

# JSUNIL TUTORIAL, SAMASTIPUR

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## CBSE TEST PAPER-02

### MATHEMATICS (Class-10)

#### Chapter: Triangles

- In a right triangle ABC, right angled at C, P and Q are points of the sides CA and CB respectively, which divide these sides in the ratio 2: 1. Prove that  
(I)  $9AQ^2 = 9AC^2 + 4BC^2$                       (II)  $9BP^2 = 9BC^2 + 4AC^2$                       (III)  $9(AQ^2 + BP^2) = 13AB^2$
- ABC is a triangle. PQ is the line segment intersecting AB in P and AC in Q such that PQ parallel to BC and divides triangle ABC into two parts equal in area. Find BP: AB.
- P and Q are the mid points on the sides CA and CB respectively of triangle ABC right angled at C. Prove that  $4(AQ^2 + BP^2) = 5AB^2$
- In an equilateral triangle ABC, the side BC is trisected at D. Prove that  $9AD^2 = 7AB^2$
- Prove that three times the sum of the squares of the sides of a triangle is equal to four times the sum of the squares of the medians of the triangle.
- If ABC is an obtuse angled triangle, obtuse angled at B and if AD ⊥ CB Prove that  $AC^2 = AB^2 + BC^2 + 2BC \times BD$
- Prove that in any triangle the sum of the squares of any two sides is equal to twice the square of half of the third side together with twice the square of the median, which bisects the third side. [To prove  $AB^2 + AC^2 = 2AD^2 + 2(1/2BC)^2$ ]
- ABC is a right triangle right-angled at C and  $AC = \sqrt{3} BC$ . Prove that  $\angle ABC = 60^\circ$ .