



Exercise 11A

Question 26:

Let a be the first term and d be the common difference

$$p^{\text{th}} \text{ term} = a + (p - 1)d = q \text{ (given) } \text{-----}(1)$$

$$q^{\text{th}} \text{ term} = a + (q - 1)d = p \text{ (given) } \text{-----}(2)$$

subtracting (2) from (1)

$$(p - q)d = q - p$$

$$(p - q)d = -(p - q)$$

$$d = -1$$

Putting $d = -1$ in (1)

$$a - (p - 1) = q \quad \therefore a = p + q - 1$$

$$\therefore (p + q)^{\text{th}} \text{ term} = a + (p + q - 1)d$$

$$= (p + q - 1) - (p + q - 1) = 0$$

Question 27:

Let a be the first term and d be the common difference

$$T_{10} = a + 9d, \quad T_{15} = a + 14d$$

$$10T_{10} = 15T_{15}$$

$$\Rightarrow 10(a + 9d) = 15(a + 14d)$$

$$\Rightarrow 2(a + 9d) = 3(a + 14d)$$

$$\Rightarrow a + 24d = 0$$

$$\therefore T_{25} = 0$$

Question 28:

Let a be the first term and d be the common difference

$$\therefore n^{\text{th}} \text{ term from the beginning} = a + (n - 1)d \text{ -----}(1)$$

$$n^{\text{th}} \text{ term from end} = l - (n - 1)d \text{ -----(2)}$$

adding (1) and (2),

sum of the n^{th} term from the beginning and n^{th} term from the end =

$$[a + (n - 1)d] + [l - (n - 1)d] = a + l$$

Question 29:

Number of rose plants in first, second, third rows.... are 43, 41, 39... respectively.

There are 11 rose plants in the last row

So, it is an AP . viz. 43, 41, 39 11

$$a = 43, d = 41 - 43 = -2, l = 11$$

Let n^{th} term be the last term

$$\therefore l = a + (n - 1)d$$

$$\Rightarrow 11 = 43 + (n - 1) \times (-2)$$

$$43 - 2n + 2 = 11 \text{ or } 2n = 45 - 11 = 34$$

$$\therefore n = 34/2 = 17$$

Hence, there are 17 rows in the flower bed.

Question 30:

Principal = Rs. 1000, rate of interest = 28% p.a, time = T years

Put $T = 1$ in (1)

$$S.I = \frac{P \times R \times T}{100} = \frac{1000 \times 8 \times T}{100} = \text{Rs. } 80T \quad \text{----- (1)}$$

\therefore S.I at the end of the first year = Rs. 80

Put $T = 2$, S.I at the end of two years = Rs. 80 \times 2 = Rs. 160

Put $T = 3$, S.I. at the end of third year = Rs. 80 \times 3 = Rs. 240

Thus, simple interests = Rs. 80, Rs. 160, Rs.240.... form an AP whose first term is Rs. 80 and common difference is Rs. $(160 - 80) = \text{Rs. } 80$
Put $T = 30$, S.I. at the end of 30 years = $a + 29d = (80 + 29 \times 80) = \text{Rs. } 80 \times 30 = \text{Rs. } 2400$

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