LESSON PLAN 1

CLASS : 7 **SUBJECT : MATHEMATICS** **TEACHER'S NAME :**

NAME OF THE UNIT	SUB-TOPICS	NO OF PERIODS REQUIRED			Time line for teaching	
		Teaching	Practice	TOTAL	From	To
INTEGERS	1.1 PROPERTIES OF ADDITION & SUBTRACTION OF INTEGERS 1.1.1 CLOSURE UNDER ADDITION 1.1.2 CLOSURE UNDER SUBTRACTION 1.1.3 COMMUTATIVE PREOPERTY 1.1.4 ASSOCIATIVE PROPERTY 1.1.5 ADDITIVE IDENTITY	1	3	4		
	1.2 MULTIPLICATION OF INTEGERS 1.2.1 MULTIPLICATION OF A POSITIVE AND A NEGATIVE INTEGER 1.2.2 MULTIPLICATION OF TWO NEGATIVE INTEGERS	1	3	4		
	1.3 PROPERTIES OF MULTIPLICATION OF INTEGERS 1.3.1 CLOSURE UNDER MULTIPLICATION 1.3.2 COMMUTATIVITY OF MULTIPLICATION 1.3.3 MULTIPLICATION BY ZERO 1.3.4 MULTIPLICATIVE IDENTITY 1.3.5 ASSOCIATIVITY FOR MULTIPLICATION 1.3.6 DISTRIBUTIVE PROPERTY	1	3	4		
	1.4 DIVISION OF INTEGERS 1.5 PROPERTIES OF DIVISION OF INTEGERS	1	3	4		
	TOTAL	4	12	16		

PRE-REQUISITES	KEY CONEPTS	KEY VOCABULARY	
	Every Pupil is expected to have basic knowledge in # Natural Numbers, Whole Numbers and Integers # Addition and Subtraction of Integers # four basic operations like +,-,x and ÷ # Properties of Closure,Commutative, Associative,Identity	# Integers # Natural Numbers # Whole Numbers # Integers # Number line	# closure # Commutativity # Associativity # Identity # Distributivity

Learning Outcomes

After Completion of this lesson every student will be able to

 # identify the right property utilized in simiplifying integerial expressions
 # add, subtract, multiply and divide integers with ease.
 # utilize the right property in simplification of integerial expressions under various operations
 # recognize the significance and appreciate the importance of integerial operations in real life situations.

Teaching Learning Process

MIND MAPPING

VARIOUS PROPERTIES OF INTEGERS

OPERATION / PROPERTY	ADDITION	SUBTRACTION	MULTIPLICATION	DIVISION
CLOSURE	YES	YES	YES	NO
COMMUTATIVITY	YES	NO	YES	NO
ASSOCIATIVITY	YES	NO	YES	NO
IDENTITY	YES – 0	NO	YES – 1	NO

DISTRIBUTIVITY OF MULTIPLICTION OVER ADDITION IS SATISFIED IN THE SET OF INTEGERS

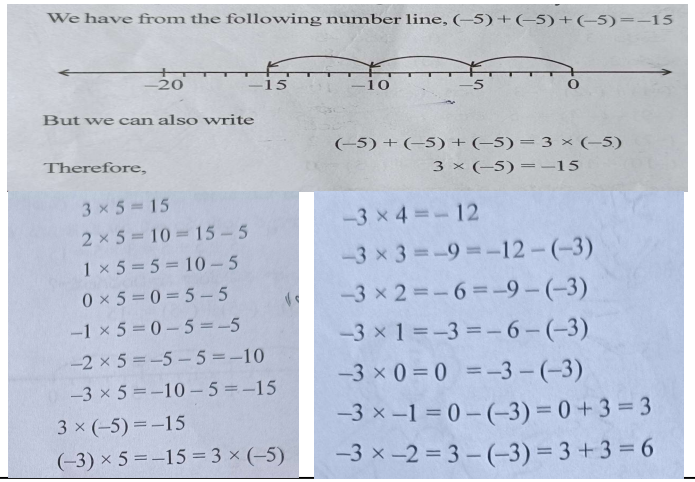
Experience & Reflection

Pupils will recollect their knowledge on Integers and their usage that they were acquainted with in their previous class and will reflect the knowledge here in exploring their properties under various operations

Students will experience the usage of integers in real life situations.

TEACHING PERIOD : 1	PROPERTIES OF ADDITION & SUBTRACTION OF INTEGERS,CLOSURE UNDER ADDITION,CLOSURE UNDER SUBTRACTION,COMMUTATIVE PREOPERTY,ASSOCIATIVE PROPERTY,ADDITIVE IDENTITY		
CONCEPTS/STEPS	**TEACHER ACTIVITY (I DO)**	**GROUP ACTIVITY (WE DO)**	**INDIVIDUAL ACTIVITY (YOU DO)**
KEY WORDS & PRE REQUISITES	Brain storming session invoving children with pre-requisites vocabulary and concepts related to previous knowledge. Introduction of new vocabulary and key words associated with the concept # INTEGERS # PROPERTIES # ADDITION # MULTIPLICATION # SUBTRACTION # DIVISION # CLOSURE # COMMUTATIVITY # ASSOCIATIVITY # IDENTITY	* Students read the pre-requisites and answer the questions to the teacher (whole class activity)	Every Pupil will read and write the key words in their note books
MIND MAPPING	Teacher writes the key word " INTEGERS" on the black board and will elict its other related words through questioning and will draw pupils' attention towards key concepts in the lesson	Hetrogeneous groups are created. One group will read the words and other	Pupils individually read the keywords associated with Integers
CONCEPTUAL UNDERSTANDING	Teacher presents different properties of integers under Addition through an activity involving children in Inductive manner from a few concrete examples to a generalized statement.		
LEARNING ACTIVITY	Teacher divides children into Hetrogeneous groups and will give different integer numbers to each group and asks children to operate them with addition/subtraction in different orders and check what were the results. Finally Teacher draws inferences from children themselves that Set of Integers is Closed, Commutative, Assoicative under Addition and has an Identity too that is "0" . Integers are closed under subtraction but not commutative ,associative under subtraction and even has no identity. -2 + 5 = -3 here -2,5 $\in$ Z and -3 $\in$ Z ; like this for any two integers a,b we have a+b is also an integer. Hence Integers are closed under addition. -3 -(-4) = +1 here -3,-4 $\in$ Z and +1 $\in$ Z ; like this for any two integers a,b we have a-b is also an integer. Hence Integers are closed under subtraction. -2 + 5 = -3 = 5+(-2) like this for any two integers a,b we have a+b is also an integer. Hence Integers are commutative under addition. -2 -(-5) = 3≠ -5-(-2)= -3 here for any two integers a,b we have a-b is not always equal to b-a. Hence Integers are not commutative under subtraction. In the Same fashion teacher introduces associativity and identity also	Hetrogeneous groups are formed to participate in the activity and each group participates in the activity actively and learn the properties	Each student in the group participates in the activity and learns the properties on integers
SUMMARY	Teacher writes the summary of the concept in a tabular form and asks children to note and read	pupils will note down and read the summary in groups	every individual reads the summary and notes it down
ASSESSMENT	Teacher asks children to solve the sums of try these section of pg.no: 8 along with example sums	every group will do the sums by discussion among each other	every individual solves the sums on their own

PRACTICE PERIOD: 1,2,3	PROPERTIES OF ADDITION & SUBTRACTION OF INTEGERS,CLOSURE UNDER ADDITION,CLOSURE UNDER SUBTRACTION,COMMUTATIVE PREOPERTY,ASSOCIATIVE PROPERTY,ADDITIVE IDENTITY		
CONCEPTS/STEPS	**TEACHER ACTIVITY (I DO)**	**GROUP ACTIVITY (WE DO)**	**INDIVIDUAL ACTIVITY (YOU DO)**
KEY WORDS READING	Teacher writes the key words from previous class's teaching period and asks children to read and write them in note books # INTEGERS # PROPERTIES # ADDITION # MULTIPLICATION # SUBTRACTION # DIVISION # CLOSURE # COMMUTATIVITY # ASSOCIATIVITY # IDENTITY	Whole class activity : one child comes to the board and reads the key words loudly and the remaining class follows.	Every child comes to the board and reads the key words and notes them down in their note books
SIMILAR LINES READING	Teacher writes some expressions and writes the propery involved in those expressions and asks children to do some more -9 + (-4) = -13 closure property under addition 8 + (-5) = (-5) + 8 commutative property under addition (3+(-5))+(-4) = 3+ ((-5)+(-4)) associative property under addition	Each group will read the similar lines and will frame some more by discussion	Every Individual prepares their own similar lines using the lines prepared by the teacher
SUMMARY/ SYNOPSIS	Teacheronce again writes important key words and tabulates different properties of integers under addition and subtraction and asks children to read,note down and practice.	pupils will note down and read the summary in groups	every individual spells and reads the summary and notes it down
WRITING/ EDITING	Teacher guides children in doing sums of exercise 1.1 on their own and checks their writings	One group will check the writings of the other and vice versa	Slow learners are focused and teacher will ascertain that every individual learns the concept

TEACHING PERIOD : 2	MULTIPLICATION OF INTEGERS,MULTIPLICATION OF A POSITIVE AND A NEGATIVE INTEGER, MULTIPLICATION OF TWO NEGATIVE INTEGERS		
CONCEPTS/STEPS	**TEACHER ACTIVITY (I DO)**	**GROUP ACTIVITY (WE DO)**	**INDIVIDUAL ACTIVITY (YOU DO)**
KEY WORDS	Brain storming session invoving children with key words * pattern * number line * multiplication * negative *positive	* Students read the keywords answer the questions to the teacher (whole class activity)	Every Pupil will read and write the key words in their note books
CONCEPTUAL UNDERSTANDING	Teacher demonstrates the concept of (i) multiplicatiof a positive and a negative integer first on a number line and using pattern method (ii) multiplication of two negative integers using pattern method 	puips are divided into hetrogenous groups and given different number pairs to multiply using number line and pattern method by discussion	Each student in the group participates in the activity and learns the process of multiplication of integers
SUMMARY	Teacher once again writes important key words and step wise procedure adopted in multiplication of integers and asks children to note down and adopt.	Pupils will note down and read the summary in groups	Every individual reads the summary and notes it down and adopts the procedure
ASSESSMENT	Teacher gives some questions from Try These sections of pg no: 12,14,16 and asks children to solve those sums	Every group will do the sums by discussion among each other	Every individual solves the sums on their own

PRACTICE PERIODS: 4,5,6	MULTIPLICATION OF INTEGERS,MULTIPLICATION OF A POSITIVE AND A NEGATIVE INTEGER, MULTIPLICATION OF TWO NEGATIVE INTEGERS		
CONCEPTS/STEPS	**TEACHER ACTIVITY (I DO)**	**GROUP ACTIVITY (WE DO)**	**INDIVIDUAL ACTIVITY (YOU DO)**
KEY WORDS READING	Teacher writes the key words from previous class's teaching period and asks children to read and write them in note books * pattern * number line * multiplication * negative *positive	Whole class activity : one child comes to the board and reads the key words	Every child comes to the board and reads the key words and notes them down in their note
SIMILAR LINES READING	Teacher conducts a practice activity using a dice game in which a table consisting of numbers from -104 to +104 will be there and a bag with 2 green colour and 2 red colour dice. Green indicates +ve and red indicates -ve. Teacher divides children into 2 groups in which each group randomly picks up two dice from the bag and rolls them and finds the product of the two numbers on the dices. Starting from zero both groups will move as per the product they get each time . The group that moves first to either -104 or +104 will be the winner.	Each group will participate in the activity and by doing the multiplication of integers multiple times they will get full command over multiplication of integers	Every individual will participate in the activity and by doing the multiplication of integers multiple times they will get full command over multiplication of integers
SUMMARY/ SYNOPSIS	Teacher once again writes important key words and step wise procedure adopted in multiplication of integers and asks children to note down and adopt.	Pupil groups will read and adopt the procedure	Teacher focuses on every individual so that each one learns how to multiply integers in successive upcoming practice sessions
WRITING/ EDITING	Teacher gives some questions from Try These sections of pg no: 12,14,16 and asks children to solve those sums and teacher checks the writings of children	One group will check the writings of the other and vice versa	

TEACHING PERIOD : 3	PROPERTIES OF MULTIPLICATION OF INTEGERS, CLOSURE UNDER MULTIPLICATION,COMMUTATIVITY OF MULTIPLICATION,MULTIPLICATION BY ZERO,MULTIPLICATIVE IDENTITY		
CONCEPTS/STEPS	**TEACHER ACTIVITY (I DO)**	**GROUP ACTIVITY (WE DO)**	**INDIVIDUAL ACTIVITY (YOU DO)**
KEY WORDS	Brain storming session invoving children with key words * closure under multiplication * Commutativity under multiplication * associativity under multiplication * Mutliplication with 0 * Multiplicative Identity	* Students read the key words and answer the questions to the teacher (whole class activity)	Every Pupil will read and write the key words in their note books
CONCEPTUAL UNDERSTANDING	Teacher presents different properties of integers under Multiplication through an activity involving children in Inductive manner from a few concrete examples to a generalized statement. Teacher divides children into Hetrogeneous groups and will give different integer numbers to each group and asks children to operate them with Multiplication in different orders and check what were the results. Finally Teacher draws inferences from children themselves that Set of Integers is Closed, Commutative, Assoicative under multiplication and has an Identity too that is "1" . -2 x 5 = -10 here -2,5 ε Z and -10 ε Z ; like this for any two integers a,b we have axb is also an integer. Hence Integers are closed under multiplication. (-3)x(-4) = +12 = (-4)x(-3) here like this for any two integers a,b we have axb=bxa Hence Integers are commutative under multiplication. -2 x (5x(-3)) = 30 = ((-2)x5)x(-3) like this for any two integers a,b we have ax(bxc)=(axb)xc .Hence Integers are Associative under multiplication. -2 x 0 = 0 = 0 x (-2) here any integer a, a x0 = 0xa=0 (-4) x 1 = -4 = 1 x (-4) for any integer a, ax1=a=1xa. Hence 1 is the multiplicative identity in integers -2 x (5+(-4))= (-2)x(5) + (-2) x (-4) like this for any 3 integers a,b,c a x (b+c) = a xb + ax c is satisfied and is called the distributive property of integers	Hetrogeneous groups are created and different 5 digited numbers will be given by one group to another and expansion will be done by the other and vice versa	Every child participates in expanding the numbers involving 5 digits and ascertains learning.
SUMMARY	Teacher writes the properties table of integers under multiplication on the black board and asks children to read write and note down	pupils will note down and read the summary in	every individual reads the summary and notes it down
ASSESSMENT	Teacher gives some questions from Try These section of pg no: 20,22 24,26,and asks children to solve those sums	every group will do the sums by discussion among each other	every individual solves the sums on their own

PRACTICE PERIODS: 7,8,9	PROPERTIES OF MULTIPLICATION OF INTEGERS, CLOSURE UNDER MULTIPLICATION,COMMUTATIVITY OF MULTIPLICATION,MULTIPLICATION BY ZERO,MULTIPLICATIVE IDENTITY		
CONCEPTS/STEPS	**TEACHER ACTIVITY (I DO)**	**GROUP ACTIVITY (WE DO)**	**INDIVIDUAL ACTIVITY (YOU DO)**
KEY WORDS READING	Teacher writes the key words from previous class's teaching period and asks children to read and write them in note books * closure under multiplication * Commutativity under multiplication * associativity under multiplication * Mutliplication with 0 * Multiplicative Identity	Whole class activity : one child comes to the board and reads the key words loudly and the remaining class follows.	Every child comes to the board and reads the key words and notes them down in their note books
SIMILAR LINES READING	Teacher writes some expressions and writes the propery involved in those expressions and asks children to do some more -9 x (-4) = 36 closure property under multiplication 8x (-5) = (-5)x 8 commutative property under multiplication (3x(-5))x(-4) = 3x ((-5)x(-4)) associative property under multiplication	Each group will read the similar lines and will frame some more by discussion	Every Individual prepares their own similar lines using the lines prepared by the teacher
SUMMARY/ SYNOPSIS	Teacher once again writes important key words and table of properties and asks children to read ,note down and adopt.	Pupil groups will read the table of properties and utilize	Teacher focuses on every individual so that each one knows and adopts the different properties on multiplication of integers in successive upcoming practice sessions
WRITING/ EDITING	Teacher asks children to fill the tables in 20,22,24,26 and solve the sums of exercise 1.2 on their own and teacher checks the writings of children	One group will check the writings of the other and vice versa	

TEACHING PERIOD : 4	DIVISION OF INTEGERS, PROPERTIES OF DIVISION OF INTEGERS		
CONCEPTS/STEPS	**TEACHER ACTIVITY (I DO)**	**GROUP ACTIVITY (WE DO)**	**INDIVIDUAL ACTIVITY (YOU DO)**
KEY WORDS	Brain storming session invoving children with key words * Division of integers * reciprocal * Properties of Division of Integers *undefined * Inverse Operation	* Students read the key words and answer the questions to the teacher (whole class activity)	Every Pupil will read and write the key words in their note books
CONCEPTUAL UNDERSTANDING	Teacher conducts an activity involving hetrogeneous groups by giving them different integers and will explain the concept of division of an integer with an another integer using multipliction properties of integers and introduces the satisfactoriness of different properties under division with some illustrations (-2) x (-3) = 6 ==> 6 ÷(-2) = -3 and 6÷(-3) = -2 in this case division of integers yielded an integer but where as if we try to divide (-6) ÷ (-5) will yield a fraction but not an integer. by this teacher draws the attention of children that division of integers is not closed By quoting some more examplary illustrations, teacher induces the all other properties of division in integers in Children. (-5)÷ 1= -5 , -7 ÷ 1 = -7 3 ÷1 = 3 like this in general for any integer 'a' a ÷ 1= a Similarly teacher explains why division with zero is undefined or meaningless	Hetrogeneous groups are created different groups will be given different integers and will be asked to mutiply them and later check corresponding divisions	Every child participates in the activity and learns the process of division of integers and understands the satisfactoriness of different properties in division
LEARNING ACTIVITY			
SUMMARY	Teacher once again writes important key words and step wise procedure adopted division of integers and their properties and asks children to note down and adopt.	pupils will note down and read the summary in groups	every individual reads the summary and notes it down and adopts the procedure
ASSESSMENT	Teacher gives some questions from Try These section of pg no: 30,32 and asks children to solve those sums	every group will do the sums by discussion among each other	every individual solves the sums on their own

PRACTICE PERIODS: 10,11,12	DIVISION OF INTEGERS, PROPERTIES OF DIVISION OF INTEGERS		
CONCEPTS/STEPS	**TEACHER ACTIVITY (I DO)**	**GROUP ACTIVITY (WE DO)**	**INDIVIDUAL ACTIVITY (YOU DO)**
KEY WORDS READING	Teacher writes the key words from previous class's teaching period and asks children to read and write them in note books * Division of integers * reciprocal * Properties of Division of Integers *undefined * Inverse Operation	Whole class activity : one child comes to the board and reads the key words loudly and the remaining	Every child comes to the board and reads the key words and notes them down in their note books
SIMILAR LINES READING	Teacher writes some properties of integers under division and asks children to writes some more by quoting relevant examples -2 ÷ 1 = -2 -3 ÷ 1 = -3 hence in general a ÷ 1 = a (-5)÷(-8) will yield a fraction and not an integer hence division of integers is not closed	Each group will read the similar lines and will frame some more by discussion	Every Individual will frame some more on their own
SUMMARY/ SYNOPSIS	Teacher once again writes important key words and step wise procedure adopted in division and exploring their properties in a tabular form and asks children to read ,note down and adopt.	Pupil groups will read and adopt the procedure	Teacher focuses on every individual so that each one learns division of integers and their properties in successive upcoming practice sessions
WRITING/ EDITING	Teacher gives some questions from examples as well as exercise 1.3 and asks children to solve those sums and teacher checks the writings of children	One group will check the writings of the other and vice versa	