

CLASS – VIII
LESSON PLAN
CHAPTER-1: Rational Numbers

Unit	Rational Numbers (Chapter 1:Rational Numbers)
Class Transaction	Total: 6 periods (approx. 40 min each)
Pre-requisite for the course	This lesson requires 1. Basic knowledge of natural numbers, whole numbers, rational numbers. 2. Knowledge of basic operations to solve fractions. 3. Knowledge of fractions and integers. 4. Knowledge of Number Line.
Assessment of qualifying knowledge	1. Written test 2. Lab activity 3. HW notebook
Objective	Students would be able to identify the difference between various types of numbers and develop skills of performing various operations on rational numbers, thereby inculcating competencies like collaboration, critical thinking and creativity
Learning Outcomes	<u>KNOWLEDGE</u>- <i>Students will develop the ability to understand</i> 1. Natural numbers, whole numbers, integers, rational numbers 2. The method of plotting rational numbers on the number line. 3. The different rational numbers lying between the given two rationals. SKILLS and COMPETENCIES- <i>Students would be able to</i> 1. Develop the ability to analyze and find various rational numbers between the given two rationals. 2. Perform various mathematical operations on rational numbers 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.)	Strategies used- Inductive deductive reasoning, think pair share, brain storming, number heads. Dimensions of learning- D1,D3 Transaction would proceed in the following manner- Brain Storming-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 1. 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 5 Marks - Lab Practical (Subject Enrichment) 5 Marks Through lab Practical Students are assessed for Collaboration, critical thinking.	4 UNIT TESTS	20 Marks each	HALF YEARLY EXAMINATION	80 Marks	ANNUAL BOARD EXAMINATION	80 Marks
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HALF YEARLY EXAMINATION	80 Marks						
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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> - Higher level questions to be done - Encouragement for referring other resources						

	<i>For weak students:</i> • Basic Level to be completed • 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 questions
1. Give a rational number which when added to it gives the same number. 2. By what rational number should $\frac{22}{7}$ be divided, to get the number $-\frac{11}{24}$? 3. Represent the following rational numbers on the number line. (i) $\frac{3}{10}$ (ii) $\frac{8}{7}$ (iii) 1.345 (iv) $\frac{21}{7}$ 4. If you subtract $\frac{1}{8}$ from a number and multiply the result by $\frac{1}{4}$, you get $\frac{1}{16}$. What is the number? 5. What is the additive inverse of $\frac{3}{5}$?

DAY	ONE
Objective	Enhance ability to solve rational numbers using appropriate properties.
Assessment of qualifying knowledge	Quiz and knowledge testing on rational numbers and their operations.
Learning Outcomes	<u>KNOWLEDGE</u>- Students will know and identify Natural Numbers, whole numbers, integers, rational numbers. <u>SKILLS and COMPETENCIES</u> Students would be able to Reason effectively and critically differentiate integers with rational numbers.
Transaction Methodology (The teacher can use the mentioned techniques, wherever applicable, and can use any other too.)	Strategies used- Inductive deductive reasoning, , think pair share, brain storming, number heads. Dimensions of learning- D1, D3 Transaction would proceed in the following manner- Anticipatory Set: 10 min Facilitator will ask few questions to introduce the topic • What is a whole number? • What is an integer? • What are fractions? • What is rational number? • What is the Difference between fraction and rational number? • How many rational numbers are there in between 2 integers or two rational numbers? 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 type of rational numbers, integers in the form of rational number, negative rational number, positive rational number, represent integers and rational numbers on the number line. 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 1.1 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 1.1 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 2. CBSE Exemplar
Self Study, Home Work, Assignments	Independent Practice: Students would do the given questions in their H.W. notebooks .
Assessments	Oral Test (5 minutes)
DAY	TWO
Objective	Students will be able to write the additive and multiplicative inverse of rational numbers and would also be able to define the same in collaborative manner .
Assessment of qualifying knowledge	Written questions on rational numbers.
Learning Outcomes	<u>KNOWLEDGE</u>- Students will know and Demonstrate the ability to solve rational numbers by applying different properties. <u>SKILLS and COMPETENCIES</u>- Students will be able to apply properties on rational numbers, in collaboration with each other.
Transaction Methodology (The teacher can use the mentioned techniques, wherever applicable, and can use any other too.)	Strategies used- Inductive deductive reasoning, think pair share, number heads. Dimensions of learning- D1, D3 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) An oral quiz will be taken and students will be asked to identify multiplicative and additive inverse of rational numbers. Guided practice: 15 min The students, with the help of the facilitator, will solve the questions from NCERT book of Exercise – 1.1 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 1.1 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 3. CBSE Exemplar
Self Study, Home Work, Assignments	Independent Practice: Students would do the given questions in their H.W. notebooks .
Assessments	Oral quiz (5 minutes)
DAY	THREE
Objective	To solve the questions of Ex- 1.1 based on rational numbers.
Assessment of qualifying knowledge	Written questions on other operations on rational numbers.
Learning Outcomes	<u>KNOWLEDGE</u>- <i>Students will develop the ability to solve rational</i> <u>SKILLS and COMPETENCIES</u> - <i>Students would be able to critically apply the concepts in given situations and collaboratively realize the need of rational numbers in real world.</i>
Transaction Methodology (The teacher can use the mentioned techniques, wherever applicable, and can use any other too.)	Strategies used- Inductive deductive reasoning, Muddiest point of discussion, think pair share, Dimensions of learning- D1, D3 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 1.1 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 – 1.1 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 1.1 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 .
Assessments	MCQ (5 minutes)
DAY	FOUR
Objective	To represent rational numbers on number line
Assessment of qualifying knowledge	Written test on rational numbers
Learning Outcomes	<u>KNOWLEDGE</u>- <i>Students will able to represent rational numbers on number line.</i> <u>SKILLS and COMPETENCIES</u> - <i>Students would be able to</i> 1. Critically apply the concepts in given situations and collaboratively represent the rational numbers on number line.
Transaction Methodology (The teacher can use the mentioned techniques, wherever applicable, and can use any other too.)	Strategies used- Inductive deductive reasoning, think pair share. Dimensions of learning- D1, D3 Transaction would proceed in the following manner- Recapitulation: <u>5 min</u> Quick revision on the previous concept would be taken up. Discussion of topic through Collaborative Learning: <u>15 min</u> (Creativity, Collaboration) Representation of rational numbers on number line would be introduced to students. They will know how rational numbers and fractions are entirely different. Guided Practice: <u>15 min</u> The students will solve the questions from NCERT book, solved examples before Ex 1.2 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 plot various rational numbers on number line. Closure: <u>5 min</u> 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 .
Assessments	Written test (5 minutes)
DAY	FIVE
Objective	To identify and enable to find various rational numbers between the given two rationals.
Assessment of qualifying knowledge	MCQ on identifying numbers as rationals.
Learning Outcomes	<u>KNOWLEDGE</u>- TO Identify various rationals between the given rationals. <u>SKILLS and COMPETENCIES</u> - Students would be able to Identify recognize different rationals between the given rationals through collaborative leaning process.
Transaction Methodology (The teacher can use the mentioned techniques, wherever applicable, and can use any other too.)	Strategies used- Inductive deductive reasoning. Dimensions of learning- D1,D3 Transaction would proceed in the following manner- Recapitulation: <u>5 min</u> Quick revision on the previous concept would be taken up. Discussion of topic through Collaborative Learning: <u>15 min</u> (Critical Thinking, Collaboration) I Guided Practice: <u>15 min</u> The students will solve the questions from NCERT book, solved examples before Ex 1.2 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 find various rational numbers in view of its definition. Closure: <u>5 min</u> 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 .
Assessments	MCQ (5 minutes)
DAY	SIX

Objective	To attain mastery on rational numbers.
Assessment of qualifying knowledge	Written test on rational numbers.
Learning Outcomes	<u>KNOWLEDGE</u>- <i>Students will know and understand</i> - every Rational number can be represented on number line. <u>SKILLS and COMPETENCIES</u> - <i>Students would be able to</i> Apply the given knowledge with 100 % accuracy Creatively represent rational number on number line.
Transaction Methodology (The teacher can use the mentioned techniques, wherever applicable, and can use any other too.)	Strategies used- Muddiest point of discussion, think pair share Dimensions of learning- D1, D2 Transaction would proceed in the following manner- Recapitulation: <u>5 min</u> Oral test would be taken. Discussion of topic through Collaborative Learning: <u>15 min</u> (Critical Thinking) The facilitator will give sufficient time and practice to students to attain the mastery on the concept learnt. Guided Practice: <u>15 min</u> The students will solve the questions from NCERT book of Exercise – 1.2 in their notebook in the class with the help of their facilitator. Independent Practice: Students will complete the remaining HW parts of Exercise 1.2 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. notebooks .
Assessments	Written test (5 minutes)