Class 10-Mathematics

Instructions for students: The notes provided must be copied to the Maths copy and then do the homework in the same copy.

Chapter 9

Arithmetic Progression(A.P)

Sum of the first 'n' terms of an A.P

$$Sn = \frac{n}{2}(a + l)$$

or

$$Sn = \frac{n}{2}(2a + (n-1)d)$$

Also In an A.P,

$a_n = S_n - S_{n-1}$

Sum of the first 'n' Natural numbers

The first 'n' natural numbers i.e. 1, 2, 3, 4…n form an A.P and their sum is

$$Sn = \frac{n(n+1)}{2}$$

Exercise 9.3

6. Solution:

First term of A.P = 17

Last term, a_n = a+(n-1)d

350 = 17+(n-1)×9

350 – 17 = 9n – 9

9n = 342

n = 38

$S_n = \frac{n}{2}(2a + (n-1)d)$

$= \frac{38}{2}(2 \times 17 + 37 \times 9)$

= 19×(34+333)

= 19×367 = **6973**

11.Solution

S_6 = 36

$\frac{6}{2}(2a+5d)$ = 36

2a+5d = 12…….(i)

S_{16} = 256

$\frac{16}{2}(2a+15d)$ = 256

$8(2a+15d)$ = 256

$2a+15d$ = 32……(ii)

Subtracting (i) from (ii) we get

10d = 20

d = 2

Substituting the value of d in (i)

2a+10 = 12

a = 1

S_{10} = $\frac{10}{2}(2\times 1+(10-1)\times 2)$

= 5(2+9×2) = 100

15.Solution

S_n = $6n-n^2$

S_{25} = $6\times 25-25^2$

= 150 – 625 = -475

S_{24} = $6\times 24-24^2$

= 144 – 576 = - 432

a_{25} = $S_{25}-S_{24}$ = -475 - -432

= -475+432 = -43

Home Work: Solve Exercise **9.3** in the Maths copy.