# A PHENOMENA IN GEOMETRIC ANALYSIS

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**Abstract:** In this work, the author has made a brief geometric analysis and found a new result. [Researcher. 2010;2(9):50-51]. (ISSN: 1553-9865).

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## 1. Construction

Construct Sachheri quadrilateral ABCD as shown in figure 1. Sides AD & BC are equal. The angles at C& D are right angles. Locate the mid points E and F of CD and AB respectively. Join E and F. Sachheri showed that the angles at E & F are also right angles. And the summit angles at A & B are equal.[ 1 ] & [ 2 ]

## 2. Results

**CASE 1**

Let us assume that EF is smaller than BC. On the extension of EF, take a point L such that EL = BC. On the production of EC, make a point H such that DC = CH. At H, erect a perpendicular HJ equal to EL. Join L and J. Now by SASAS correspondence, Sachheri quadrilaterals ABCD & HELJ are congruent. So, the summit angles at A, B, L & J are equal.

i.e angles DAB = CBA = ELJ = HJL (1)

Join B & L. Now, ECBL is an another Sachheri quadrilateral.
So, the summit angles at B & L are equal.
i.e. angle CBL = angle ELB (2)
Comparing (1) and (2) we get a contradiction. This implies that
our assumption that EF is smaller than BC is NOT applicable (3)

**CASE 2**

Let us assume that EF is greater than BC. Now look at figure 2. On EF choose a point such L that EL = BC. On the extension of EC take a point H. Draw HJ perpendicular such that HJ=EL. Join L & B. Also join L & J. By SASAS correspondence, Sachheri quadrilaterals ABCD & JHEL are congruent.

So, the angles, DAB=CBA=ELJ=HJL (4)
BCEL is an another Sachheri quadrilateral.
So, the summit angles are equal. i.e. angle ELB= angle CBL (5)

A brief analysis of (4) & (5) shows a contradiction. This makes us that our assumption that EF is greater than BC is NOT at all agreeable (6)

From equations (3) & (6) we get that sides EF and BC are equal (7)

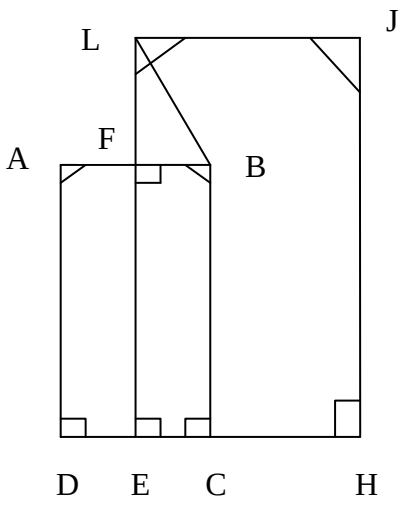


Fig. 1 (Euclidean)

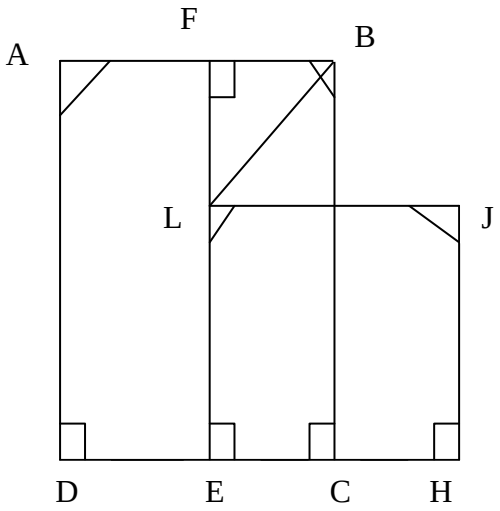


Fig. 2 (Euclidean)

**Discussion**

From (7) we get that the summit angle FBC is a right angle [ 1 ].Consequently this establishes the parallel postulate [ 1 ] & [ 2 ]But the mere existence of consistent models of hyberpolic and elliptic geometries demonstrate that the parallel postulate cannot b deduced from the first four postulates. Since our result is consistent, there is something hidden. Only further studies will unlock this mystery. The author has found two more results. [3 - 4] S. Kalimuthu has proved that there exists a spherical quadrilateral whose interior angle sum is equal to 360 degrees. [5]. Also, he has established applying linear algebraic equations to Euclidean geometry that the sum of the interior angles of a triangle is equal to two right angles. His construction and proof can be easily extended to hyperbolic and spherical geometries. [ 6 ] Kalimuthu's spherical geometry theorem and his general algebraic theorem can NOT be questioned. So, the author's finding is consistent.

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