



Exercise 11A

Question 16:

In the given AP, let the first term = a , and common difference = d

Then, $T_n = a + (n-1)d$

$\Rightarrow T_7 = a + (7-1)d$, and $T_{13} = a + (13-1)d$

$\Rightarrow T_7 = a + 6d$, $T_{13} = a + 12d$

Now, $T_7 = -4 \Rightarrow a + 6d = -4$ --- (1)

$T_{13} = -16 \Rightarrow a + 12d = -16$ --- (2)

Subtracting (1) from (2), we get

$\Rightarrow 6d = -12 \Rightarrow d = -2$

Putting $d = -2$ in (1), we get

$a + 6(-2) = -4$

$\Rightarrow a - 12 = -4$

$\Rightarrow a = 8$

Thus, $a = 8$, and $d = -2$

So the required AP is 8, 6, 4, 2, 0.....

Question 17:

In the given AP let the first term = a , And common difference = d

Then, $T_n = a + (n-1)d$

$\Rightarrow T_{10} = a + (10-1)d$, $T_{17} = a + (17-1)d$, $T_{13} = a + (13-1)d$

$\Rightarrow T_{10} = a + 9d$, $T_{17} = a + 16d$, $T_{13} = a + 12d$

Now, $T_{10} = 52 \Rightarrow a + 9d = 52$ --- (1)

and $T_{17} = T_{13} + 20 \Rightarrow a + 16d = a + 12d + 20$

$\Rightarrow 4d = 20 \Rightarrow d = 5$

Putting $d = 5$ in (1), we get

$a + 9 \times 5 = 52 \Rightarrow a = 52 - 45 \Rightarrow a = 7$

Thus, $a = 7$ and $d = 5$

So the required AP is 7, 12, 17, 22....

Question 18:

Let the first term of given AP = a and common difference = d

Then, $T_n = a + (n-1)d$

$\Rightarrow T_4 = a + (4-1)d$, $T_{25} = a + (25-1)d$, $T_{11} = a + (11-1)d$

$\Rightarrow T_4 = a + 3d$, $T_{25} = a + 24d$, $T_{11} = a + 10d$

Now, $T_4 = 0 \Rightarrow a + 3d = 0 \Rightarrow a = -3d$

$\therefore T_{25} = a + 24d = (-3d + 24d) \Rightarrow 21d$

and $T_{11} = a + 10d = (-3d + 10d) \Rightarrow 7d$

$\therefore T_{25} = 21d = 3 \times 7d = 3 \times T_{11}$

Hence 25th term is triple its 11th term.

Question 19:

The given AP is 3, 8, 13, 18....

First term $a = 3$, common difference $a = 8 - 3 = 5$

$\therefore T_n = a + (n-1)d = 3 + (n-1) \times 5 = 5n - 2$

$T_{20} = 3 + (20-1)5 = 3 + 19 \times 5 = 98$

Let n^{th} term is 55 more than the 20th term

$\therefore (5n - 2) - 98 = 55$

Or $5n = 100 + 55 = 155$

$n = 155/5 = 31$

\therefore 31st term is 55 more than the 20th term of given AP.

Question 20:

The given AP is 5, 15, 25....

$$a = 5, d = 15 - 5 = 10$$

$$\text{We have, } T_n = 130 + T_{31}$$

$$\Rightarrow a + (n-1)d = 130 + 5 + (31-1) \times 10$$

$$\Rightarrow 5 + (n-1)10 = 130 + 5 + (31-1) \times 10$$

$$\Rightarrow 5 + 10n - 10 = 135 + 300$$

$$\Rightarrow 10n - 5 = 435 \text{ or } 10n = 435 + 5$$

$$\therefore n = 440/10 = 44$$

Thus, the required term is 44th.

***** END *****