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 $\boxed{26}$

Arithmetic Progressions Ex 9.3 Q6

Answer :

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

We need to find the 40^{th} 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,

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

$$19 = a+5d \qquad \ldots\ldots(1)$$

Also,

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

$$41 = a+16d \qquad \ldots\ldots(2)$$

So, to solve for a and d

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

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

$$11d = 22$$

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

$$d = 2 \qquad \ldots\ldots(3)$$

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, $\boxed{a_{40} = 87}$

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,

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

$0 = a + 8d$

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

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),

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

$= -8d + 18d$ (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.

********** END **********