Revision–2021 :Mathematics X

SJ Notes on Focus Area

February 3, 2021

Focus point 1

(This is a simplified special package based on focus area mathematics X in the year 2021 SSLC Examination)

■ The concept arithmetic sequence

1) Write an arithmetic sequence having first term 5 and common difference 3.

2) Look at the sequence of equilateral triangles. The sequence is formed by using matchsticks.

   a) Write the number of matchsticks in each term as a number sequence.
   b) Is this an arithmetic sequence.
   c) If so, what is its common diffrence?

3) a) Write the sequence of numbers ends with 1 or 6 in one's place.
   b) Is this an arithmetic sequence?
   c) If so, what is its largest two digit term?

4) a) Write the sequence of numbers which gives the remainder 2 on dividing by 3.
   b) What is the smallest three digit term of this sequence?

5) a) Write the sequence of numbers 3 more than the multiples of 5.
   b) Is this an arithmetic sequence?What is its common difference?
   c) What is the largest three digit term of this sequence?

6) a) Write the sequence of numbers having 1 in ones place.
   b) Describe this sequence in other words also.
   c) Is this an arithmetic sequence?

7) $\frac{1}{7}, \frac{2}{7}, \frac{3}{7} \cdots$ is a sequence.

   a) The numerators are natural numbers in the order and denominator is 7. Is this an arithmetic sequence?

   b) What is the position of 1 in this sequence?

   c) What is the position of 100 in this sequence?

   d) Is this sequence contain all natural numbers?

8) The sequence $7, 10, \bigcirc, 16, \bigcirc, 22$ is an arithmetic sequence.

   a) What is the common difference of the sequence ?

   b) What are the missing terms in the sequence ?

9) x, y, z are in arithmetic sequence.If $x - y = k(z - x)$ then what is k?

Answers

1) $5, 8, 11, 14 \cdots$

2) a) $3, 5, 7 \cdots$

b) $5 - 3 = 7 - 5 = 9 - 7$. Since common difference exists it is an arithmetic sequence.

c) Common difference is 2

3) a) $1, 6, 11, 16, 21, 26 \cdots$

b) Yes.

c) 96

4) a) $2, 5, 8, 11 \cdots$

b) 101

5) a) $8, 13, 18, 23 \cdots$

b) This is an arithmetic sequence. Common difference $d = 5$

c) 998

6) a) $1, 11, 21, 31 \cdots$

b) This is a squence of numbers 9 less than the multiples of 10.
or
The sequence of numbers which give the remainder 1 on dividing by 10
or
The sequence of numbers 9 less than the multiples of 10.

c) This is an arithmetic sequence.

7) a) $\frac{2}{7} - \frac{1}{7} = \frac{1}{7}$,
$\frac{3}{7} - \frac{2}{7} = \frac{1}{7}$
This is an arithmetic sequence with first term $\frac{1}{7}$ and common difference $\frac{1}{7}$

b) Seventh term $x_7 = \frac{7}{7} = 1$. 7 th term is 1, the first natural number.

c) $x_{700} = \frac{700}{7} = 100$.
700 th term is 100

d) When the numerators are $7, 14, 21, 28 \cdots$ we get all the natural numbers $1, 2, 3 \cdots$.

8) a) $7, 10, \bigcirc, 16, \bigcirc, 22$ is the given arithmetic sequence
$d = 10 - 7 = 3$

b) $7, 10, \boxed{13}, 16, \boxed{19}, 22$

9) Let d be the common difference .
$y - x = d, z - x = -2d$. Therefors $d = k \times -2d, k = \frac{-1}{2}$

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