

Activity -3 (13/6/13)

Pythagoras theorem

Objective

To verify the Pythagoras Theorem by the method of paper folding, cutting and pasting.

Pythagoras Theorem

The area of the square on the hypotenuse of a right angled triangle is equal to the sum of the areas of squares on the other two sides.

Pre-requisite knowledge

1. Area of a square.
2. Construction of parallel lines and perpendicular bisectors.
3. Construction of a right angled triangle.

Procedure

1. Take a card board of size say 20 cm × 20 cm.
2. Cut any right angled triangle and paste it on the cardboard. Suppose its sides are a , b and c .
3. Cut a square of side a cm and place it along the side of length a cm of the right angled triangle.
4. Similarly cut squares of sides b cm and c cm and place them along the respective sides of the right angled triangle.
5. Label the diagram as shown in Fig 5(a).
6. Join BH and AI. These are two diagonals of the square ABIH. The two diagonals intersect each other at the point O.
7. Through O, draw RS \parallel BC.
8. Draw PQ, the perpendicular bisector of RS, passing through O.
9. Now the square ABIH is divided in four quadrilaterals. Colour them as shown in Fig 5(a).
10. From the square ABIH cut the four quadrilaterals. Colour them and name them as shown in Fig 5(b).

Observations

The square ACGF and the four quadrilaterals cut from the square ABIH completely fill the square BCED. Thus the theorem is verified.

Learning Outcome

Students learn one more method of verifying Pythagoras theorem.

Remark

The teacher may point out that the activity only verifies Pythagoras theorem for the given triangle. Verification is different from a general mathematical proof.

Materials required

card board,
coloured pencils,
pair of scissors,
fevicol,
geometry box.