

Exercise 24.2

Question 1: Calculate the mean for the following distribution:

x:	5	6	7	8	9
f:	4	8	14	11	3

Solution:

x	f	fx
5	4	20
6	8	48
7	14	98
8	11	88
9	3	27
N=40		$\sum fx = 281$

Formula to calculate mean:

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

$$= 281/40$$

$$= 7.025$$

=> Mean for the given distribution is 7.025.

Question 2: Find the mean of the following data:

x:	19	21	23	25	27	29	31
f:	13	15	16	18	16	15	13

Solution:

x	f	fx
19	13	247
21	15	315
23	16	368
25	18	450
27	16	432
29	15	435
31	13	403
N=106		$\sum fx = 2650$

Formula to calculate mean:

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

$$= 2650/106$$

$$= 25$$

=> Mean for the given data is 25.

Question 3: The mean of the following data is 20.6 .Find the value of p.

x:	10	15	p	25	35
f:	3	10	25	7	5

Solution:

x	f	fx
10	3	30
15	10	150
p	25	25p
25	7	175
35	5	175
N = 50		$\sum fx = 25p + 530$

Formula to calculate mean:

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

$$= (25p + 530)/50$$

$$\text{Mean} = 20.6 \text{ (Given)}$$

So,

$$20.6 = (25p + 530)/50$$

$$25p + 530 = 1030$$

$$25p = 1030 - 530 = 500$$

$$\text{or } p = 20$$

=> The value of p is 20.

Question 4: If the mean of the following data is 15, find p.

x:	5	10	15	20	25
f:	6	p	6	10	5

Solution:

x	f	fx
5	6	30
10	p	10p
15	6	90
20	10	200
25	5	125
N=p+27		$\sum fx = 10p + 445$

Formula to calculate mean:

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

$$= (10p + 445)/(p + 27)$$

Mean = 15 (Given)

$$\text{So, } (10p + 445)/(p + 27) = 15$$

$$10p + 445 = 15(p + 27)$$

$$10p - 15p = 405 - 445 = -40$$

$$-5p = -40$$

$$\text{or } p = 8$$

=> The value of p is 8.

Question 5: Find the value of p for the following distribution whose mean is 16.6.

x:	8	12	15	p	20	25	30
f:	12	16	20	24	16	8	4

Solution:

x	f	fx
8	12	96
12	16	192
15	20	300
p	24	24p
20	16	320
25	8	200
30	4	120
N=100		$\sum fx = 24p + 1228$

Formula to calculate mean:

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

$$= (24p + 1228)/100$$

$$\text{Mean} = 16.6 \text{ (given)}$$

$$\text{So, } (24p + 1228)/100 = 16.6$$

$$24p + 1228 = 1660$$

$$24p = 1660 - 1228 = 432$$

$$p = 432/24 = 18$$

=> The value of p is 18.

Question 6: Find the missing value of p for the following distribution whose mean is 12.58.

$x:$	5	8	10	12	p	20	25
$f:$	2	5	8	22	7	4	2

Solution:

x	f	fx
5	2	10
8	5	40
10	8	80
12	22	264
p	7	$7p$
20	4	80
25	2	50
$N = 50$		$\sum fx = 7p + 524$

Formula to calculate mean:

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

$$= (7p + 524)/50$$

$$\text{Mean} = 12.58 \text{ (given)}$$

$$\text{So, } (7p + 524)/50 = 12.58$$

$$7p + 524 = 12.58 \times 50$$

$$7p + 524 = 629$$

$$7p = 629 - 524 = 105$$

$$p = 105/7 = 15$$

=> The value of p is 15.

Question 7: Find the missing frequency (p) for the following distribution whose mean is 7.68.

x:	3	5	7	9	11	13
f:	6	8	15	p	8	4

Solution:

x	f	fx
3	6	18
5	8	40
7	15	105
9	p	$9p$
11	8	88
13	4	52
$N = p + 41$		$\sum fx = 9p + 303$

Formula to calculate mean:

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

$$= (9p + 303)/(p + 41)$$

$$\text{Mean} = 7.68 \text{ (given)}$$

$$\text{So, } (9p + 303)/(p + 41) = 7.68$$

$$9p + 303 = 7.68(p + 41)$$

$$9p + 303 = 7.68p + 314.88$$

$$9p - 7.68p = 314.88 - 303$$

$$1.32p = 11.88$$

$$\text{or } p = (11.881)/(1.32) = 9$$

=> The value of p is 9.