

# Activity 25

## OBJECTIVE

To find the formula for the area of a trapezium experimentally.

## MATERIAL REQUIRED

Hardboard, thermocol, coloured glazed papers, adhesive, scissors.

## METHOD OF CONSTRUCTION

1. Take a piece of hardboard for the base of the model.
2. Cut two congruent trapeziums of parallel sides  $a$  and  $b$  units [see Fig. 1].
3. Place them on the hardboard as shown in Fig. 2.

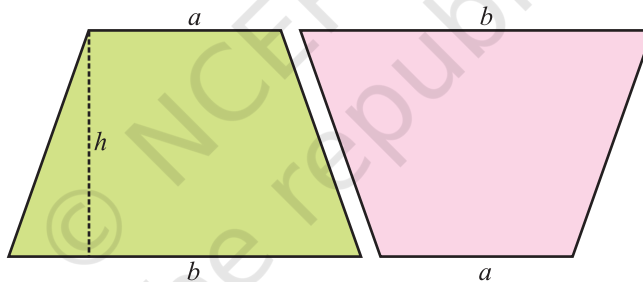


Fig. 1

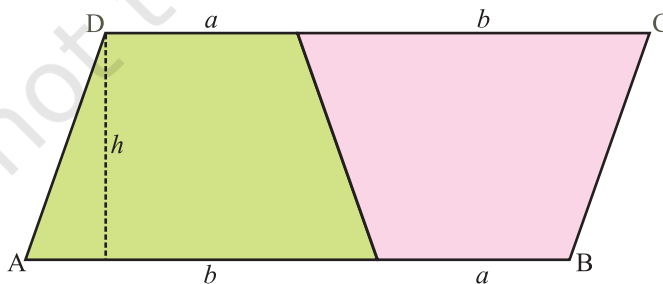


Fig. 2

## DEMONSTRATION

1. Figure formed by the two trapeziums [see Fig. 2] is a parallelogram ABCD.
2. Side AB of the parallelogram =  $(a + b)$  units and its corresponding altitude =  $h$  units.

3. Area of each trapezium =  $\frac{1}{2}$  (area of parallelogram) =  $\frac{1}{2}(a + b) \times h$

Therefore, area of trapezium =  $\frac{1}{2}(a + b) \times h$

$$= \frac{1}{2} (\text{sum of parallel sides}) \times \text{perpendicular distance.}$$

Here, area is in square units.

## OBSERVATION

Lengths of parallel sides of the trapezium = -----,-----.

Length of altitude of the parallelogram = -----.

Area of parallelogram = -----.

Area of the trapezium =  $\frac{1}{2}$  (Sum of ----- sides)  $\times$  -----.

## APPLICATION

This concept is used for finding the formula for area of a triangle in coordinate geometry. This may also be used in finding the area of a field which can be split into different trapeziums and right triangles.