Work Sheet- 5 for Class- Nine (16.08.2020), Chapter- Thirteen, Exercise- 13.1, Finite Series
Creative Questions:

1. $3 + 6 + 9 + 12 +$ .... **[All B.- 18]**
   a) Find the sum of first 20 terms of natural numbers.
   b) If the sum of n terms of the series is 630 then find the value of n.
   c) Considering the first term of the series as first term and the common deference as common ration then construct a new series and find the sum of first 10 terms of the series.

2. **Sixth and eleventh terms of an arithmetic series are 30 and 55 respectively** **[S.B.- 16]**
   a) Form two equations taking a as first term and d as common difference.
   b) Find the series according to the stem.
   c) If sum of n terms of the series is 6375 then find the value of n.

3. $\log 3 + \log 9 + \log 27 +$ …. **[J.B.- 15]**
   a) What kind of series is it?
   b) Find the 5th and 10th term of this series.
   c) Find the Sum of 1st 12 terms of this series.

4. **The lth term of an arithmetic series is l^2 and k^{th} term is k^2.**
   a) Construct two equations according to the given information of the stem considering a as the first term of the series and d as common difference.
   b) Find the $(l + k)^{th}$ term.
   c) Prove that, summation of first $(l + k)$ terms of the series is $\frac{l + k}{2}(l^2 + k^2 + l + k)$.

5. **General terms of the three sequences are given below:** $\frac{1}{n}, (-1)^{n+1}\frac{n}{n+1}, \frac{n-1}{n+1}$
   a) Write down the 7th term of the second sequence.
   b) Write down the second and the third sequences.
   c) Find the sum of first three terms of the new sequence obtained by adding the general terms of first and second sequences.

6. $x + y + 2 +$ .... **is an arithmetic series whose common difference is** $d, \frac{\sqrt{1+d} + \sqrt{1-d}}{\sqrt{1+d} - \sqrt{1-d}} = 2 + \sqrt{3}.$
   a) From the arithmetic series form an equation in terms of x and y.
   b) Using the given equation show that, $d = \frac{1}{2}$.
   c) Find the sum of first 100 terms of the arithmetic series.