

Class – X

Lesson Plan

Topic: ARITHMETIC PROGRESSION

Brief Description of the lesson: In this lesson, learners will be introduced to the concept of arithmetic progression or AP. They will learn about the general form of an AP, first term, the common difference, nth term of an AP and the sum of the first n terms of an AP.

UN Sustainable Goals to be achieved (if any): Quality Education

Objectives: (put Bloom's level)

I - Specific Objectives

Students will be able to

- 1 Understand the concepts of given pattern as sequence (U)
- 2 Identify if a given series of numbers form an arithmetic progression or AP (U)
- 3 Find the first term and the common difference of a given AP. (K)
- 4 Understand the general term of an A.P (A_n)
- 5 Write the specified term of an A.P. when a, n and d are known (A)
- 6 Derive the formula for the sum of the first n terms of an AP (E)
- 7 Apply the formula to find the sum of the first n terms of an AP.(A)

II - Behavioral Objectives

- 1 Student will be able to visualize and create various patterns.
- 2 Students will be able to calculate the amount they will receive on a particular sum after n number of years. They will develop estimation.

Process / Activities

Activity (to introduce the lesson)

- Concept of sequence will be explained by giving different set of numbers to the students from which they will sort out the numbers with equal difference. **(Prestructural)**

Note: Concept of AP will be introduced with the help of above activity (patterns of number following AP and not in AP) **(Unistructural)**

- To form an AP by own and find their n^{th} term, 10^{th} term and sum of first 10 terms **(Multistructural)**
- One student of class is getting monthly pocket money Rs. 50 in month of June 2019, pocket money increased to Rs. 60 in month of July and Rs. 70 in month of August and so on. Now students will find out how much pocket money he will receive in month of February 2020? **(Extended Abstract)**

Skills (as per subject)

- Problem solving
- Critical Thinking
- Reasoning
- Visualization
- Estimation

Activity / Assignment (to assess learning)

- To verify that the sum of first n natural numbers is $\frac{n(n+1)}{2}$, i.e. $\Sigma n = \frac{n(n+1)}{2}$, by graphical method.

- To verify that the sum of first n odd natural numbers is n^2 , by graphical method.

Expected Learning Outcome-

Students would be able to:

- 1 Understand the concepts of given pattern as sequence .
- 2 Identify if a given series of numbers form an arithmetic progression or AP .
- 3 Find the first term and the common difference of a given AP.
- 4 Understand the general term of an A.P.
- 5 Write the specified term of an A.P. when a , n and d are known.
- 6 Derive the formula for the sum of the first n terms of an AP.
- 7 Apply the formula to find the sum of the first n terms of an AP.
- 8 Represent situations from daily life by using progressions.

Assessment: (SOLO)

1. Find next three terms the sequence: 2, 8, 14, _____ **(Prestructural)**

2. Write first four terms of the AP, when the first term a and the common difference d is given as:

(i) $a = 10$, $d = 10$ (ii) $a = -2$, $d = 0$

(Unistructural)

3. Which term of the AP : 21, 18, 15, . . . is -81 ? Also, is any term 0? Give reason for your answer

(Multistructural)

4. A sum of Rs 1000 is invested at 8% simple interest per year. Calculate the interest at the end of each year. Do these interests form an AP? If so, find the interest at the end of 30 years making use of this fact.

(Relational)

5. Reena got selected for a job. She has been offered the job with a starting monthly salary of Rs 8000, with an annual increment of Rs 500. What would be her monthly salary for the fifth year?

(Extended Abstract)