

Q. 3) The following are the monthly salaries in rupees of 12 families. Calculate the arithmetic mean:

S.No	Income	S.No	Income
1	280	7	80
2	180	8	94
3	96	9	100
4	98	10	75
5	104	11	600
6	75	12	200
Total			1,982

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Calculation of Arithmetic mean (by direct method)

S.NO (mid value) (x)	Income (Frequency) (f)	Product ($f \times x$)
1	280	280
2	180	360
3	96	288
4	98	392
5	104	520
6	75	450
7	80	560
8	94	752
9	100	900
10	75	750
11	800	6,600
12	200	2,400
$\Sigma f = 1,982$		$\Sigma fx = 14,252$

$$\therefore \text{Mean } (\bar{x}) = \frac{\Sigma fx}{\Sigma f}$$

$$\Rightarrow \frac{14,252}{1,982}$$

$$\Rightarrow 7.19$$

\therefore The mean income is RS. 7.19.

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Continuous Series :-

① Find out average :

class :-	0-10	10-20	20-30	30-40	40-50
Frequency:	12	10	15	8	6

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Calculation of Arithmetic mean
(by direct method)

class (C.I)	Frequency (f)	mid value (x)	Product (f × x)
0-10	12	5	60
10-20	10	15	150
20-30	15	25	375
30-40	8	35	280
40-50	6	45	270
	$\Sigma f = 51$		$\Sigma fx = 1,135$

$$\therefore \text{Mean}(\bar{X}) = \frac{\Sigma fx}{\Sigma f}$$

$$\Rightarrow \frac{1,135}{51}$$

$$\Rightarrow 22.255$$

$$\therefore \text{Mean}(\bar{X}) = 22.255$$

② Find the mean from the following data:

Class	10-20	20-30	30-40	40-50	50-60	60-70
Frequency	15	18	27	14	9	7

Calculation of arithmetic mean
(by direct method)

Class (C.I.)	Frequency (f)	mid value (m)	Product (f × m)
10-20	15	15	225
20-30	18	25	450
30-40	27	35	945
40-50	14	45	630
50-60	9	55	495
60-70	7	65	455
	$\Sigma f = 90$		$\Sigma fm = 3,200$

$$\therefore \text{mean}(\bar{x}) = \frac{\Sigma fm}{\Sigma f}$$

$$\Rightarrow \frac{3200}{90}$$

$$\Rightarrow 35.5$$

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$$\therefore \text{Mean}(\bar{x}) = 35.5$$

③ Find out Simple arithmetic mean from the following data:

Profit per Shop (in RS.)	0-10	10-20	20-30	30-40	40-50
No. of Shops	12	18	21	20	9

Calculation of Arithmetic mean (by direct method)

Profit per Shop (Class Interval) (C.I)	No. of Shops (Frequency) (f)	mid value (m)	Product (f × m)
0-10	12	5	60
10-20	18	15	270
20-30	21	25	525
30-40	20	35	700
40-50	9	45	405
	$\Sigma f = 80$		$\Sigma fm = 1960$

$$\therefore \text{Mean} = \frac{\Sigma fm}{\Sigma f}$$

$$\Rightarrow \frac{1960}{80}$$

$$\Rightarrow 24.5$$

\therefore The mean(x) profit per shop is 24.5.

④ Calculate mean of the following table:

Class	8-14	14-20	20-26	26-32	32-38
Frequency	30	40	20	10	5

Calculation of Arithmetic mean (by direct method)

Class (C.I)	Frequency (f)	mid value (m)	Product (f × m)
8-14	30	11	330
14-20	40	17	680
20-26	20	23	460
26-32	10	29	290
32-38	5	35	175
	$\Sigma f = 105$		$\Sigma fm = 1935$

$$\therefore \text{Mean}(x) = \frac{\Sigma fm}{\Sigma f}$$

$$\Rightarrow \frac{1935}{105}$$

$$\Rightarrow 18.43$$

$$\therefore \text{mean}(x) = 18.43$$

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⑤ Find out the mean of the following data:

Age in years	20-30	30-40	40-50	50-60	60-70	70-80
No. of men	12	18	42	54	45	15

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Calculation of Arithmetic mean
(by direct method)

Age in years (Class interval) (C.I)	No. of men (Frequency) (f)	mid value (m)	Product (f × m)
20-30	12	25	300
30-40	18	35	630
40-50	42	45	1,890
50-60	54	55	2,970
60-70	45	65	2,925
70-80	15	75	1,125
	$\Sigma f = 186$		$\Sigma fm = 9,840$

$$\therefore \text{Mean} = \frac{\Sigma fm}{\Sigma f}$$

$$\Rightarrow \frac{9,840}{186}$$

$$\Rightarrow 52.903$$

\therefore The mean (\bar{x}) Age is 52.903 years.

Discrete Series :-

① Calculate mean from the following table:

Class:	0-4	5-9	10-14	15-19	20-24	25-29
Frequency	12	17	35	18	8	2

Sol

Calculation of Arithmetic mean
(by direct method)

Class (C.I)	Frequency (f)	mid value (m)	Product (f × m)
0-4	12	2	24
5-9	17	7	119
10-14	35	12	420
15-19	18	17	306
20-24	8	22	176
25-29	2	27	54
	$\Sigma f = 92$		$\Sigma fm = 1,099$

$$\therefore \text{mean} = \frac{\Sigma fm}{\Sigma f}$$

$$\Rightarrow \frac{1,099}{92}$$

$$\Rightarrow 11.94$$

\therefore Mean (\bar{x}) = 11.94

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② Calculate the arithmetic mean from the following data:

Age in years	no. of persons	Age in years	No. of persons
18-22	14	38-42	20
23-27	28	43-47	15
28-32	33	48-52	13
33-37	30	53-57	7

Calculation of Arithmetic mean
(by direct method)

Sol

Age in years (Class interval) (C.I)	No. of persons (Frequency) (f)	mid value (m)	Product (f × m)
18-22	14	20	280
23-27	28	25	700
28-32	33	30	990
33-37	30	35	1050
38-42	20	40	800
43-47	15	45	675
48-52	13	50	650
53-57	7	55	385
	$\Sigma f = 160$		$\Sigma f \times m = 5580$

$\therefore \text{mean} = \frac{\Sigma fm}{\Sigma f}$

$\Rightarrow \frac{5580}{160}$

$\Rightarrow 34.875$

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\therefore The mean (\bar{x}) age is 34.875 years.

③ Calculate the mean from the following frequency table:

x	6-10	11-15	16-20	21-25	26-30
frequency	20	30	50	40	10

Sol Calculation of Arithmetic mean
(by direct method)

x	frequency (f)	mid value (m)	Product (f × m)
Class interval (C.I)			
6-10	20	8	160
11-15	30	13	390
16-20	50	18	900
21-25	40	23	920
26-30	10	28	280
	$\Sigma f = 150$		$\Sigma f \times m = 2650$

$$\therefore \text{mean}(\bar{x}) = \frac{\sum fx}{\sum f}$$

$$\Rightarrow \frac{2650}{150}$$

$$\Rightarrow 17.66$$

\therefore The mean (\bar{x}) is 17.66.

④ Calculate mean from the following table:

Height	60-62	63-65	66-68	69-71	72-74
Frequency	15	54	126	81	24

Calculation of Arithmetic mean
(by direct method)

Height (Class interval) (C.I.)	Frequency (f)	mid value (m)	product (fm)
60-62	15	61	915
63-65	54	64	3456
66-68	126	67	8442
69-71	81	70	5670
72-74	24	73	1752
	$\sum f = 300$		$\sum fm = 20,235$

$$\therefore \text{mean} = \frac{\sum fx}{\sum f}$$

$$\Rightarrow \frac{20,235}{300}$$

$$\Rightarrow 67.45$$

\therefore The mean height is 67.45.

⑤ Calculate the mean from the following table shows the age distribution of patients of malaria in a village during a particular month:

Age (in year)	25-29	30-34	35-39	40-44	45-49	50-54	55-59
No. of cases	4	14	22	16	6	5	3

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$$\therefore \text{Mean}(\bar{x}) = \frac{\sum fx}{\sum f}$$

$$\Rightarrow \frac{2650}{150}$$

$$\Rightarrow 17.66$$

\therefore The mean (\bar{x}) is 17.66.

Q1) Calculate mean from the following table:

Height	60-62	63-65	66-68	69-71	72-74
Frequency	15	54	126	81	24

Calculation of Arithmetic mean
(by direct method)

Height (Class interval) (C.I)	Frequency (f)	mid value (x)	Product (fx)
60-62	15	61	915
63-65	54	64	3456
66-68	126	67	8442
69-71	81	70	5670
72-74	24	73	1752
	$\sum f = 300$		$\sum fx = 20,235$

$$\therefore \text{Mean} = \frac{\sum fx}{\sum f}$$

$$\Rightarrow \frac{20,235}{300}$$

$$\Rightarrow 67.45$$

\therefore The mean height is 67.45.

Q2) Calculate the mean from the following table shows the age distribution of patients of malaria in a village during a particular month:

Age (in year)	25-29	30-34	35-39	40-44	45-49	50-54	55-59
no. of cases	4	14	22	16	6	5	3

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Calculation of Arithmetic mean (by direct method)

Sol	Age (in years) class interval (C.I)	No. of persons (Frequency) (f)	mid value (x)	Product (fx)
	25-29	4	27	108
	30-34	14	32	448
	35-39	22	37	814
	40-44	16	42	672
	45-49	6	47	282
	50-54	5	52	260
	55-59	3	57	171
		$\Sigma f = 70$		$\Sigma fx = 2755$

$$\therefore \text{mean} = \frac{\Sigma fx}{\Sigma f}$$

$$\Rightarrow \frac{2755}{70}$$

$$\Rightarrow 39.35$$

\therefore The mean age is 39.35 years.

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Short-cut method Continuous Series:-

① Find out average:

Class	0-10	10-20	20-30	30-40	40-50
Frequency	12	10	15	8	6

Sol Calculation of Arithmetic mean (by Short-cut method)

Class (C.I)	Frequency (f)	mid value (x)	Deviation x-A where, A=25	Product (fdx)
0-10	12	5	-20	-240
10-20	10	15	-10	-100
20-30	15	25	0	0
30-40	8	35	10	80
40-50	6	45	20	120
	$\Sigma f = 51$		$\Sigma dx = 0$	$\Sigma fdx = -140$

$$\therefore \text{Mean}(\bar{x}) = A + \frac{\Sigma fdx}{\Sigma f}$$

$$\Rightarrow 25 + \frac{-140}{51} = 25 + (-2.74)$$

$$\Rightarrow 25 - 2.74$$

$$\therefore \text{Mean}(\bar{x}) \Rightarrow 22.26$$