

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 5	3 6	4
No. of intervals (f):	15	24	29 43	46 39	54

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	$u_i = x_i - A = x_i - 3$	$f_i u_i$
0	15	-3	-45
1	24	-2	-48
2	29	-1	-29
3	46	0	0
4	54		54
5	43	2	86
6	39	3	117
	N= 250		Sum = 135

$$\text{Mean number of calls} = 3 + \frac{135}{250} = \frac{885}{250} = 3.54$$

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
No of tosses (f):	38	144	342	287
	4	5		
	164	25		

Soln: Let the assumed mean (A) = 2

No. of heads per toss x_i	No of intervals f_i	$u_i = A_i - x = A_i - 2$ $u_i = A_i - x = A_i - 2$	$f_i u_i$
0	38	-2	-76
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	20	22	24	25
	30	33	38	45	
Frequency (f):	5	8	11	20	23
	18	13	3	1	

Find the average number of marks.

Soln: Let the assumed mean (A) = 25

Marks x_i	Frequency f_i	$u_i = x_i - A = x_i - 25$	$f_i u_i$
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 = $25 + 110/102$

$$= (2550 + 110)/102$$

$$= 2660/102$$

$$= 26.08 \text{ (Approx)}$$

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	1	2	3
	4	5	6	7
No of days (f):	1	4	10	50
	34	15	4	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	$u_i = x_i - A = x_i - 3$	$f_i u_i$
3	1	-3	-3
1	4	-2	-8
2	10	-1	-10
3	50	0	0
4	34	1	34
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
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	No of days f_i	$u_i = x_i - A = x_i - 2$	$f_i u_i$
0	154	-2	-308
1	96	-1	-96
2	36	0	0
3	9	1	9
4	5	2	10
5	1	3	3

	N = 300	Sum = 381
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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	$u_i = x_i - A = x_i - 2$	$f_i u_i$
0	70	-2	-140
1	52	-1	-52
2	34	0	0
3	3	1	3
4	1	2	2
	N = 160		Sum = -187

Average no of accidents per day workers

$$\Rightarrow x + (-187/160)$$

$$= 133/160$$

$$= 0.83$$

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	$u_i = x_i - A = x_i - 25$	$f_i u_i$
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

$$\text{Mean} = 25 + (-1170)/400 = 22.075$$