

②	Class	10-20	20-30	30-40	40-50	50-60	60-70
	Frequency	15	18	27	14	9	7

Sol

Calculation of Arithmetic mean
(by Short-cut method)

Class (C- \bar{x})	Frequency (f)	midvalue (x_i)	deviation($x_i - A$) where $A = 45$	Product ($f \times dx$)
10-20	15	15	-30	-450
20-30	18	25	-20	-360
30-40	27	35	-10	-270
40-50	14	45	0	0
50-60	9	55	10	90
60-70	7	65	20	140
	$\Sigma f = 90$		$\Sigma dx = -30$	$\Sigma fdx = -850$

$$\therefore \text{mean} = A + \frac{\Sigma fdx}{\Sigma f}$$

$$\Rightarrow 45 + \frac{-850}{90}$$

$$\Rightarrow 45 + (-9.4)$$

$$\Rightarrow 45 - 9.4$$

$$\Rightarrow 35.6$$

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$$\therefore \text{mean}(X) = 35.6$$

③ Find of simple arithmetic mean by Short-cut method from the following data:

Profit per shop (RS):	0-10	10-20	20-30	30-40	40-50
No. of shops	12	18	21	20	9

Sol

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

Profit per Shop (class interval) (C.I)	No. of Shops (frequency) (f)	mid value (m)	deviation (m-A) where, A=25	Product (f × dm)
0-10	12	5	-20	-240
10-20	18	15	-10	-180
20-30	21	25	0	0
30-40	20	35	10	200
40-50	9	45	20	180
$\Sigma f =$	80		$\Sigma fdm =$ 0	$\Sigma fdm =$ 40

$$\therefore \text{mean} = A + \frac{\Sigma fdm}{\Sigma f}$$

$$\Rightarrow 25 + \frac{-40}{80} = 25 + (-0.5)$$

$$\Rightarrow 25 - 0.5 = 24.5$$

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

Q) Calculate mean of the following table:

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

Sol

Calculation of Arithmetic mean
(by short-cut method)

Class (C-I)	Frequency (f)	mid value (x)	deviation (x-A) where A = 23	Product (fx dx)
8-14	30	11	-12	-360
14-20	40	17	-6	-240
20-26	20	23	0	0
26-32	10	29	6	60
32-38	5	35	12	60
	$\Sigma f = 105$		$\Sigma dx = 0$	$\Sigma fdx = -480$

$$\therefore \text{Mean} = A + \frac{\Sigma fdx}{\Sigma f}$$

$$\Rightarrow 23 + \frac{-480}{105} = 23 + (-4.57)$$

$$\Rightarrow 23 - 4.57$$

$$\Rightarrow 18.43$$

$$\therefore \text{Mean}(\bar{x}) = 18.43$$

5) Find out the mean of the following table:
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

Sol

Calculation of Arithmetic mean
(by Short-cut method)

Age in years (Class interval) (C.I.)	No. of men (Frequency) (f)	Mid value (x)	Deviation (x-A) where, A = 55	Product (f x d)
20-30	12	25	-30	-360
30-40	18	35	-20	-360
40-50	42	45	-10	-420
50-60	54	55	0	0
60-70	45	65	10	450
70-80	15	75	20	300
	$\Sigma f = 186$		$\Sigma dx = -30$	$\Sigma fdx = -390$

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$$\therefore \text{mean} = A + \frac{\Sigma fdx}{\Sigma f}$$

$$=) 55 + \frac{(-390)}{186} = 55 + (-2.096)$$

$$=) 55 - 2.096 = 52.904$$

Sol

Calculation of Arithmetic mean (by short-cut method)

Age (in years) (Class interval) (C.I.)	No. of cases (frequency) (f)	mid value (m)	Deviation (m-A) where A = 42	Product (fdm)
25-29	14	27	-15	-60
30-34	14	32	-10	-140
35-39	22	37	-5	-110
40-44	16	42	0	0
45-49	6	47	5	30
50-54	5	52	10	50
55-59	3	57	15	45
	$\Sigma f = 70$		$\Sigma dm = 0$	$\Sigma fdm = -185$

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

$$\Rightarrow 42 + \frac{-185}{70}$$

$$\Rightarrow 42 + (-2.64)$$

$$\Rightarrow 42 - 2.64$$

$$\Rightarrow 39.36$$

\therefore The mean age of the patients is 39.36 years.