

LESSON PLAN

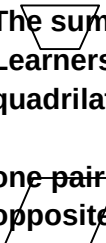
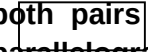
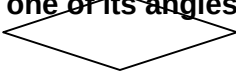


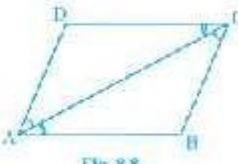
DLF Public School

THE LEARNING ACADEMY
Managed By Darbari Lal Found

Class	Subject	Time slot	Lesson	Topic P1
IX	Maths	35 Mins 1 Pd	Quadrilateral	Types of Quadrilaterals, Properties of a parallelogram and proofs of properties of Parallelogram
Expected Learning Outcome: Learners will be able to 1) Define the properties of different quadrilaterals. 2) Apply Angle sum property of a quadrilateral 3) Identify the properties of parallelogram; 4) Prove theorems by using different congruency criteria of triangles				
Expected skill development: 1) Thinking skills while proving different statements 2) Reasoning + proofs, 3) Communicating using mathematical terminology 4) Application in practical problems.				

FLOW OF LESSON WITH RESPECT TO TIME (Introduction/warm-up, Content, Think Line, Closure)

Pedagogy	Content
<u>(10 mins) Warm Up</u> Recap using Question and Answer Method	The facilitator and learners will recall about angle sum property of a quadrilateral and types of quadrilateral which they have already done in class VIII. The sum of the angles of a quadrilateral is 360°. Learners will give a rough sketch of all types of quadrilateral and their definitions:  Trapezium - a quadrilateral in which one pair of opposite sides are parallel and one pair of opposite side are non parallel is called a trapezium.  Parallelogram – a quadrilateral in which both pairs of opposite sides are parallel is called parallelogram.  Rectangle - a parallelogram in which one of its angles is right angle is called rectangle.  Rhombus : a parallelogram in which all sides are equal is called Rhombus.  Square: A rectangle whose consecutive sides are equal is called Square. Kite : A quadrilateral in which two pairs of adjacent sides are equal is called kite. 

<u>(20 mins) Demonstration by Facilitator on Board</u> Learners will verify by drawing a diagonal and dividing the quadrilateral in two triangles. Lecture and Discussion Method Learning by doing Method followed by Discussion and Black-Board work	Theorem 8.2: A diagonal of a parallelogram divides it into two congruent triangles. Theorem will be explained. Theorem 8.2: <i>In a parallelogram, opposite sides are equal.</i> Theorem 8.4: <i>In a parallelogram opposite angles are equal.</i> Theorem 8.2 and 8.3 follows from Theorem 8.1 by cpctc Proof : By the Facilitator Proof : Let ABCD be a parallelogram and AC be a diagonal (see Fig. 8.8). Observe that the diagonal AC divides parallelogram ABCD into two triangles, namely, $\triangle ABC$ and $\triangle CDA$. We need to prove that these triangles are congruent. In $\triangle ABC$ and $\triangle CDA$, note that $BC \parallel AD$ and AC is a transversal. So, $\angle BCA = \angle DAC$ (Pair of alternate angles) Also, $AB \parallel DC$ and AC is a transversal. So, $\angle BAC = \angle DCA$ (Pair of alternate angles) and $AC = CA$ (Common) So, $\triangle ABC \cong \triangle CDA$ (ASA rule) or, diagonal AC divides parallelogram ABCD into two congruent triangles ABC and CDA ■ Now, measure the opposite sides of parallelogram ABCD. What do you observe? You will find that $AB = DC$ and $AD = BC$. Angle B = angle D and similarly angle A = Angle C 
<u>(5 mins) Inclass Exercise: Closure</u> Question and Answer Method followed by Discussion	Theorem 8.6: The diagonals of a parallelogram bisect each other.

Proposed Questions (must include the questions asked in the classroom <u>and</u> the ones given as class-work in the notebook) THINKLINE: What would the ‘WORLD’ look like without ‘QUADRILATERALS’?	
Evaluation/Assessment LEARNING STRATEGIES Group discussion, individual work, observation and explanation by the Facilitator. Learners on the way 1. In a parallelogram ABCD, if angle A=70° find other angles of the parallelogram.	Advanced Learner 1. In a parallelogram ABCD, angle A and angle B are in ratio of 3:2, find all the angles of the parallelogram.
Materials needed/Resources:- Chalk, blackboard, duster, NCERT text book.	

Common Misconceptions:

1. The learners may consider that square is not a rectangle.
2. Only difference between Rhombus and square is Rhombus is tilted but square is perpendicular.
3. Kite is a parallelogram.

Addressing the misconceptions:

1. The facilitator will explain square satisfy all the conditions of rectangle so square is special type of rectangle.
2. Each angle of a square is 90 degree while in case of rhombus it is not like that. Diagonals of square are equal while diagonals of rhombus are not equal.
3. Kite is not a parallelogram because there adjacent sides are equal and opposite sides are unequal.

Home Assignments: Justify your answers:

1. A square is a rectangle.
2. A square is a rhombus.
3. A rectangle is a square.
4. A rhombus is a square.
5. All parallelograms are trapezium.
6. All trapezium are parallelogram.
7. A kite is a parallelogram