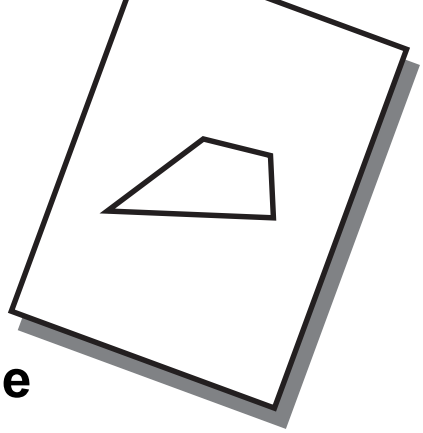

Activity 18

The quadrilateral formed by the mid points of a quadrilateral

Objective
To show that the figure obtained by joining the mid-points of consecutive sides of the quadrilateral is a parallelogram.

Pre-requisite knowledge

1. Finding mid-points of the line segments by paper folding. (Familiarity with Activity 1A)
2. If in a quadrilateral a pair of opposite sides are equal and parallel, then it is a parallelogram.

Material required
Coloured paper, a pair of scissors, gum.

Procedure
Cut off a quadrilateral ABCD of paper with prescribed dimensions. Mark the mid-points P, Q, R and S of the sides AB, BC, CD and DA respectively by folding the sides appropriately. Cut off the quadrilateral PQRS. [Fig 18 (a)]

Observations
By considering triangle ABC, it follows that PQ the line joining the mid-points of AB and BC is parallel to AC and PQ = ½ AC (Mid-point theorem). Similarly from triangle ADC, RS = ½ AC and RS is parallel to AC.

PQ is parallel to SR and PQ = SR, so PQRS is a parallelogram.

Learning outcome
The students learn that a parallelogram can be obtained from any quadrilateral by joining the mid-points of its sides.

Remark
The students can compare the areas of the parallelogram PQRS and the quadrilateral ABCD.

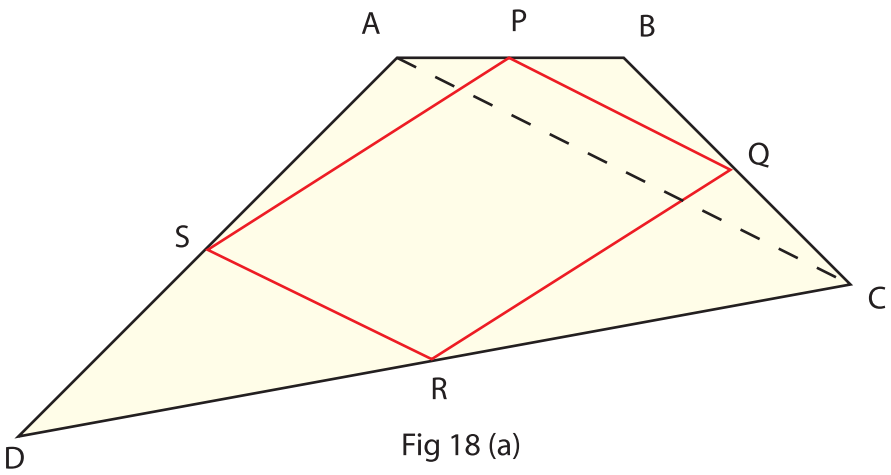

Fig 18 (a)