



Arithmetic Progressions Ex 9.3 Q5

Answer :

In the given problem, we are given an A.P whose,

First term (a) = 5

Last term (a_n) = 80

Common difference (d) = 3

We need to find the number of terms present in it (n)

So here we will find the value of n using the formula, $a_n = a + (n-1)d$

So, substituting the values in the above mentioned formula

$$80 = 5 + (n-1)3$$

$$80 - 5 = 3n - 3$$

$$75 + 3 = 3n$$

$$n = \frac{78}{3}$$

$$n = 26$$

Thus, $n = 26$

Therefore, the number of terms present in the given A.P is 26

Arithmetic Progressions Ex 9.3 Q6

Answer :

In the given problem, we are given 6th and 17th term of an A.P.

We need to find the 40th term

Here,

$$a_6 = 19$$

$$a_{17} = 41$$

Now, we will find a_6 and a_{17} using the formula $a_n = a + (n-1)d$

So,

$$a_6 = a + (6-1)d$$

$$19 = a + 5d \quad \dots\dots(1)$$

Also,

$$a_{17} = a + (17-1)d$$

$$41 = a + 16d \quad \dots\dots(2)$$

So, to solve for a and d

On subtracting (1) from (2), we get

$$a + 16d - a - 5d = 41 - 19$$

$$11d = 22$$

$$d = \frac{22}{11}$$

$$d = 2 \quad \dots\dots(3)$$

Substituting (3) in (1), we get

$$19 = a + 5(2)$$

$$19 - 10 = a$$

$$a = 9$$

Thus,

$$a = 9$$

$$d = 2$$

$$n = 40$$

Substituting the above values in the formula $a_n = a + (n-1)d$

$$a_{40} = 9 + (40-1)2$$

$$a_{40} = 9 + 80 - 2$$

$$a_{40} = 87$$

Therefore, $a_{40} = 87$

Arithmetic Progressions Ex 9.3 Q7

Answer :

In the given problem, the 9th term of an A.P. is zero.

Here, let us take the first term of the A.P as a and the common difference as d

So, as we know,

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

We get,

$$a_9 = a + (9-1)d$$

$$0 = a + 8d$$

$$a = -8d \quad \dots\dots(1)$$

Now, we need to prove that 29th term is double of 19th term. So, let us first find the two terms.

For 19th term ($n = 19$),

$$a_{19} = a + (19-1)d$$

$$= -8d + 18d \quad (\text{Using 1})$$

$$= 10d$$

For 29th term ($n = 29$),

(Using 1)

Therefore, for the given A.P. the 29th term is double of the 19th term.

Hence proved.

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