

CLASS – VII
LESSON PLAN
CHAPTER-12: ALGEBRAIC EXPRESSIONS

Unit	Algebraic expressions (Chapter 12: Algebraic expressions and identities)
Class Transaction	Total: 8 periods (approx. 40 min each)
Pre-requisite for the course	This lesson requires 1. Basic knowledge of variables. 2. Knowledge of addition and subtraction in variables.
Assessment of qualifying knowledge	1. Written test 2. Lab activity 3. HW notebook
Objective	Students would be able to explain the concept of a polynomial and its kinds, add and subtract the polynomials, multiply a monomial by a monomial, Multiply a monomial by a polynomial, multiply a polynomial by a polynomial, thereby inculcating competencies like collaboration, critical thinking and creativity
Learning Outcomes	<u>KNOWLEDGE</u> - <i>Students will develop the ability to understand</i> 1. Different types of polynomials. 2. The method of adding, subtracting, multiplying the polynomials. <u>SKILLS and COMPETENCIES</u> - <i>Students would be able to</i> 1. Develop the ability to analyze and differentiate between the different types of polynomials. 2. Perform skills like multiplication, substitution of values in polynomials and develop critical thinking and collaboration in the process.
Transaction Methodology (The teacher can use the mentioned techniques, wherever applicable, and can use any other too.)	Transaction would proceed in the following manner- <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: Quiz 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 the given questions in their H.W. notebooks. H.W. 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	Through Pen Paper Test Students will be assessed creatively and critically <table> <tr> <td>4 UNIT TESTS</td> <td>20 Marks each</td> </tr> <tr> <td>HALF YEARLY EXAMINATION</td> <td>80 Marks</td> </tr> <tr> <td>ANNUAL BOARD EXAMINATION</td> <td>80 Marks</td> </tr> </table> INTERNAL ASSESSMENT 10 Marks - Note Book Submission 05 Marks - Lab Practical (Subject Enrichment) 05 Marks Through lab Practical Students are assessed for Collaboration, Character building, Character Building	4 UNIT TESTS	20 Marks each	HALF YEARLY EXAMINATION	80 Marks	ANNUAL BOARD EXAMINATION	80 Marks
4 UNIT TESTS	20 Marks each						
HALF YEARLY EXAMINATION	80 Marks						
ANNUAL BOARD EXAMINATION	80 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> - Encouragement for referring other resources <i>For weak students:</i> - Buddy 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 • Encourage and motivate them at every level.	
Marks	The weightage would be given by CBSE.	
Assessment	1.	Add the following. $-7mn + 5$, $12mn + 2$, $9mn - 8$, $-2mn - 3$
	2.	Subtract the first expression from the second. $a - b$, $b - a$
	3.	Simplify. $-3ab - 2ac + 4ab$
	4.	Simplify : $8x - 9y - 3xy - 2y - x + 4xy$
	5.	Find The value of expression $2a^2 + 2b^2 - ab$ for $a=2$ and $b=1$.
	6.	Find the sum of xy , $x+y$ and $y+xy$.

DAY	ONE
Objective	Understand What are monomials, binomials, polynomials, terms coefficients
Assessment of qualifying knowledge	Quiz and knowledge testing on types of polynomials and identifying coefficients.
Learning Outcomes	<u>KNOWLEDGE</u>- Students will know and identify types of polynomials. <u>SKILLS and COMPETENCIES</u> Students would be able to Reason effectively and critically and write down the required coefficients as asked in the question for the given terms of the polynomials.
Transaction Methodology (The teacher can use the mentioned techniques, wherever applicable, and can use any other too.)	Transaction would proceed in the following manner- Anticipatory Set: 10 min Facilitator will ask few questions to introduce the topic • What is an expression? • What is a term? • What is an expression with one or two or three terms? • What is a polynomial? • What is a coefficient? Discussion of topic through Collaborative Learning: 15 min <u>Inquiry based learning</u> (Critical Thinking and Problem Solving) Through question and answer students will revise algebraic expressions and their properties. Students will explain the meaning of terms, coefficients, monomials, binomials, polynomials Guided practice: 10 min The students will solve the questions from NCERT book, solved examples before Ex 12.1 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 12.1 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 the given questions in their H.W from their course book.
Assessments	Oral Test (5 minutes)
DAY	TWO
Objective	Students will be able to identify the difference between various types

	of polynomials and would also be able to perform operations of addition and subtraction in collaborative manner .
Assessment of qualifying knowledge	Written questions on representing integers as rational numbers and representing on number line.
Learning Outcomes	<u>KNOWLEDGE</u>- <i>Students will know and Demonstrate</i> the ability to identify like terms of given expressions. <u>SKILLS and COMPETENCIES</u>- <i>Students will be able to differentiate and classify</i> various types of polynomials and perform various operations, in collaboration with each other.
Transaction Methodology (The teacher can use the mentioned techniques, wherever applicable, and can use any other too.)	Transaction would proceed in the following manner- Recapitulation: 5 min Brainstorming on the previously taught concept would be done. Discussion of topic through Collaborative Learning: 15 min (Critical Thinking, Collaboration) Students will be given different expressions and will be asked to identify like terms in then and then perform the addition and subtraction of those expressions. Guided practice: 15 min The students, with the help of the facilitator, will solve the questions from NCERT book of Exercise – 12.1, Q3(ii),(iv) 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 of Exercise 12.1 Q3 in their Math HW notebook. Students who would difficulty in solving the problem would solve with the help of their buddies. 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 the given questions in their H.W.from their course book.
Assessments	Oral quiz (5 minutes)
DAY	THREE
Objective	To solve the questions of Ex- 12.1 based on operations on algebraic expressions.
Assessment of qualifying knowledge	Written questions on performing addition and subtraction on algebraic expressions.

Learning Outcomes	KNOWLEDGE- Students will develop the ability to understand the addition of expressions using column method. SKILLS and COMPETENCIES - Students would be able to critically apply the concepts in given situations and collaboratively perform the addition operations on given expressions.
Transaction Methodology (The teacher can use the mentioned techniques, wherever applicable, and can use any other too.)	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) Examples related to exercise 12.1 Q4.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 – 12.1, Q4(a). in their notebook in the class with the help of their teacher. The teacher would ensure that 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 12.1 Q4. 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 the given questions in their H.W. notebooks from their course book.
Assessments	MCQ (5 minutes)
DAY	FOUR
Objective	To understand irrational numbers and difference between rationals and irrationals
Assessment of qualifying knowledge	Written test on identifying whether the given number is rational or irrational.
Learning Outcomes	KNOWLEDGE- Students will develop the ability to understand the subtraction of expressions using column method SKILLS and COMPETENCIES - Students would be able to critically apply the concepts in given situations and collaboratively perform the subtraction operations on given expressions
Transaction Methodology	Transaction would proceed in the following manner- Recapitulation: 5 min

(The teacher can use the mentioned techniques, wherever applicable, and can use any other too.)	Quick revision on the previous concept would be taken up. Discussion of topic through Collaborative Learning: 15 min (Creativity, Collaboration) Examples related to exercise 12.1 Q4. 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 – 12.1, Q4(c). 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 of Exercise 12.1 Q4. in their Math HW notebook. Closure: 5 min Discussion of muddiest point. .
Resources	Text Book: NCERT text book for Mathematics Reference Book CBSE Exemplar
Self Study, Home Work, Assignments	Independent Practice: Students would do the given questions in their H.W. notebook from their course book..
Assessments	Written test (5 minutes)
DAY	FIVE
Objective	To understand the multiplication of monomials with monomials.
Assessment of qualifying knowledge	MCQ on multiplications of monomials.
Learning Outcomes	<u>KNOWLEDGE- Design</u> the ways of addition and subtraction of algebraic expressions. <u>SKILLS and COMPETENCIES</u> - <i>Students would be able to</i> Comprehend that powers of variables add up when we multiply two monomials, through collaborative leaning process.
Transaction Methodology (The teacher can use the mentioned techniques, wherever applicable, and can use any other too.)	Transaction would proceed in the following manner- Recapitulation: 5 min Quick revision on the previous concept would be taken up. Discussion of topic through Collaborative Learning: 15 min (Critical Thinking, Collaboration) Students will be taught how a monomial is multiplies with another given monomial. This would be discussed in detail with vivid examples. Guided Practice: 15 min The students will solve the questions from NCERT book, solved examples before Ex 12.2 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 solve various multiplication questions of multiplication of monomials. Closure: 5 min Discussion of muddiest point. .
Resources	Text Book: NCERT text book for Mathematics Reference Book CBSE Exemplar
Self Study, Home Work, Assignments	Independent Practice: Students would do the given questions in their H.W. notebooks from their course book.
Assessments	MCQ (5 minutes)
DAY	SIX
Objective	To deepen the understanding of monomial with a monomial and binomial too.
Assessment of qualifying knowledge	Written test on performing multiplication on monomials.
Learning Outcomes	<u>KNOWLEDGE</u>- <i>Students will know and understand the process of multiplication among monomials.</i> <u>SKILLS and COMPETENCIES</u> - <i>Students would be able to</i> 1. Apply the given knowledge with 100 % accuracy 2. Creatively form questions related to the concept and also solve them.
Transaction Methodology (The teacher can use the mentioned techniques, wherever applicable, and can use any other too.)	Transaction would proceed in the following manner- Recapitulation: 5 min Oral test would be taken. Discussion of topic through Collaborative Learning: 15 min (Critical Thinking) How to multiply various monomials. Guided Practice: 15 min The students will solve the questions from NCERT book of Exercise – 12.2 in their notebook in the class with the help of their facilitator. Independent Practice: Students will complete the remaining HW parts of Exercise 9.2 in their Math HW notebook. Closure: 5 min Summarization, preferably by a student, 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 the given questions in their H.W. notebooks

Assessments	Written test (5 minutes)
DAY	SEVEN
Objective	To learn the multiplication of a monomial with a polynomial
Assessment of qualifying knowledge	Written test on multiplication of monomial with different types of polynomials.
Learning Outcomes	<u>KNOWLEDGE</u>- <i>Students will know and understand</i> 1. That a monomial can be multiplied with a polynomial by following a certain rule. <u>SKILLS and COMPETENCIES</u> - <i>Students would be able to</i> 1. Multiply the monomial with a polynomial.
Transaction Methodology (The teacher can use the mentioned techniques, wherever applicable, and can use any other too.)	Transaction would proceed in the following manner- Recapitulation: 5 min Warming session would be taken. Discussion of topic through Collaborative Learning: 15 min (Critical thinking, communication) Solved examples from the book would be taken up. Guided Practice: 20 min The students will solve the questions from NCERT book of Exercise – 12.3Q3(ii),(iv) in their notebook in the class with the help of their facilitator. The facilitator would explain the questions from Ex 12.3 with a collaborative approach towards them. Independent Practice: Students will complete the remaining HW parts of Exercise 12.2 Q3 in their Math HW notebook. Closure: 5 min Summarization, preferably by a student, 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 the given questions in their H.W. notebooks from their course book.
Assessments	Written test (5 minutes)
DAY	EIGHT
Objective	To learn multiplication of different polynomials.
Assessment of qualifying knowledge	Written test on multiplication of polynomials.
Learning Outcomes	<u>KNOWLEDGE</u>- <i>Students will know and understand</i> 1. How to multiply a polynomial with another. <u>SKILLS and COMPETENCIES</u> - <i>Students would be able to</i>

	1. Critically visualize the multiplication process.
Transaction Methodology (The teacher can use the mentioned techniques, wherever applicable, and can use any other too.)	Transaction would proceed in the following manner- Recapitulation: <u>5 min</u> One-minute test would be taken. Discussion of topic through Collaborative Learning: <u>15 min</u> (Creativity) Step by step discussion on multiplication of one polynomial with another. Digital content would be used. Guided Practice: <u>15 min</u> The students will solve the questions from NCERT book of Exercise – 12.3Q4,Q5 in their notebook in the class with the help of their facilitator. The facilitator would explain the questions from Ex 12.3 with a collaborative approach towards them. Independent Practice: Students will complete the remaining HW parts given in of Exercise 12.3 Q4,Q5 in their Math HW notebook. Closure: <u>5 min</u> Summarization, preferably by a student, 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 the given questions in their H.W. notebook from their course book.
Assessments	Written test (5 minutes)