



### Exercise 11C

Question 6:

Here,  $a = 15$ ,  $d = (11 - 15) = -4$ , and  $l = -13$

Let the total number of term be  $n$ , then

$$T_n = -13$$

$$\Rightarrow a + (n - 1)d = -13$$

$$\Rightarrow 15 + (n - 1) \times (-4) = -13$$

$$\Rightarrow -4(n - 1) = -28$$

$$(n - 1) = 7 \Rightarrow n = 8$$

$-13$  is  $8^{\text{th}}$  term.

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

$$= \frac{8}{2}(15 - 13) = 4(2) = 8$$

Hence, the sum of first  $8^{\text{th}}$  term of given AP is 8.

Question 7:

All 2 - digit whole numbers, which are divisible by 3 are 12, 15, 18, 21, ... 99

This is an AP in which  $a = 12$ ,  $d = (15 - 12) = 3$ , and  $l = 99$

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

$$T_n = 99 \Rightarrow a + (n - 1)d = 99$$

$$\Rightarrow 12 + (n - 1) \times 3 = 99$$

$$(n - 1) \times 3 = 87 \Rightarrow n - 1 = 29$$

$$\Rightarrow n = 30$$

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

$$= \frac{30}{2}(12 + 99) = 15 \times 111 = 1665$$

Question 8:

All the even number between 5 and 100 are 6, 8, 10, 12, ..., 98

This is an AP in which  $a = 6$ ,  $d = (8 - 6) = 2$ ,  $l = 98$

$$\begin{aligned}
T_n &= 98 \Rightarrow a + (n - 1)d \\
\Rightarrow 6 + (n - 1)2 &= 98 \Rightarrow 2(n - 1) = 92 \\
\Rightarrow (n - 1) &= 46 \Rightarrow n = 47 \\
\text{Required sum} &= \frac{n}{2}(a + l) \\
&= \frac{47}{2}(6 + 98) \Rightarrow 47 \times 52 = 2444 \\
\text{hence, } S_n &= 2444
\end{aligned}$$

Question 9:

All natural number divisible by 6 and less than 100 are 6, 12, 18, 24, ..., 96

This is an AP in which  $a = 6$ ,  $d = (12 - 6) = 6$  and  $l = 96$

$$\begin{aligned}
T_n &= 96 \\
\Rightarrow a + (n - 1)d &= 96 \\
\Rightarrow 6 + (n - 1)6 &= 96 \\
\Rightarrow (n - 1) \times 6 &= 90 \\
\Rightarrow n - 1 &= 15 \\
\Rightarrow n &= 16 \\
\text{Required sum} &= \frac{n}{2}(a + l) \\
&= \frac{16}{2}(6 + 96) = 8 \times 102 = 816 \\
\text{Hence, } S_n &= 816
\end{aligned}$$

Question 10:

All natural numbers between 100 and 500 divisible by 7 are 105, 112, 119, 126, ... 497

This is an AP in which  $a = 105$ ,  $d = (112 - 105) = 7$ ,  $l = 497$

Let the number of term be  $n$ , then

$$\begin{aligned}
T_n &= a + (n - 1)d = 497 \\
\Rightarrow 105 + (n - 1) \times 7 &= 497 \Rightarrow 7(n - 1) = 392 \Rightarrow n - 1 = 56 \\
\Rightarrow n &= 57 \\
\text{Required sum} &= \frac{n}{2}(a + l) = \frac{57}{2}(105 + 497) = 57 \times 301 \\
&= 57 \times (300 + 1) = 57 \times 300 + 57 \times 1 \\
&= 17157
\end{aligned}$$

$$\text{Hence, } S_n = 17157$$

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