

LESSON PLAN
MATHEMATICS VIII
CH 3 UNDERSTANDING QUADRILATERALS

Unit	Geometry (Chapter 3: Understanding Quadrilaterals)
Class Transaction	Total: 10 periods (approx. 40 min each)
Pre-requisite for the course	This lesson requires 1. Basic knowledge of shapes, angles, polygons, exterior angle, properties of quadrilateral. 2. Knowledge of basic types of quadrilateral. 3. Knowledge of angle sum property.
Assessment of qualifying knowledge	1. Written test 2. Lab activity 3. HW notebook
Objective	Students would be able to understand the concepts of a curve, polygon and its interior and exterior angles quadrilateral, its sides, angles, diagonals important property regarding the sum of the four angles of a quadrilaterals, thereby inculcating competencies like collaboration, critical thinking and creativity
Learning Outcomes	<u>KNOWLEDGE</u>- <i>Students will develop the ability to understand</i> 1. Polygon, curve, exterior angle, interior angles and parallelogram 2. Properties of a Rhombus, Rectangle and Square 3. Properties of quadrilaterals. <u>SKILLS and COMPETENCIES</u>- <i>Students would be able to</i> 1. Develop the ability to analyze and differentiate between various types of quadrilaterals and polygons. 2. Perform analytical skills like identifying type of polygon and their properties 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 of discussion, think pair share, graphic organizer, brain storming, number heads. Dimensions of learning- D1, D2,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 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> - 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. In a quadrilateral ABCD, the angles A, B, C and D are in the ratio 1: 2: 3: 4. Find the measure of each angle of the quadrilateral.
2. The interior angle of a regular is 108° . Find the number of sides of the polygon.
3. The exterior angle of a regular polygon is one-fifth of its interior angle. How many sides have the polygon?
4. The measures of two adjacent angles of a parallelogram are in the ratio 4: 5. Find the measure of each of the angles of the parallelogram.
5. If an exterior angle of a regular polygon is 45° , then find the number of its sides.

DAY	ONE
Objective	Enhance ability to accurately recognize and use appropriate terminology related to quadrilaterals and developing the art of communication and critical thinking.
Assessment of qualifying knowledge	Quiz and knowledge testing on polygons.
Learning Outcomes	<u>KNOWLEDGE</u>- Students will know and identify polygons. <u>SKILLS and COMPETENCIES</u> Students would be able to Reason effectively and critically differentiate different types polygons i.e. regular, irregular, concave and convex.
Transaction Methodology (The teacher can use the mentioned techniques, wherever applicable, and can use any other too.)	Strategies used- Inductive deductive reasoning, graphic organizer, 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 curve? • What is a line? • What are polygon? • What is sum of 3 angles? • What is sum of 4 angles? • What is exterior angle? • What is quadrilateral? • How many types of quadrilaterals are there? • Are all quadrilaterals same? • What are diagonals? • What is bisector? Discussion of topic through Collaborative Learning: 15 min <u>Inquiry based learning</u> (Critical Thinking and Problem Solving) Students would be asked to write definitions of curves, polygons and types of polygons. 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 3.1 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 3.1 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. notebooks .
Assessments	Oral Test (5 minutes)
DAY	TWO
Objective	Students will understand the sum of exterior angles of a polygon is always 360^0 and sum of all angles of a quadrilateral is 360^0 in collaborative manner .
Assessment of qualifying knowledge	Quick oral test.
Learning Outcomes	<u>KNOWLEDGE</u> - <i>Students will know and</i> Demonstrate the ability to find sum of interior angles of different polygons using formula and find number of diagonals. <u>SKILLS and COMPETENCIES</u> - <i>Students will be able to</i> differentiate and classify various types of polygons, 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, graphic organizer, number heads. 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 various polygons and will be able to realize the fact that sum of all interior angles depends on number of sides whereas sum of exterior angles is same. Guided practice: 15 min The students, with the help of the facilitator, will solve the example questions from NCERT book before Exercise – 3.2 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 3.2 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	To solve the questions of Ex- 3.2 based on sum of angles of polygons.
Assessment of qualifying knowledge	Written questions on sum angles of polygons.
Learning Outcomes	<u>KNOWLEDGE</u>- Students will develop the ability to understand the Sum of exterior angles and interior angles of polygon. <u>SKILLS and COMPETENCIES</u> - Students would be able to critically apply the concepts in given situations and collaboratively realize the fact that sum of all interior angles depends on number of sides whereas sum of exterior angles is same.
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, graphic organizer. 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 3.2 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 – 3.2 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 3.2 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	Quick on-Board test (5 minutes)
DAY	FOUR
Objective	To understand different types of Quadrilaterals
Assessment of qualifying knowledge	Written test on types of quadrilaterals.

Learning Outcomes	<u>KNOWLEDGE</u>- Students will develop the ability to understand the Different <u>SKILLS and COMPETENCIES</u> - Students would be able to 1. Critically apply the concepts in given situations and collaboratively realize the fact that different quadrilaterals have different properties. 2. Comprehend that not every quadrilateral is a parallelogram.
Transaction Methodology (The teacher can use the mentioned techniques, wherever applicable, and can use any other too.)	Strategies used- Inductive deductive reasoning, number heads. Dimensions of learning- D1,D3 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) parallelograms would be introduced to students. They will know how parallelograms are from quadrilaterals. 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 3.3 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 irrational numbers in view of its definition. 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)
DAY	FIVE
Objective	To understand properties of parallelogram and Deriving the following properties of a parallelogram through activity ➤ Opposite sides of a parallelogram are equal ➤ Opposite angles of a parallelogram are equal ➤ Diagonals of a parallelogram bisect each other
Assessment of qualifying knowledge	MCQ on properties.
Learning Outcomes	<u>KNOWLEDGE</u> - Students will know and understand

	1. Every quadrilateral having different properties are defined uniquely. <u>SKILLS and COMPETENCIES</u> - <i>Students would be able to Comprehend</i> That different quadrilaterals have different properties. Also through activity they will verify the properties of parallelograms 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, number heads. Dimensions of learning- D1,D3 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) parallelograms would be introduced to students. They will know how parallelograms are from quadrilaterals and through activity they will verify the properties of parallelograms. 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 3.3 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 irrational numbers in view of its definition. 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	MCQ (5 minutes)
DAY	SIX
Objective	To solve the questions of Ex- 3.2 based on sum of angles of polygons.
Assessment of qualifying knowledge	Written test on properties of parallelograms. Homework notebooks.
Learning Outcomes	<u>KNOWLEDGE-</u> <i>Students will know and understand</i> Properties of parallelograms. <u>SKILLS and COMPETENCIES</u> - <i>Students would be able to</i> Apply the given knowledge with 100 % accuracy Creatively solve questions based on properties of parallelograms.
Transaction Methodology (The teacher can use the mentioned	Strategies used- Inductive deductive reasoning, think pair share, number heads. Dimensions of learning- D1, D3 Transaction would proceed in the following manner-

techniques, wherever applicable, and can use any other too.)	Recapitulation: 5 min Oral test would be taken. Discussion of topic through Collaborative Learning: 15 min (Critical Thinking) How to use Properties of parallelograms is applicable to questions would be discussed in detail. Guided Practice: 15 min The students will solve the questions from NCERT book of Exercise – 3.3 in their notebook in the class with the help of their facilitator. Independent Practice: Students will complete the remaining HW parts of Exercise 3.3 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 solve the questions of Ex- 3.3 based on properties of parallelograms.
Assessment of qualifying knowledge	Written test on properties of parallelograms. Homework notebooks.
Learning Outcomes	<u>KNOWLEDGE</u>- <i>Students will know and understand</i> Properties of parallelograms. <u>SKILLS and COMPETENCIES</u> - <i>Students would be able to</i> 3. Apply the given knowledge with 100 % accuracy 4. Creatively solve questions based on properties of parallelograms.
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, number heads. Dimensions of learning- D1 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 Properties of parallelograms is applicable to questions would be discussed in detail. Guided Practice: 15 min The students will solve the questions from NCERT book of Exercise – 3.3 in their notebook in the class with the help of their facilitator. Independent Practice: Students will complete the remaining HW parts of Exercise 3.3 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	EIGHT
Objective	Students would be able to understand the properties of special types of parallelograms like square, rhombus, rectangle.
Assessment of qualifying knowledge	Written test, notebook.
Learning Outcomes	<u>KNOWLEDGE</u> - <i>Students will know and understand</i> 1. Properties of rectangle, rhombus and square. <u>SKILLS and COMPETENCIES</u> - <i>Students would be able to</i> 1. Critically visualize the different special parallelograms. 2. Differentiate between properties of square, rhombus, rectangle.
Transaction Methodology (The teacher can use the mentioned techniques, wherever applicable, and can use any other too.)	Strategies used- think pair share, graphic organizer, number heads. Dimensions of learning- D1, D3 Transaction would proceed in the following manner- Recapitulation: 5 min One-minute test would be taken. Discussion of topic through Collaborative Learning: 15 min (Creativity) Redefining different types of special parallelograms. Mind mapping would be used Digital content would be used. Guided Practice: 15 min The facilitator would explain through different examples. Collaborative approach would be taken up. Independent Practice: Students will go through the solved examples before Ex 3.4 of NCERT text book. 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	NINE
Objective	To solve the questions of Ex- 3.4 based on properties of special parallelograms.
Assessment of qualifying knowledge	Written test on properties of special types of parallelograms. Homework notebooks.
Learning Outcomes	<u>KNOWLEDGE</u>- <i>Students will know and understand</i> Properties of special type of parallelograms. <u>SKILLS and COMPETENCIES</u> - <i>Students would be able to</i> 5. Apply the given knowledge with 100 % accuracy 6. Creatively solve questions based on properties of special parallelograms.
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 Dimensions of learning- D1, D3 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 Properties of parallelograms is applicable to questions would be discussed in detail. Guided Practice: 15 min The students will solve the questions from NCERT book of Exercise – 3.4 in their notebook in the class with the help of their facilitator. Independent Practice: Students will complete the remaining HW parts of Exercise 3.4 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	Oral test (5 minutes)
DAY	TEN
Objective	Student will make a comparative study of the properties of different types of quadrilaterals.
Assessment of qualifying knowledge	MCQ test based on properties .

	Apply the knowledge meaningfully and creatively.
Learning Outcomes	<u>KNOWLEDGE</u>- <i>Students will know and understand</i> Difference between different parallelograms. <u>SKILLS and COMPETENCIES</u> - <i>Students would be able to</i> 1. Develop various techniques to identify them creatively and collaboratively.
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, graphic organizer Dimensions of learning- D1, D2,D3 Transaction would proceed in the following manner- Recapitulation: 5 min One minute test would be taken. Discussion of topic through Collaborative Learning: 15 min (Critical and creative thinking) Identification of properties and preparing a tabular form for differentiating the properties of different types of quadrilaterals. Guided Practice: 15 min The facilitator would guide with a collaborative approach towards them. Independent Practice: Students will complete the remaining HW (table) 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	MCQ test (5 minutes)