Exercise 24(A)

Find the mean of the following set of numbers:
(i) 6, 9, 11, 12 and 7
(ii) 11, 14, 23, 26, 10, 12, 18 and 6
Solution:

(i) By definition, we know
Mean = ∑x/ n
Here, n = 5
Thus,
Mean = (6 + 9 + 11 + 12 + 7)/ 5 = 45/5 = 9

(ii) By definition, we know
Mean = ∑x/ n
Here, n = 8
Thus,
Mean = (11 + 14 + 23 + 26 + 10 + 12 + 18 + 6)/ 8 = 120/8 = 15

2. Marks obtained (in mathematics) by 9 student are given below:
60, 67, 52, 76, 50, 51, 74, 45 and 56
(a) find the arithmetic mean
(b) if marks of each student be increased by 4; what will be the new value of arithmetic mean.
Solution:

(a) Mean = ∑x/ n
Here, n = 9
Thus,
Mean = (60 + 67 + 52 + 76 + 50 + 51 + 74 + 45 + 56)/ 9 = 531/9 = 59

(b) If the marks of each student be increased by 4 then new arithmetic mean will be = 59 + 4 = 63

3. Find the mean of the natural numbers from 3 to 12.
Solution:

The numbers between 3 to 12 are 3, 4, 5, 6, 7, 8, 9, 10, 11 and 12.
Here n = 10
Mean = ∑x/ n
= (3 + 4 + 5 + 6 + 7 + 8 + 9 + 10 + 11 + 12)/ 10 = 75/10 = 7.5

4. (a) Find the mean of 7, 11, 6, 5, and 6
(b) If each number given in (a) is diminished by 2, find the new value of mean.
Solution:

(a) Mean = ∑x/ n , here n = 5
= (7 + 11 + 6 + 5 + 6)/ 5 = 35/5 = 7

(b) If 2 is subtracted from each number, then the mean will he changed as 7 – 2 = 5

5. If the mean of 6, 4, 7, 'a' and 10 is 8. Find the value of 'a'
Solution:

Given,
No. of terms (n) = 5
Mean = 8
Sum of all terms = 8 x 5 = 40 …… (i)
But, sum of numbers = 6 + 4 + 7 + a + 10 = 27 + a ….. (ii)
On equating (i) and (ii), we get
27 + a = 40
Thus, a = 13

6. The mean of the number 6, 'y', 7, 'x' and 14 is 8. Express 'y' in terms of 'x'.
Solution:

Given,
No. of terms (n) = 5 and mean = 8
So, the sum of all terms = 5 x 8 = 40 ……. (i)
but sum of numbers = 6 + y + 7 + x + 14 = 27 + y + x ……. (ii)
On equating (i) and (ii), we get
27 + y + x = 40
x + y = 13
Hence, y = 13 - x

7. The ages of 40 students are given in the following table:

Age(in yrs)	**12**	**13**	**14**	**15**	**16**	**17**	**18**
Frequency	**2**	**4**	**6**	**9**	**8**	**7**	**4**

Find the arithmetic mean.
Solution:

Age in yrs x_i	Frequency (f_i)	$f_i x_i$
12	2	24
13	4	52
14	6	84
15	9	135
16	8	128
17	7	119
18	4	72
Total	40	614

Mean = $\sum f_i x_i / \sum f_i$ = 614/40 = 15.35