

Arithematic Progressions Ex 19.6 Q7

Let $A_1, A_2, A_3, A_4, \ldots, A_n$ be the n AMs inserted between two number a and b. Then,

$$A_1, A_2, A_3, A_4, ..., A_n, b$$
 are in A.P

So, the mean of a and b

$$A.M = \frac{a+b}{2}$$

The mean of
$$A_1$$
 and A_n

$$A.M = \frac{a+d+b-d}{2} = \frac{a+b}{2}$$

Similarly mean of
$$A_2$$
 and A_{n-1}
$$A.M = \frac{a+2d+b-2d}{2} = \frac{a+b}{2}$$

Similarly we observe the means is equidistant from begining and the end is constant $\frac{a+b}{2}$.

The AM is
$$\frac{a+b}{2}$$
.

Arithematic Progressions Ex 19.6 Q8 Here,

 A_1 is the A.M of x and y,

 A_2 is the A.M of y and z. and

Then,

$$A_1 = \frac{x+y}{2} \qquad \qquad ---(i) \qquad \left[\because AM = \frac{a+b}{2} \right]$$

$$A_2 = \frac{y+z}{2} \qquad \qquad ---(ii)$$

Let A.M be the arithematic mean of A_1 and A_2 Then,

A.M =
$$\frac{A_1 + A_2}{4}$$

= $\frac{x + y + y + z}{4}$
= $\frac{x + 2y + z}{4}$ ---(iii)

Since, 4, y, z are in A.P [Given]

$$y = \frac{x + a}{2}$$
 --- (iv

From (iii) and (iv)

$$A.M = \frac{\left(\frac{X+a}{2}\right) + \left(\frac{2y}{2}\right)}{2} = \frac{y+y}{2} = y$$

Hence, proved A.M between A_1 and A_2 is y.

Arithematic Progressions Ex 19.6 Q9

$$8, a_1, a_2, a_3, a_4, a_5, 26$$

 $a = 8$
 $a + 6d = 26$
 $\Rightarrow d = \frac{18}{6} = 3$
So series is 8, 11, 14, 17, 20, 23, 26

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