



Exercise 11A

Question 1:

The given progression is 3, 9, 15, 21

Clearly $(9 - 3) = (15 - 9) = (21 - 15) = 6$ which is constant

Thus, each term differs from its preceding term by 6

So, the given progression is an AP

Its first term = 3 and the common difference = 6

Question 2:

The given progression is 16, 11, 6, 1, -4

Clearly $(11 - 16) = (6 - 11) = (1 - 6) = (-4 - 1) = -5$ which is constant

Thus, each term differs from its preceding term by -5

So the given progression is an AP

Its first term = 16 and the common difference = -5

Question 3:

(i) The given AP is 1, 5, 9, 13, 17.....

Its first term = 1 and common difference = $(5 - 1) = 4$

$\therefore a = 1$ and $d = 4$

The n^{th} term of the AP is given by

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

$$T_{20} = 1 + (20-1) \times 4 = 1 + 76 = 77$$

Hence, the 20th term is 77

(ii) The given AP is 6, 9, 12, 15

Its first term = 6 and common difference = $(9 - 6) = 3$

$\therefore a = 6, d = 3$

The n^{th} term of the AP is given by

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

$$T_{35} = 6 + (35-1) \times 3 = 6 + 102 = 108$$

Hence, the 35th term is 108

(iii) The given AP is 5, 11, 17, 23

Its first term = 5, and common difference = $(11 - 5) = 6$

$\therefore a = 5, d = 6$

The n^{th} term of AP is given by

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

$$T_n = 5 + (n-1) \times 6 = 5 + 6n - 6 = 6n - 1$$

(iv) The given AP is $(5a - x), 6a, (7a + x)$

Its first term = $(5a - x)$ and common difference = $6a - 5a - x = a + x$

The n^{th} term of AP is given by

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

$$T_{11} = (5a - x) + (11-1)(a + x)$$

$$= 5a - x + 10a + 10x$$

$$= 15a + 9x = 3(5a + 3x)$$

Hence the 11th term is $3(5a + 3x)$

Question 4:

(i) The given AP is 63, 58, 53, 48

First term = 63, common difference = $58 - 63 = -5$

$\therefore a = 63, d = -5$

The n^{th} term of AP is given by

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

$$T_{10} = 63 + (10-1)(-5) = 63 - 45 = 18$$

Hence the 10th term is 18

(ii) The given AP is 9, 5, 1, -3....

First term = 9, common difference = 5 - 9 = -4

$\therefore a = 9, d = -4$

The nth term of AP is given by

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

$$T_{14} = 9 + (14-1)(-4) = 9 - 52 = -43$$

Hence, the 14th term is -43

(iii) The given AP is 16, 9, 2, -5

First term = 16, common difference = 9 - 16 = -7

$\therefore a = 16, d = -7$

The nth term of AP is given by

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

$$T_n = 16 + (n-1)(-7) \Rightarrow 16 - 7n + 7 = (23 - 7n)$$

Hence, the nth term is (23 - 7n).

***** END *****