



### Exercise 11C

Question 11:

All numbers between 300 and 700 that are multiples of 9 are 306, 315, 324, 333, ..., 693

This is an AP in which  $a = 306$ ,  $d = (315 - 306) = 9$ ,  $l = 693$

Let the number of these terms be  $n$ , then

$$T_n = 693$$

$$\Rightarrow a + (n - 1)d = 693$$

$$\Rightarrow 306 + (n - 1) \times 9 = 693$$

$$\Rightarrow 9(n - 1) = 387$$

$$\Rightarrow (n - 1) = 43$$

$$\Rightarrow n = 44$$

$$\begin{aligned} \text{Required sum} &= \frac{n}{2}(a + l) \\ &= \frac{44}{2}(306 + 693) \end{aligned}$$

$$\Rightarrow 22 \times 999$$

$$\Rightarrow 22 \times (1000 - 1)$$

$$\Rightarrow 22 \times 1000 - 22$$

$$\Rightarrow 22000 - 22 = 21978$$

$$\text{Hence, } S_n = 21978$$

Question 12:

All three digit natural numbers divisible by 13 are 104, 117, 130, 143, ..., 988

This is an AP in which  $a = 104$ ,  $d = (117 - 104) = 13$ ,  $l = 988$

$$T_n = 988 \Rightarrow a + (n - 1)d = 988 \Rightarrow 104 + (n - 1) \times 13 = 988$$

$$\Rightarrow 13 \times (n - 1) = 884$$

$$\Rightarrow (n - 1) = 68 \Rightarrow n = 69$$

$$\text{Required sum} = \frac{n}{2}(a + l)$$

$$= \frac{69}{2}(104 + 988) \Rightarrow 69 \times 546$$

$$S_n = 37674$$

Question 13:

First 15 multiples of 8 are 8, 16, 24, ... to 15<sup>th</sup> term

$$\therefore a = 8, d = 16 - 8 = 8, n = 15$$

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

Sum of first 15 multiples of 8

$$S_{15} = \frac{15}{2}[2 \times 8 + (15 - 1) \times 8] = \frac{15}{2}[16 + 112]$$

$$= \frac{15}{2} \times 128 = 15 \times 64 = 960$$

Question 14:

Odd natural numbers between 0 and 50 are 1, 3, 5, ... 49

$$\therefore a = 1, d = 3 - 1 = 2, l = 49$$

Let the number of terms be n

$$\text{Now, } l = a + (n - 1)d \text{ or } 49 = 1 + (n - 1) \times 2$$

$$49 = 1 + 2n - 2 \therefore 2n = 50 \text{ or } n = 25$$

$$\text{Now, } S_n = \frac{n}{2}(a + l)$$

Sum of odd numbers between 0 and 49

$$= \frac{25}{2}(1 + 49) = \frac{25}{2} \times 50 = 25 \times 25 = 625$$

Question 15:

First 100 even natural numbers divisible by 5 are

10, 20, 30, ... to 100 term

First term of AP = 10

Common difference d = 20 - 10 = 10

Number of terms = n = 100

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

$$= \frac{100}{2}[2 \times 10 + (100 - 1) \times 10]$$

$$= 50(20 + 99 \times 10)$$

$$= 50(20 + 990)$$

$$= 50 \times 1010 = 50500$$

\*\*\*\*\*END\*\*\*\*\*