Section E1

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Advanced plane geometry research - I

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Geometry can be simply defined as the science of space, being the most complicated or intricate part in mathematics in the past as well as at present, due to the complexity of analyzing the relationships between lines, curves, planes etc, expanding its enormous strength throughout many sectors of mathematics, physics and other subject areas, and consists of all other sections in mathematics such as algebra, calculus etc. But according to the present curricula, particularly in Sri Lanka, geometry is collapsing rapidly due to some factors, most probably due to the lack of interest and research in geometry. Therefore, this paper presents some geometrical derivatives and relationships to fill this knowledge gap in geometry.

(1)Consider any ABC triangle according to the reputed notation as AB=c,BC=a,CA=b. The two lines are intersected AB and AC at X and Y respectively equal to the ratio of **bc/(b+c)** each, from a D point on BC being parallel to AB and AC .E and F are the respective mid points of AB and AC.DP and DQ are the internal bisectors of angle ADC and angle ADB which meet AB at P and AC at Q. The relationship I discovered is that the extended EY or YE,extended XF or FX, extended PQ or QP and the external bisector of angle A, are concurrent on a constant point on extended BC or CB, meanwhile the intersected points of CP,BQ and CX,BF and BY,CE are on the AD line.

(2) In any triangle, the area of any quadrangle being drawn on any length is equal to the addition of the double area of the rectangles which are generated by the remaining lengths and the distances to the respective perpendiculars from the corner points of the length that consists the quadrangle, which are created from the mid point of the length that includes quadrangle, to the remaining lengths.

(3) Consider any ABC triangle. The internal bisector of the angle A meets BC at D.AD is extended up to P as AD=DP. Imagine that AB=c,AC=b,BP=p,PC=q. The ABPC quadrilateral has the correlation of $(p^2/c)+(q^2/b)=b+c$.

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