



Arithmetic Progressions Ex 19.2 Q7

Given: $a = 5$

$$d = 3$$

$$a_n = \text{last term} = 80$$

Let there be n terms

$$\therefore a_n = 80 = a + (n - 1)d$$

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

$$\Rightarrow n = 26$$

\therefore Thus, there are 26 terms in the given sequence.

Arithmetic Progressions Ex 19.2 Q8

Given that:

$$a_6 = 19 = a + (6 - 1)d \quad \text{--- (i)}$$

$$a_{17} = 41 = a + (17 - 1)d \quad \text{--- (ii)}$$

Solving (i) and (ii), we get

$$a = 9 \text{ and } d = 2$$

$$\therefore a_{40} = a + (40 - 1)d$$

$$= 9 + (40 - 1)2$$

$$= 9 + 39(2)$$

$$= 87$$

40th term of the given sequence is 87.

Arithmetic Progressions Ex 19.2 Q9

Given:

$$a_9 = 0$$

$$\therefore a + 8d = 0$$

$$a = -8d \quad \text{--- (i)}$$

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

$$= a + 18d$$

$$= -8d + 18d$$

$$= 10d$$

$$[\because a = -8d \text{ from (i)}]$$

$$\text{--- (ii)}$$

$$a_{29} = a + (29 - 1)d$$

$$= -8d + 28d$$

$$= 20d$$

$$[\because a = -8d \text{ from (i)}]$$

$$\text{--- (iii)}$$

From (ii) and (iii)

$$a_{29} = 2a_{19} \quad \text{Hence proved.}$$

Arithmetic Progressions Ex 19.2 Q10

Given:

$$10a_{10} = 15a_{15}$$

$$\Rightarrow 10\{a + (10 - 1)d\} = 15\{a + (15 - 1)d\}$$

$$\Rightarrow 10a + 90d = 15a + 210d$$

$$\Rightarrow 5a + 120d = 0$$

$$\Rightarrow a + 24d = 0 \quad \text{---(i)}$$

$$a_{25} = a + (25 - 1)d$$

$$= a + 24d$$

$$= 0$$

$$[\because \text{from (i) } a + 24d = 0]$$

Hence proved.

***** END *****