

CLASS – X
LESSON PLAN
CHAPTER-5: ARITHMETIC PROGRESSIONS

Unit	Algebra (Chapter 5: Arithmetic Progressions)
Class Transaction	Total: 7 periods (approx. 40 min each)
Pre-requisite for the course	This lesson requires 1. Basic analysis and an eye for observing patterns in nature 2. Knowledge of basic arithmetic operations
Assessment of qualifying knowledge	1. Written test 2. Lab activity 3. HW notebook
Objective	To make students observe and understand certain things in nature which follow a certain pattern and in particular the series in which succeeding terms are obtained by adding a fixed number to the preceding term (Character building).
Learning Outcomes	<u>KNOWLEDGE</u>- Students will know and understand 1. How to recognize an arithmetic progression. 2. How to find the given terms and sum of the given Arithmetic Progression. 3. Methods to solve a given application based question through real life situations. <u>SKILLS</u>- Students will be able to 1. Identify Arithmetic Progressions 2. Apply the knowledge to everyday situations and make calculations faster (Application based critical thinking)
Transaction Methodology (The teacher can use the mentioned techniques, wherever applicable, and can use any other too.)	Transaction would proceed in the following manner- Strategy Used: Inductive and deductive reasoning, Brainstorming, graphic organiser <i>Brain Storming</i>-The class would start with a discussion on what the students have already learnt in the previous classes and hence what is it that they would learn now. They would also be told the significance of the topic that they would be studying. <i>Introduction of the topic</i>- ppt and Digital Content would be shared <i>Guided practice followed by Independent Practice</i>- NCERT questions to be discussed in the classroom. Techniques to be used: Numbered Heads Daily Practice Problem

	MCQ Peer Assessment Case Studies Lab Activities Any Other
Resources	Text Book: NCERT text book for Mathematics Reference Book CBSE Exemplar
Self Study, Home Work, Assignments	Independent Practice: Students would do some questions from NCERT and Exemplar in their H.W notebooks. HW notebooks to be marked as per the given plan: <i>Assessment Parameters:</i> The total marks for the activity is 5 marks On time submission.....1 mark Presentation/ Neatness.....1 mark Content.....3 marks It is also advised that the students come to the class with proper background knowledge of the topic under discussion. They can refer to the resources stated above.
Assessments	3 UNIT TESTS (20, 30, 30)80 Marks MID TERM EXAMINATION80 Marks HALF YEARLY EXAMINATION 80 Marks PRE BOARD-I EXAMINATION 80 Marks PRE BOARD-II EXAMINATION 80 Marks ANNUAL BOARD EXAMINATION 80 Marks PERIODIC TEST Average of the best two tests to be taken that will have a weightage of 10 marks. Best 2 Tests out of: Units tests, Midterm examination, Half Yearly examination. INTERNAL ASSESSMENT20 Marks - Periodical Test 10 Marks - Note Book Submission 05 Marks - Lab Practical 05 Marks
Addressing Classroom Diversity	Due to various social backgrounds and multiple intelligences, the classroom might be a diverse arena. The following techniques can be used for various groups: <i>For gifted students:</i> - Hight order thinking questions from Exemplar - Encouragement for referring other resources

	<i>For weak students:</i> • Extra help to be provided • Provide grade-up classes <i>For differently abled students:</i> • Ignore spelling mistakes and formulae, if not written • Call parents at regular intervals • Provide grade-up classes
Marks	The weightage would be given by CBSE.

DAY	ONE
Objective	Generate and describe patterns using symbols and mathematical expressions
Assessment of qualifying knowledge	Different number series will be given as an assignment to think critically and analyse the patterns and series given
Learning Outcomes	<u>KNOWLEDGE</u>- Students will know and identify the pattern involved to get total number of terms relationship establishment. <u>SKILLS and COMPETENCIES</u> Students will be able to • Create different patterns. • To find the pattern obtained (critical thinking).
Transaction Methodology (The teacher can use the mentioned techniques, wherever applicable, and can use any other too.)	Transaction would proceed in the following manner- Strategy Used: Brainstorming Anticipatory Set: 10 min Facilitator will ask few questions to introduce the topic • Have you observed the petals of sunflower or holes of honey comb? • Do you find any particular pattern? Discussion of topic through Collaborative Learning: 15 min <u>Inquiry based learning (Critical Thinking and Problem Solving)</u> Students would be asked to write different real life situations in which they are supposed to analyse the number of triangles involved. The facilitator would take rounds and ensure that each learner is engaged. Guided practice: 10 min The students will solve different patterns and series, in their notebook in the class with the help of their facilitator. The facilitator would take rounds and help the students in solving the questions. Independent Practice: Students will go through the solved examples before Ex 5.1 of NCERT text book. Closure: 5 min A short oral test would be taken to check proper assimilation of the topic discussed.
Resources	Text Book: NCERT text book for Mathematics Reference Book CBSE Exemplar
Self Study, Home Work, Assignments	Independent Practice: Students would do some series in their H.W. notebooks.
Assessments	Oral Test (5 minutes)
DAY	TWO
Objective	Students will be able to analyse patterns in real life in different creative aspects of life and will be able to recognize number patterns.
Assessment of qualifying knowledge	Different number series will be given as an assignment to think critically and analyse whether it is arithmetic progression or not.

Learning Outcomes	<u>KNOWLEDGE</u>- Students will know and identify the pattern involved to get the full series.. <u>SKILLS and COMPETENCIES</u> Students will be able to • Create different patterns.
Transaction Methodology (The teacher can use the mentioned techniques, wherever applicable, and can use any other too.)	Transaction would proceed in the following manner- Strategy Used: Brainstorming Recapitulation: 5 min Oral test on the previous concept would be taken up. Discussion of topic through Collaborative Learning: 15 min <u>Inquiry based learning (Critical Thinking and Problem Solving)</u> Students would be asked to write different real life situations in which they are supposed to analyse the pattern. The facilitator would take rounds and ensure that each learner is engaged. Guided practice: 10 min The students will solve the questions from NCERT book, Ex 5.1 in their notebook in the class with the help of their facilitator. The facilitator would take rounds and help the students in solving the questions. Independent Practice: Students will go through the solved examples before Ex 5.1 of NCERT text book. Closure: 5 min A short oral test would be taken to check proper assimilation of the topic discussed.
Resources	Text Book: NCERT text book for Mathematics Reference Book CBSE Exemplar
Self Study, Home Work, Assignments	Independent Practice: Students would solve some questions from NCERT in their H.W. notebooks.
Assessments	Oral Test (5 minutes)
DAY	THREE
Objective	Students will be able to analyse patterns in real life in different creative aspects of life and will be able to recognize number patterns in ascending and descending order keeping a common difference in between.
Assessment of qualifying knowledge	Different number series will be given as an assignment to think critically and analyse whether it is arithmetic progression or not.
Learning Outcomes	<u>KNOWLEDGE</u>- Students will know and identify the pattern involved to get arithmetic progression and to get their first term, common difference and total number of terms relationship establishment. <u>SKILLS and COMPETENCIES</u> Students will be able to • Create different arithmetic patterns.

	To find nth term of the pattern obtained(critical thinking).
Transaction Methodology (The teacher can use the mentioned techniques, wherever applicable, and can use any other too.)	Transaction would proceed in the following manner- Strategy Used: Brainstorming Recapitulation: 5 min Oral test on the previous concept would be taken up. Discussion of topic through Collaborative Learning: 15 min <u>Inquiry based learning</u> (Critical Thinking and Problem Solving) Students would be asked to write different real life situations in which they are supposed to analyse the pattern. The facilitator would take rounds and ensure that each learner is engaged. Guided practice: 10 min The students will solve the questions from NCERT book, solved examples before Ex 5.2 in their notebook in the class with the help of their facilitator. The facilitator would take rounds and help the students in solving the questions. Independent Practice: Students will go through the solved examples before Ex 5.2 of NCERT text book. Closure: 5 min A short oral test would be taken to check proper assimilation of the topic discussed.
Resources	Text Book: NCERT text book for Mathematics Reference Book CBSE Exemplar
Self Study, Home Work, Assignments	Independent Practice: Students would solve some questions from NCERT in their H.W. notebooks.
Assessments	Oral Test (5 minutes)
DAY	FOUR
Objective	To solve the questions of Ex- 5.2 based on nth term of an arithmetic Progression with 100% accuracy
Assessment of qualifying knowledge	Written questions involving formula of nth term.
Learning Outcomes	<u>KNOWLEDGE</u> - Students will develop the ability to understand the relationship between first term, nth term, common difference and nth term. <u>SKILLS and COMPETENCIES</u> - Students would be able to critically apply the concepts in given situations and collaboratively realize the fact that if any of the three values are given fourth one can be calculated.
Transaction Methodology (The teacher can use the mentioned techniques, wherever applicable, and can use any other too.)	Strategies Used : Think pair and Share, Inductive and Deductive learning Transaction would proceed in the following manner Recapitulation: 5 min Oral test on the previous concept would be taken up. Discussion of topic through Collaborative Learning: 15 min (Critical thinking) Exercise 5.2 would be discussed and students would solve different questions per group and then the questions would be crosschecked. Digital content would be used. The facilitator would take rounds and help students with their doubts. Guided Practice: 15 min The students will solve the questions from NCERT book of

	Exercise – 5.2 in their notebook in the class with the help of their teacher. The teacher would ensure that each student tries to be independent at the work as well as be under the teacher's guidance. Independent Practice: Students will complete the remaining HW parts given in Exercise 5.2 in their Math HW notebook. Closure: 5 min A short oral test would be taken to check proper assimilation of the topic discussed.
Resources	Text Book: NCERT text book for Mathematics Reference Book CBSE Exemplar
Self Study, Home Work, Assignments	Independent Practice: Students would do some questions in their H.W. notebooks.
Assessments	Written test (5 minutes)
DAY	FIVE
Objective	Students will learn to find the sum of n terms of an AP by performing one lab activity in a collaborative manner.
Assessment of qualifying knowledge	Problem solving approach will be enhanced to give daily life situations in the form of a pattern.
Learning Outcomes	<u>KNOWLEDGE</u>- Students will develop the ability to analyze the number of terms and will be able to find their sum. <u>SKILLS and COMPETENCIES</u> - Students will think and convert the situation in mathematical pattern in a creative manner.
Transaction Methodology (The teacher can use the mentioned techniques, wherever applicable, and can use any other too.)	Transaction would proceed in the following manner- Strategy Used: Inductive and deductive reasoning, graphic organiser Recapitulation: 5 min Oral test on the previous concept would be taken up. Discussion of topic through Collaborative Learning: 15 min (Critical thinking) Questions will be discussed and students will be able to solve different questions per group and then the questions will be crosschecked. Students will be able to generalise and explain patterns and relationships in algebraic form. Guided Practice: 15 min The students will solve the questions generate rules/ formulae from those patterns with the help of their teacher. The teacher will ensure that each student tries to be independent at the work as well as be under the teacher's guidance. Independent Practice: Students will investigate patterns among these sequences – use patterns to continue the sequence. Closure: 5 min A short oral test would be taken to check proper assimilation of the topic discussed.
Resources	Text Book: NCERT text book for Mathematics Reference Book CBSE Exemplar

Self Study, Home Work, Assignments	Independent Practice: Students would do some questions in their H.W. notebooks.
Assessments	Written test (5 minutes)
DAY	SIX
Objective	To complete the problems given in Ex- 5.3 with 100% accuracy.
Assessment of qualifying knowledge	Problem solving approach will be enhanced to give daily life situations in the form of a pattern.
Learning Outcomes	<u>KNOWLEDGE</u> - Students will develop the ability to analyze the number of terms and will be able to find their sum. <u>SKILLS and COMPETENCIES</u> - Students will think and convert the situation in mathematical pattern in a creative manner .
Transaction Methodology (The teacher can use the mentioned techniques, wherever applicable, and can use any other too.)	Transaction would proceed in the following manner- Strategy Used: Inductive and deductive reasoning, graphic organiser Recapitulation: 5 min Oral test on the previous concept would be taken up. Discussion of topic through Collaborative Learning: 15 min (Critical thinking) NCERT Exercise questions will be discussed and students will be able to solve different questions per group and then the questions will be crosschecked. Digital content will be used. The facilitator will take rounds and help students with their doubts. Guided Practice: 15 min The students will solve the questions from NCERT book of Exercise 5.3 in their notebook in the class with the help of their teacher. The teacher will ensure that each student tries to be independent at the work as well as be under the teacher's guidance. Independent Practice: Students will complete the remaining HW parts of Exercise 5.3 in their Math HW notebook. Closure: 5 min A short oral test would be taken to check proper assimilation of the topic discussed.
Resources	Text Book: NCERT text book for Mathematics Reference Book CBSE Exemplar
Self Study, Home Work, Assignments	Independent Practice: Students would do some questions in their H.W. notebooks.
Assessments	Written test (5 minutes)
DAY	SEVEN
Objective	To solve the problems of Arithmetic Progression involving Natural Numbers.
Assessment of qualifying knowledge	Problem solving approach will be enhanced to give daily life situations in the form of a pattern.
Learning Outcomes	<u>KNOWLEDGE</u> - Students will develop the ability to analyze the number of terms and will be able to find their sum.

	<u>SKILLS and COMPETENCIES</u> - <i>Students will think and convert the situation in mathematical pattern in a creative manner.</i>
Transaction Methodology (The teacher can use the mentioned techniques, wherever applicable, and can use any other too.)	Transaction would proceed in the following manner- Strategy Used: Inductive and deductive reasoning, graphic organiser Recapitulation: <u>5 min</u> Oral test on the previous concept would be taken up. Discussion of topic through Collaborative Learning: <u>15 min</u> (Critical thinking) Exemplar questions will be discussed and students will be able to solve different questions per group and then the questions will be crosschecked. Digital content will be used. The facilitator will take rounds and help students with their doubts. Guided Practice: <u>15 min</u> The students will solve the questions from Exemplar of special series of Arithmetic Progression in their notebook in the class with the help of their teacher. The teacher will ensure that each student tries to be independent at the work as well as be under the teacher's guidance. Independent Practice: Students will solve remaining questions of special series of Arithmetic Progression in their Math HW notebook. Closure: <u>5 min</u> A short oral test would be taken to check proper assimilation of the topic discussed.
Resources	Text Book: NCERT text book for Mathematics Reference Book CBSE Exemplar
Self Study, Home Work, Assignments	Independent Practice: Students would do some questions in their H.W. notebooks.
Assessments	Written test (5 minutes)