

CHAPTER 2

ARITHMETIC PROGRESSION

LONG QUESTIONS

Q. 1

Which of the following sequence is an A.P.? If they are A.P., find the common difference.

-10, -6, -2, 2,...

SOLUTION:

Here the first term $t_1 = -10$

$$t_2 - t_1 = -6 - (-10) = -6 + 10 = 4,$$

$$t_3 - t_2 = -2 - (-2) = 2 + 2 = 4$$

The difference between any two consecutive terms is constant.

ANS: The given sequence is an A.P. The common difference = $d = 4$.

Q. 2

Which of the following sequence is an A.P.? If they are A.P., find the common difference.

$3, 3 + \sqrt{2}, 3 + 2\sqrt{2}, 3 + 3\sqrt{2}$

SOLUTION:

Here the first term $t_1 = 3$

$$t_2 - t_1 = 3 + \sqrt{2} - 3 = \sqrt{2}$$

$$t_3 - t_2 = 3 + 2\sqrt{2} - (3 + \sqrt{2}) = \sqrt{2}$$

$$t_4 - t_3 = 3 + 3\sqrt{2} - (3 + 2\sqrt{2}) = \sqrt{2}$$

The difference between any two consecutive terms is constant.

Ans: The given sequence is an A.P. The common difference is $d = \sqrt{2}$

Q. 3

Write an A.P. whose first term is a & common difference is d , $a = -1.25$, $d = 3$.

SOLUTION:

$$a = t_1 = -1.25,$$

$$t_2 = t_1 + d = -1.25 + 3 = 1.75$$

$$t_3 = t_2 + d = 1.75 + 3 = 4.75,$$

$$t_4 = t_3 + d = 4.75 + 3 = 7.75$$

Ans.:- 1.25, 1.75, 4.75, 7.75 is the required A.P.

Q. 4

Find the first term and common difference for the A.P.

0.6, 0.9, 1.2, 1.5,...

SOLUTION:

Here, $t_1 = 0.6$, $t_2 = 0.9$, $t_3 = 1.2$, $t_4 = 1.5$,...

$$d = t_2 - t_1 = 0.9 - 0.6 = 0.3,$$

$$d = t_3 - t_2 = 1.2 - 0.9 = 0.3,$$

$$d = t_4 - t_3 = 1.5 - 1.2 = 0.3.$$

Ans: The first term $a = 0.6$ and $d = 0.3$

Q. 5

Find the first term and common difference for the A.P.

$$\frac{1}{4}, \frac{3}{4}, \frac{5}{4}, \frac{7}{4}$$

SOLUTION:

$$t_1 = \frac{1}{4}, t_2 = \frac{3}{4}, t_3 = \frac{5}{4}, t_4 = \frac{7}{4}, \dots$$

$$d = t_2 - t_1 = \frac{3}{4} - \frac{1}{4} = \frac{3-1}{4} = \frac{2}{4} = \frac{1}{2}$$

$$d = t_3 - t_2 = \frac{5}{4} - \frac{3}{4} = \frac{5-3}{4} = \frac{2}{4} = \frac{1}{2}$$

$$d = t_4 - t_3 = \frac{7}{4} - \frac{5}{4} = \frac{7-5}{4} = \frac{2}{4} = \frac{1}{2}$$

Ans: The first term $a = \frac{1}{4}$ and $d = \frac{1}{2}$