

CLASS – VIII
LESSON PLAN
CHAPTER-13: DIRECT AND INVERSE PROPORTIONS

Unit	Number System (Chapter 13: Direct and Inverse Variations)
Class Transaction	Total: 4 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 ratio and proportions 3. Knowledge of fractions.
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 irrational numbers, thereby inculcating competencies like collaboration, critical thinking and creativity
Learning Outcomes	<u>KNOWLEDGE</u>- Students will develop the ability to understand 1. Direct and Inverse relation between the given quantities. 2. To compute the missing value. <u>SKILLS and COMPETENCIES</u>- Students would be able to 1. Develop the ability to analyze and differentiate between direct and inverse proportions 2. Perform numerical skills to evaluate the missing value 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, muddiest point discussion, think pair share. Dimensions Of Learning- D1,D2 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 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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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> - HOTs questions to be done - 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 QUESTIONS

1. 6 pipes are required to fill a tank in 1 hour 20 minutes. How long will it take if only 5 pipes of the same type are used?
2. There are 100 students in a hostel. Food provision for them is for 20 days. How long will these provisions last, if 25 more students join the group?
3. If 15 workers can build a wall in 48 hours. How many workers will be required to do the same work in 30 hours?
4. A machine fills 540 bottles in six hours. How many bottles will it fill in five hours?
5. Jagmeet has a road map with a scale of 1 cm = 20 km. He drives on a road for 72 km. What would be his distance covered in the map?

DAY	ONE
Objective	Enhance ability to use appropriate relation between the given quantities and developing the communication and critical thinking.
Assessment of qualifying knowledge	Quiz and knowledge on directly related proportions.
Learning Outcomes	<u>KNOWLEDGE</u>- Students will know and identify the direct proportion between two quantities <u>SKILLS and COMPETENCIES</u> Students would be able to Reason effectively and critically reason why the given quantities directly proportionated.
Transaction Methodology (The teacher can use the mentioned techniques, wherever applicable, and can use any other too.)	Strategies used- Think pair share. Dimensions Of Learning- D1,D2 Transaction would proceed in the following manner- Anticipatory Set: 10 min Facilitator will ask few questions to introduce the topic • What is a ratio? • What is a proportion? • What are fractions? • What is a relation between speed and time? • What is the relation between the cost of 1 book and cost of 12 books? Discussion of topic through Collaborative Learning: 15 min <u>Inquiry based learning</u> (Critical Thinking and Problem Solving) Students would be asked to write answers to the above questions 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 13.1 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 13.1 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 1. 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 identify the critically reason the direct relation between the given quantities and would also be able to find the missing value in collaborative manner .
Assessment of qualifying knowledge	Written questions on directly proportionate quantities.
Learning Outcomes	<u>KNOWLEDGE</u>- Students will know and Demonstrate the ability to find the missing value which is directly related. <u>SKILLS and COMPETENCIES</u>- Students will be able to solve and identify directly related proportions in collaboration with each other.
Transaction Methodology (The teacher can use the mentioned techniques, wherever applicable, and can use any other too.)	Strategies used- Think pair share. Dimensions Of Learning- D1,D2 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 and cites few examples of directly proportionate quantities from real world situations and will be able to realize the need for the same. Guided practice: 15 min The students, with the help of the facilitator, will solve the questions from NCERT book of Exercise – 13.1 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 13.1 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 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	Students will be able to identify the critically reason the indirect relation between the given quantities and would also be able to find the missing value in collaborative manner .
Assessment of qualifying knowledge	Written questions on directly proportionate quantities.
Learning Outcomes	<u>KNOWLEDGE</u>- Students will know and Demonstrate the ability to find the missing value which is indirectly related. <u>SKILLS and COMPETENCIES</u>- Students will be able to solve and identify indirectly related proportions in collaboration with each other.
Transaction Methodology (The teacher can use the mentioned techniques, wherever applicable, and can use any other too.)	Strategies used- Think pair share. Dimensions Of Learning- D1,D2 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 13.2 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 – 13.2 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 of Exercise 13.2 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 the given questions in their H.W. notebooks
Assessments	MCQ (5 minutes)
DAY	FOUR
Objective	To attain mastery on the concept.
Assessment of qualifying knowledge	Written test on identifying whether the given relation is directly or indirectly related.
Learning Outcomes	KNOWLEDGE- <i>Students will develop the ability to distinguish between the direct and indirect relations.</i> SKILLS and COMPETENCIES - <i>Students would be able to</i> Critically apply the concepts in given situations and collaboratively realize the fact that quantities can be either directly or indirectly related. Comprehend that effect on one quantity will effect the other.
Transaction Methodology (The teacher can use the mentioned techniques, wherever applicable, and can use any other too.)	Strategies used- Think pair share. Dimensions Of Learning- D1,D2 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 (Creativity, Collaboration) The facilitator will ensure that students get sufficient practice to attain mastery on the concepts learnt. Guided Practice: 15 min The students will solve the questions from NCERT book, solved examples before Ex 13.2 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 the various problems independently. 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
Assessments	Written test (5 minutes)