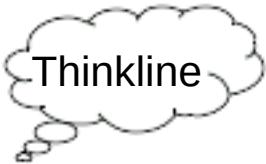




Class	Subject	Time slot	Lesson	Topic P1
IX	Mathematics	35 Mins 1 Pd	Areas of Parallelograms and Triangles	• Introduction • Figures on the Same Base and Between the Same Parallels

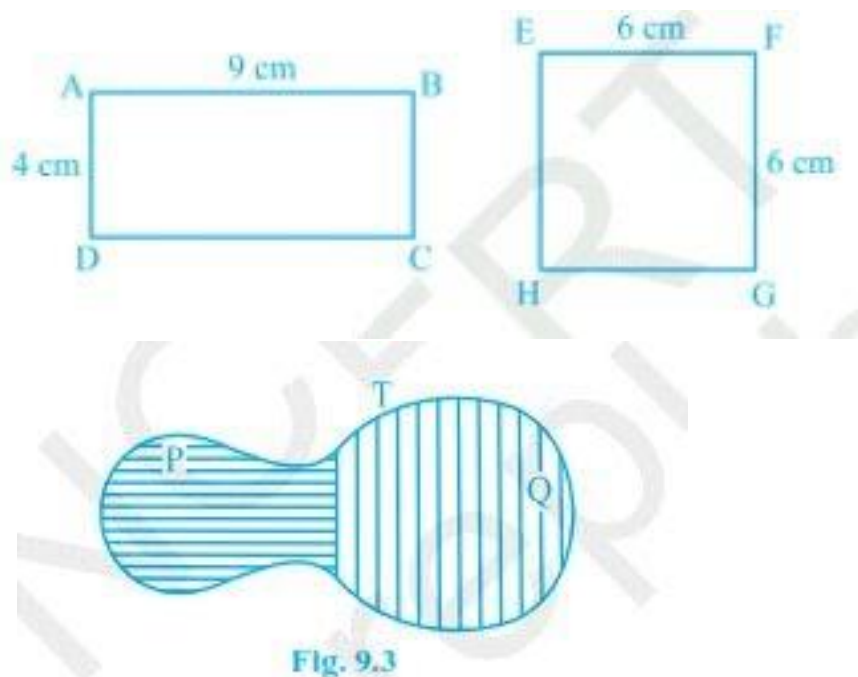
- 1) Define different terms like planar region, area, congruent regions and relations between areas of congruent regions.
- 2) Identify the geometrical figures that have the same base and lie between the same parallels

- 1) Observational skill while identifying parallelogram and triangles on the same base between same parallel
- 2) Procedural thinking
- 3) Communicating using mathematical terminology relating to geometry
- 4) Representation skill while drawing the figure as per the requirement of the question
- 5) Developing connections between different properties of Parallelogram and Triangles

Pedagogy	Content
<u>(10 mins) Warm Up</u> <u>+ Demonstration by Facilitator</u>  Thinkline Do you think that all the three parts so obtained by her were, in fact, equal in area?	Facilitator will begin with an example that a farmer had a triangular field and she wanted to divide it equally among her two daughters and one son. Without actually calculating the area of the field, she just divided one side of the triangular field into three equal parts and joined the two points of division to the opposite vertex. In this way, the field was divided into three parts and she gave one part to each of her children.

(20 mins) Demonstration by Facilitator on Board

To get answers to this type of questions and other related problems, there is a need to have a relook at areas of plane figures.



Facilitator will help the learners in studying some relationship between the areas of the geometric figures under the condition when they lie on the same base and between the same parallels. This study will also be useful in the understanding of some results on 'similarity of triangles' in class X.

ACTIVITY:

The Facilitator asks the Learners to make two parallel lines on the graph paper. Now the Learners are asked to make some triangles and parallelograms in between the two given lines.

The Facilitator explains that as the base and the height is not changing so the area of the triangles made will be same.

So, two figures are said to be on the same base and between the same parallels, if they have a common base (side) and the vertices (or the vertex) opposite to the common base of each figure lie on a line parallel to the base.

Learners will recall

1. The part of the plane enclosed by a simple closed figure is called a planar region corresponding to that figure.
2. The magnitude or measure of this planar region is called its area.
3. Two figures are called congruent, if they have the same shape and the same size.
4. If two figures A and B are congruent, they must have equal areas. However, the converse of this statement is not true.

You may observe that planar region formed by figure T is made up of two planar regions formed by figures P and Q. You can easily see that

Area of figure T = Area of figure P + Area of figure Q.

You may denote the area of figure A as $ar(A)$, area of figure B as $ar(B)$, area of figure T as $ar(T)$, and so on. Now you can say that *area of a figure is a number (in some unit) associated with the part of the plane enclosed by the figure with the following two properties:*

(1) If A and B are two congruent figures, then $ar(A) = ar(B)$;

and (2) if a planar region formed by a figure T is made up of two non-overlapping planar regions formed by figures P and Q, then $ar(T) = ar(P) + ar(Q)$.

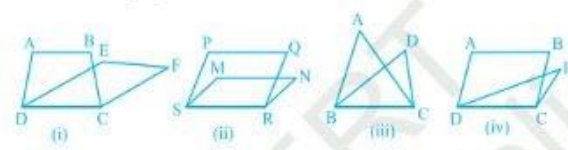
Area of a triangle = $\frac{1}{2}$ X base x height.

(5 mins) In class Exercise: Closure

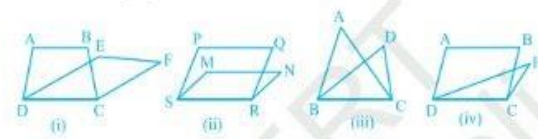
NOTE: It should clearly be noted that out of the two parallels, one must be the line containing the common base

Identify the geometrical figures that have the same base and lie between the same parallels alongside

Look at the following figures:



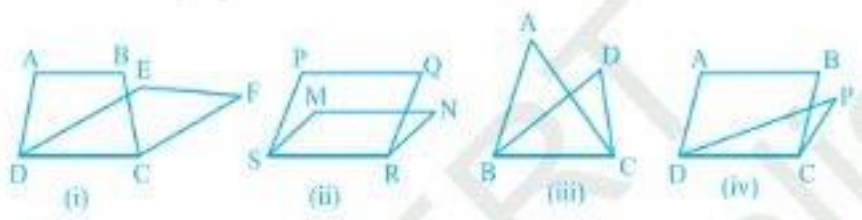
Look at the following figures:



- Proposed Questions (must include the questions asked in the classroom and the ones given as class-work in the notebook)

Identify the geometrical figures that have the same base and lie between the same parallels

Look at the following figures:



- Evaluation/ Assessment: Peer discussion will be done. Teacher will assess the children randomly and also through student teacher interaction

Learners on the way
Define Plane figures with some examples

Advanced Learner
Give an example to show that two figure having equal areas need not be congruent.

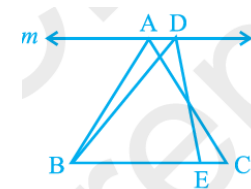
Materials needed/ Resources :- Chalk, duster, NCERT Textbook

Common Misconceptions:

- Learners may think the figures on the same base means base on same line.

Addressing the misconceptions:

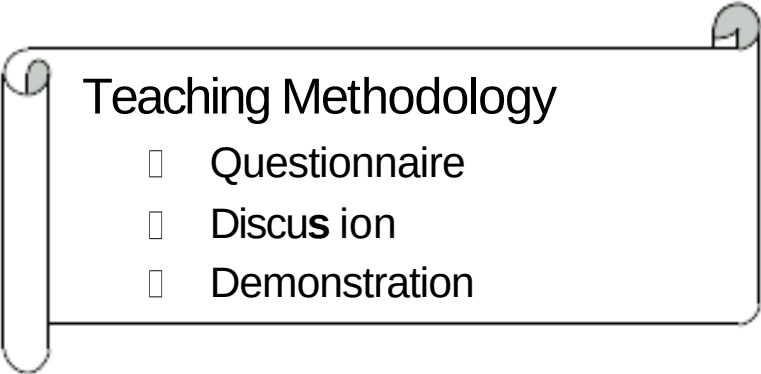
By drawing and observing different figures on the board



- **Home Assignments:**

Explore the following axioms and write down in your notebook, giving example in each case

- 1) Area axiom
- 2) Congruence area axiom
- 3) Area addition axiom
- 4) Area monotone axiom
- 5) Rectangle area axiom



Teaching Methodology

- Questionnaire
- Discussion
- Demonstration