



Arithmetic Progressions Ex 19.6 Q4

Let $A_1, A_2, A_3, A_4, A_5, A_6$ be the 6 AM's between 15 and -13

Then,

$15, A_1, A_2, A_3, A_4, A_5, A_6, -13$ are in A.P of 8 terms

Here, $-13 = a_8 = a + 7d$

$$\Rightarrow -13 = 15 + 7d$$

$$\text{or } d = -4 \quad \text{---(i)}$$

$$\therefore A_1 = a + d = 15 - 4 = 11$$

$$A_2 = a + 2d = 15 - 2(4) = 7$$

$$A_3 = a + 3d = 15 - 4(3) = 3$$

$$A_4 = a + 4d = 15 - 4(4) = -1$$

$$A_5 = a + 5d = 15 - 4(5) = -5$$

$$A_6 = a + 6d = 15 - 4(6) = -9$$

The 6 A.M.s between 15 and -13 are 11, 7, 3, -1, -5 and -9.

Arithmetic Progressions Ex 19.6 Q5

Let the n A.M's between 3 and 17 be $A_1, A_2, A_3, \dots, A_n$

Then,

$$\begin{aligned} \text{A.T.Q.} \\ \frac{A_n}{A_1} &= \frac{3}{1} \quad \text{---(i)} \end{aligned}$$

We know that

$3, A_1, A_2, A_3, \dots, A_n, 17$ are in A.P of $n+2$ terms

So, 17 is the $(n+2)$ th terms.

$$\text{i.e. } 17 = 3 + (n+2-1)d \quad \text{[Using } a_n = a + (n-1)d \text{]}$$

$$\text{or } d = \frac{14}{(n+1)} \quad \text{---(ii)}$$

$$\begin{aligned} \therefore A_n &= 3 + (n+1-1)d \\ &= 3 + \frac{14n}{n+1} = \frac{17n+3}{n+1} \quad \text{---(iii)} \end{aligned}$$

$$A_1 = 3 + d = \frac{3n+17}{n+1} \quad \text{---(iv)}$$

From (i), (iii) and iv

$$\frac{A_n}{A_1} = \frac{17n+3}{3n+17} = \frac{3}{1}$$

$$\therefore n = 6$$

There are 6 A.M between 3 and 17.

Arithmetic Progressions Ex 19.6 Q6

Let there be n A.M between 7 and 71 and let the A.M's be $A_1, A_2, A_3, \dots, A_n$.
So,

$7, A_1, A_2, A_3, \dots, A_n, 71$ are in A.P of $(n+2)$ terms

$$A_5 = a_6 = a + 5d = 27 \quad [\text{Given}]$$

$$\Rightarrow a + 5d = 27$$

$$\Rightarrow d = 4 \quad [\because a = 7] \quad \text{---(i)}$$

The $(n+2)$ th term of A.P is 71

$$\therefore a_{n+2} = 71 = a + (n+2-1)d$$

$$\text{or } n = 15$$

There are 15 AM's between 7 and 71.

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