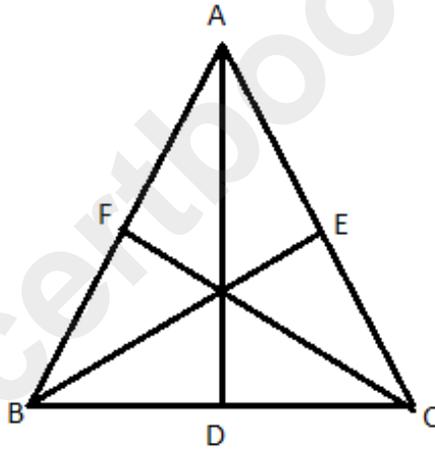


# Inequalities

## Important Theorems

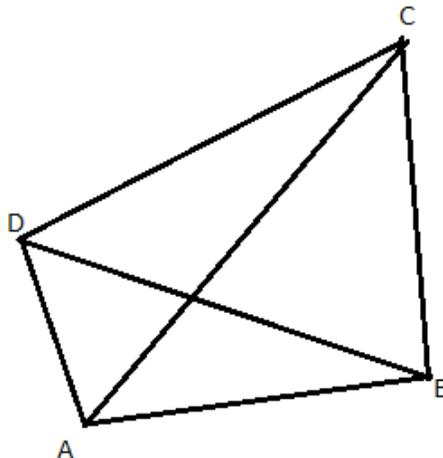
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- If two sides of a triangle are unequal, the greater side has the greater angle opposite to it.
- If two angles of a triangle are unequal, the greater angle has the greater side opposite to it.
- The sum of any two sides of a triangle is greater than the third side.
- In a triangle, the difference of the lengths of any two sides is less than the third side.
- Of all the straight lines that can be drawn to a straight line from a given point outside it, the perpendicular is the shortest.
- Perimeter of a triangle is greater than the sum of the lengths of its medians.



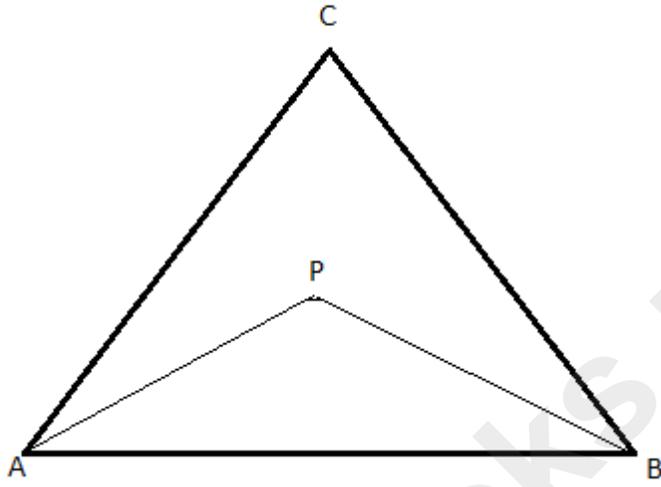
Thus, we have,  $AB + BC + AC > AD + BE + CF$

- In any quadrilateral, the sum of the lengths of four sides exceeds the sum of the lengths of its diagonals.



Thus, we have  $(AB + BC + CD + DA) > (AC + BD)$

- If P is any point in the interior of a triangle ABC, then we have  $PA + PB < AC + BC$



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