily wages (in Rs.)	100 - 120	120 - 140	140 - 160	160 - 180	180 - 200
Number of workers	12	14	8	6	10

Find the mean daily wages of the workers of the factory by using an appropriate method.

Ans.

Daily wages (in Rs.)	No. of workers (f_i)	Class Marks (x_i)	$u_i = \frac{x_i - a}{h}$	$f_i u_i$
100 - 120	12	110	-2	-24
120 - 140	14	130	-1	-14
140 - 160	8	150	0	0
160 - 180	6	170	1	6
180 - 200	10	190	2	20
	$\sum f_i = 50$			$\sum f_i u_i = -12$

From given data, Assume mean (a) = 150, Width of the class (h) = 20

$$\therefore \bar{u} = \frac{\sum f_i u_i}{\sum f_i} = \frac{-12}{50} = -0.24$$

Using formula, Mean (\bar{x}) = $a + h\bar{u}$ =

$$150 + 20(-0.24) = 150 - 4.8 = 145.2$$

Hence mean daily wages of the workers of factory is Rs. 145.20.

3. The following distribution shows the daily pocket allowance of children of a locality. The mean pocket allowance is Rs.18. Find the missing frequency (f).

Daily pocket allowance (in Rs.)	11 - 13	13 - 15	15 - 17	17 - 19	19 - 21	21 - 23	23 - 25
Number of houses	7	6	9	13	f	5	4

Ans.

Daily pocket allowance (in Rs.)	No. of children (f_i)	Class Marks (x_i)	$d_i = x_i - a$	$f_i d_i$
11 - 13	7	12	- 6	- 42
13 - 15	6	14	- 4	- 24
15 - 17	9	16	- 2	- 18
17 - 19	13	18	0	0
19 - 21	f	20	2	$2f$
21 - 23	5	22	4	20
23 - 25	4	24	6	24
	$\sum f_i = 44 + f$			$\sum f_i d_i = 2f - 40$

From given data, Assume mean (a) = 18

$$\begin{aligned}
\therefore (\bar{x}) &= a + \frac{\sum f_i d_i}{\sum f_i} \\
\Rightarrow 18 &= 18 + \frac{2f - 40}{44 + f} \\
\Rightarrow \frac{2f - 40}{44 + f} &= 0 \\
\Rightarrow 2f - 40 &= 0 \\
\Rightarrow 2f &= 40 \\
\Rightarrow f &= 20
\end{aligned}$$

Hence missing frequency is 20.

4. Thirty women were examined in a hospital by a doctor and the number of heart beats per minute were recorded and summarized as follows:

Number of heart beats per minute	65-68	68-71	71-74	74-77	77-80	80-83	83-86
Number of women	2	4	3	8	7	4	2

Ans.

No. of heart beats per min.	No. of women (f_i)	Class Marks (x_i)	$u_i = \frac{x_i - a}{h}$	$f_i u_i$
65 - 68	2	66.5	-3	-6
68 - 71	4	69.5	-2	-8
71 - 74	3	72.5	-1	-3
74 - 77	8	75.5	0	0
77 - 80	7	78.4	1	7
80 - 83	4	81.5	2	8
83 - 86	2	84.5	3	6
	$\sum f_i = 30$			$\sum f_i u_i = 4$

From given data, Assume mean (a) = 75.5, Width of the class (h) = 3

$$\therefore \bar{u} = \frac{\sum f_i u_i}{\sum f_i} = \frac{4}{30} = 0.13 \text{ (approx.)}$$

Using formula, Mean (\bar{x}) = $a + h\bar{u} = 75.5 + 3(0.13)$
 $= 75.5 + 0.39 = 78.89$

Hence mean heart beat per minute for women is 78.89.

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