

SEQUENCES & SERIES (Q 5, PAPER 1)

LESSON NO. 3: ARITHMETIC SEQUENCES I

2005

5 (a) The first term of an arithmetic sequence is 9 and the second term is 13.

(i) Find the common difference.

(ii) Find the third term.

SOLUTION

5 (a)

Arithmetic sequence: 9, 13,...

5 (a) (i)

$$d = \text{Common difference} = \text{Any term} - \text{Previous term}$$

$$d = 13 - 9 = 4$$

5 (a) (ii)

Keep on adding the common difference, 4, to each term to get the next term.

Arithmetic sequence: 9, 13, 17, 21,.....

You can see the third term is 17.

2004

5 (a) The first term of an arithmetic sequence is 40 and the common difference is -5 .

Write down the first five terms of the sequence.

SOLUTION

5 (a)

Start with 40 and keep on taking away 5.

Arithmetic sequence: 40, 35, 30, 25, 20,...

2002

5 (a) Write down the next three terms in each of the following arithmetic sequences

(i) $-10, -8, -6, \dots$

(ii) $4.1, 4.7, 5.3, \dots$

SOLUTION

5 (a) (i)

$$d = \text{Common difference} = \text{Any term} - \text{Previous term}$$

$$d = -8 - (-10) = -8 + 10 = +2$$

Keep on adding on 2 to each term: $-10, -8, -6, -4, -2, 0$

5 (a) (ii)

$$d = 4.7 - 4.1 = 0.6$$

Keep on adding 0.6 on to each term: $4.1, 4.7, 5.3, 5.9, 6.5, 7.1$

1998

5 (a) The first two terms of an arithmetic sequence are 17, 13,...

Find

(i) d , the common difference

(ii) T_7 , the seventh term.

SOLUTION

5 (a) (i)

$$d = 13 - 17 = -4$$

$d = \text{Common difference} = \text{Any term} - \text{Previous term}$

5 (a) (ii)

Keep on adding -4 to each term to generate the next term. Keep going till you get to the seventh term.

Arithmetic sequence: 17, 13, 9, 5, 1, -3 , -7 ,...

The seventh term $T_7 = -7$.