RD SHARMA

Solutions

Class 10 Maths

Chapter 7

Ex 7.2

1. The number of telephone calls received at an exchange per interval for 250 successive one-minute intervals are given in the following frequency table:

No. of calls(x):	0	1	2	3	4	5	6
No. of intervals (f):	15	24	29	46	54	43	39

Compute the mean number of calls per interval.

Soln: Let be assumed mean (A) = 3

No. of calls x_i	No. of intervals f_i	$u_1=x_i-A=x_i=3u_1 = x_i - A = x_i = 3$	$f_iu_if_i u_i$
0	15	-3	-45
1	24	-2	-47
2	29	-1	-39
3	46	0	0
4	54		54
5	43	2	43(2) = 86
6	39	3	47
	N= 250		Sum = 135

Mean number of cells = 3+frac1352503 + frac135250 = frac885250frac885250 = 3.54

2. Five coins were simultaneously tossed 1000 times, and at each toss the number of heads was observed. The number of tosses during which 0, 1, 2, 3, 4 and 5 heads were obtained are shown in the table below. Find the mean number of heads per toss.

No of heads per toss (x):	0	1	2	3	4	5
No of tosses (f):	38	144	342	287	164	25

Soln: Let the assumed mean (A) = 2

No. of heads per toss x_i	No of intervals f_i	$u_i=A_i-x=A_i-2$ $u_i = A_i - x = A_i - 2$	f_iu_i $f_i u_i$
0	38	-2	-7
1	144	-1	-144
2	342	0	0
3	287	1	287
4	164	2	328
5	25	3	75
	N= 1000		Sum = 470

Mean number of per toss = 2 +470/1000 = 2 + 0.47 =2.47

3. The following table gives the number of branches and number of plants in the garden of a school.

No of branches (x):	2	3	4	5	6
No of plants (f):	49	43	57	38	13

Calculate the average number of branches per plant.

Soln:

Let the assumed mean (A) = 4

No of branches x_i	No of plants f_i	$u_i = x_i - A = x_i - 4$	$f_i u_i$
2	49	-2	-98
3	43	-1	-43
4	57	0	0
5	38	1	38
6	13	2	26
	N = 200		Sum = -77

Average number of branches per plant = 4 + (-77/200) = 4 -77/200 = (800 -77)/200 = 3.615

4. The following table gives the number of children of 150 families in a village

No of children (x):	**0**	**1**	**2**	**3**	**4**	**5**
No of families (f):	**10**	**21**	**55**	**42**	**15**	**7**

Find the average number of children per family.

Soln: Let the assumed mean (A) = 2

No of children x_i	No of families f_i	$u_i = x_i - A = x_i - 2$	$f_i u_i$

0	10	-2	-20
1	21	-1	-21
3	42	1	42
4	15	2	30
5	7	5	35
	N = 20		Sum = 52

Average number of children for family = 2 + 52/150 = (300 +52)/150 = 352/150 = 2.35 (approx)

5. The marks obtained out of 50, by 102 students in a physics test are given in the frequency table below:

Marks (x):	15 30	20 33	22 38	24 45	25
Frequency (f):	5 18	8 13	11 3	20 1	23

Find the average number of marks.

Soln: Let the assumed mean (A) = 25

Marks x_i	Frequency f_i	$u_i = x_i - A = x_i - 2$	$f_i u_i$
15	5	-10	-50
20	8	-5	-40
22	8	-3	-24
24	20	-1	-20
25	23	0	0
30	18	5	90
33	13	8	104

38	3	12	36
45	3	20	60
	N = 122		Sum = 110

Average number of marks = 25 + 110/102

= (2550 + 110)/102

= 2660/102

= 26.08 (Approx)

6.The number of students absent in a class was recorded every day for 120 days and the information is given in the following

No of students absent (x):	0 4	1 5	2 6	3 7
No of days (f):	1 34	4 15	10 4	50 2

Find the mean number of students absent per day.

Soln:Let mean assumed mean (A) = 3

No of students absent x_i	No of days f_i	$u_i = x_i - A = x_i - 3$ $u_i=x_i-A=x_i-3$	f_iu_i
3	1	-3	-3
1	4	-2	-8
2	10	-1	-10
3	50	0	0
4	34	1	24
5	15	2	30

6	4	3	12
7	2	4	8
	N = 120		Sum =63

Mean number of students absent per day = 3 + 63/120

= (360 + 63)/120

= 423/120

= 3.53

7. In the first proof of reading of a book containing 300 pages the following distribution of misprints was obtained:

No of misprints per page (x):	0 1 2 3 4 5
No of pages (f):	154 96 36 9 5 1

Find the average number of misprints per page.

Soln: Let the assumed mean (A) = 2

No of misprints per page $x_i x_i$	No of days $f_i f_i$	$u_i = x_i - A = x_i - 3$ $u_i = x_i - A = x_i - 3$	$f_i u_i f_i u_i$
0	154	-2	-308
1	95	-1	-95
2	36	0	0
3	9	1	9
4	5	2	1
5	1	3	3

	N = 300		Sum = 381

Average number of misprints per day = 2 + (-381/300)

= 2 – 381/300

= (600-381)/300

= 219/300

= 0.73

8. The following distribution gives the number of accidents met by 160 workers in a factory during a month.

No of accidents (x):	0	1	2	3	4
No of workers (f):	70	52	34	3	1

Find the average number of accidents per worker.

Soln: Let the assumed mean (A) = 2

No of accidents	No of workers f_i	$u_i=x_i-A=x_i-3$ $u_i = x_i - A = x_i - 3$	f_iu_i $f_i u_i$
0	70	-2	-140
1	52	-1	-52
2	34	0	0
3	3	1	3
4	1	2	2
	N = 100		Sum = -187

Average no of accidents per day workers

=> x + (-187/160)

= 133/160

= 0.83

9. Find the mean from the following frequency distribution of marks at a test in statistics:

Marks (x):	5	10	15	20	25
	30	35	40	45	50
No of students (f):	15	50	80	76	72
	45	39	9	8	6

Soln: Let the assumed mean (A) = 25

Marks x_i	No of students f_i	$u_i=x_i-A=x_i-3$	f_iu_i
5	15	-20	-300
10	50	-15	-750
15	80	-10	-800
20	76	-5	-380
25	72	0	0
30	45	5	225
35	39	10	390
40	9	15	135
45	8	20	160
50	6	25	150
	N = 400		Sum = -1170

Mean = 25 + (-1170)/400 = 22.075