IIIT Delhi - RAM Maths Circle
Session 17

(Organized by the Department of Mathematics, IIIT Delhi)

IIIT-Delhi January 18th, 2026

Problem 1. Prove that for any three points A, B, and C we have

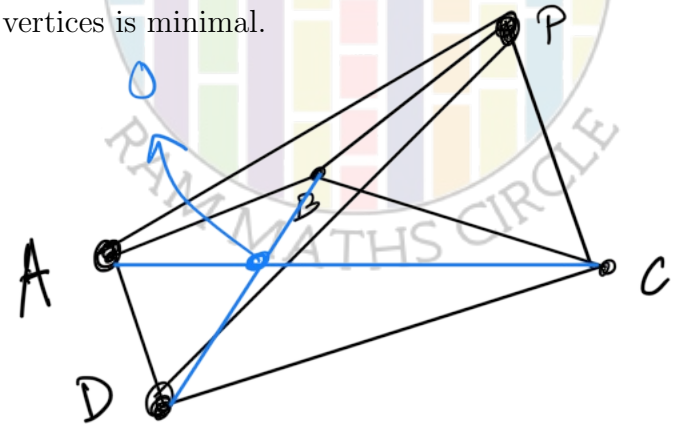
$$AC \geq |AB - BC|.$$

Problem 2. Side AC of triangle ABC has length 3.8, and side AB has length 0.6. If the length of side BC is an integer, what is this length?

Problem 3. Prove that the length of any side of a triangle is not more than half its perimeter.

Problem 4. The distance from Leningrad to Moscow is 660 kilometers. From Leningrad to the town of Likovo it is 310 kilometers, from Likovo to Klin it is 200 kilometers, and from Klin to Moscow is 150 kilometers. How far is it from Likovo to Moscow?

Problem 5. Find a point inside a convex quadrilateral such that the sum of the distances from the point to the vertices is minimal.



Problem 6. Point O is given on the plane of square $ABCD$. Prove that the distance from O to one of the vertices is not greater than the sum of the distances from O to the other three vertices.

Problem 7. Prove that the sum of the diagonals of a convex quadrilateral is less than the perimeter but more than half the perimeter.

Problem 8. Prove that the sum of the diagonals of a convex pentagon is greater than the perimeter but less than double the perimeter.

Problem 9. Prove that the distance between any two points inside a triangle is not greater than half the perimeter of the triangle.

End of problem sheet