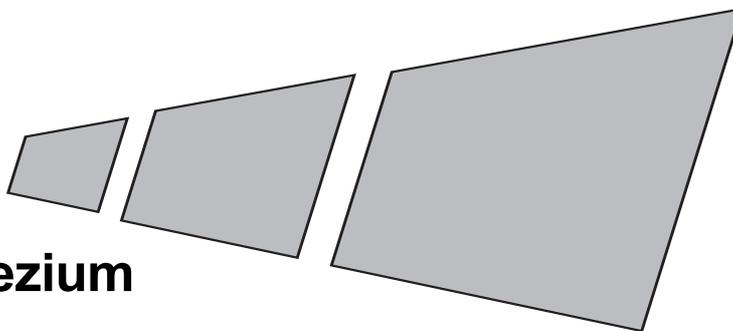


Activity 6



Area of a trapezium

Objective

To show that the area of a trapezium is equal to half the product of its altitude and the sum of its parallel sides, using paper cutting and pasting.

Pre-requisite knowledge

1. A trapezium is a quadrilateral with one pair of opposite sides parallel.
2. A quadrilateral is a parallelogram if a pair of its opposite sides are parallel and equal to each other.

Material Required

Coloured paper, a pair of scissors, gum.

Procedure

1. Take two sheets of coloured paper.
2. Cut two identical trapeziums ABCD and PQRS. [Fig 6 (a)]
3. Paste them together as shown in Fig 6(b) to obtain a quadrilateral RBCQ.

Observations

The two trapezia add up to form a parallelogram whose base RB is the sum of the two parallel sides of the trapezium AB and CD.

$$\begin{aligned}\text{Area of trapezium ABCD} &= \frac{1}{2} \text{ area of parallelogram RQCB [Fig 6 (b)]} \\ &= \frac{1}{2} \times (AB + CD) \times \text{height} \\ &= \frac{1}{2} \times (a + b) \times h\end{aligned}$$

Learning Outcomes

The students learn to obtain a parallelogram by appropriately juxtaposing two identical trapezia and obtain a simple insight into the formula for the area of a trapezium.

Remark

The teacher may encourage students to provide a proof that RBCQ is a parallelogram.

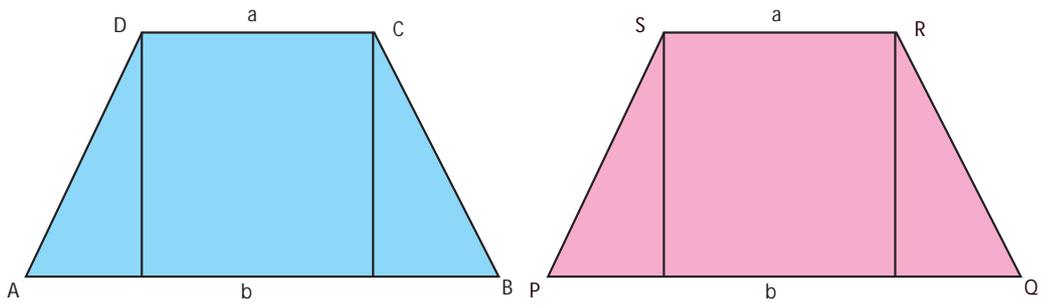


Fig 6(a)

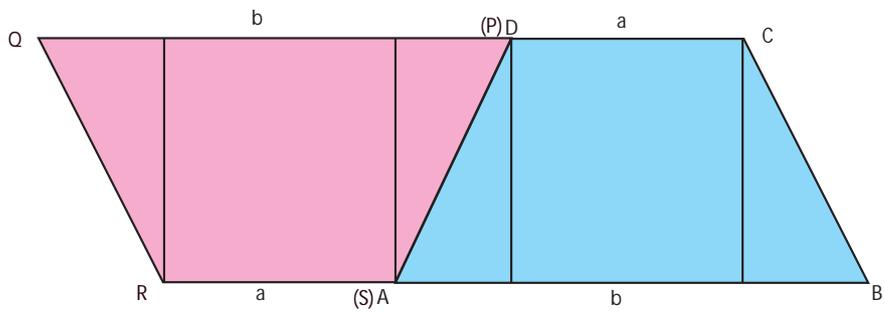


Fig 6(b)