Theorem 6.5

Brandon Stuhr (Refereed by Nicole Hegewald)

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Theorem 6.5. Let ABCDE be a regular pentagon. Then triangle ACD is isosceles.

Proof. Since ABCDE is a regular pentagon, all 5 angles are congruent and all 5 sides are congruent. Using the regular pentagon, create diagonals AD and BD. This creates triangle ADB. By Euclid Proposition I.4, we know that triangles AED and BCD are congruent triangles since they have two congruent sides and the angle contained by the two sides is also congruent. Since BCD and AED are congruent triangles, we know that DB is congruent to AD. Therefore, triangle ABD has two congruent sides AD and DB and is an isosceles triangle.

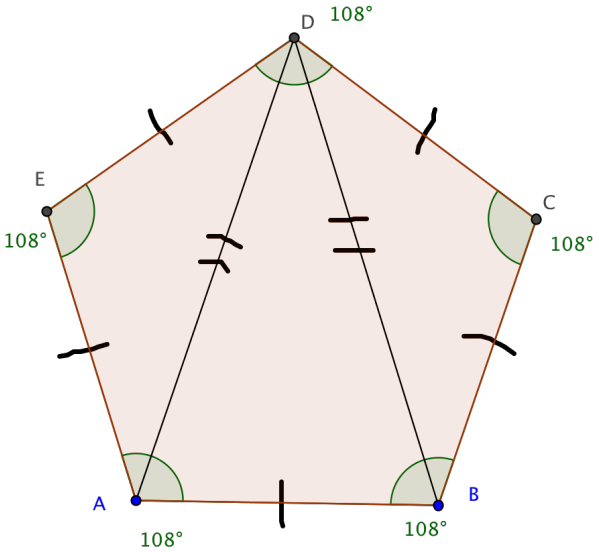

Figure 1: Regular pentagon with isosceles triangle ADB.

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