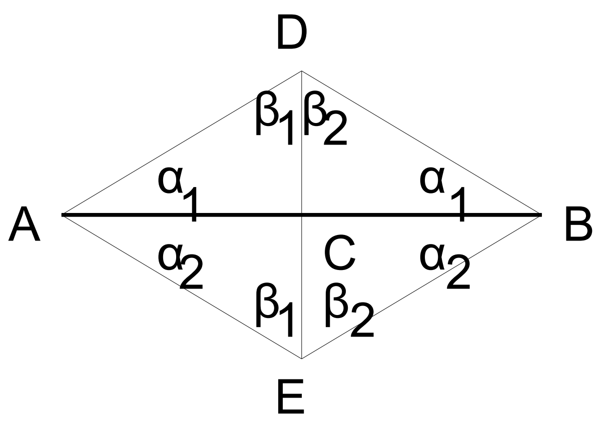

Proof that DE bisects AB at C:

1. AD=DB=BE=EA, all 4 outer line segments are the same length, by construction.
2. Since triangle ADB is isosceles, angles DAB and DBA measure the same (let's call it $\alpha1$ – Greek letters are used for angle measures.)
3. Since triangles AEB, AED, BED are also isosceles, we have 3 more pairs of congruent angles, marked $\alpha2$, $\beta1$, $\beta2$.
4. In triangle AED, $(\alpha1+\alpha2)+2\ \beta1 = 180$ degrees.
   In triangle BED, $(\alpha1+\alpha2)+2\ \beta2 = 180$ degrees.
   Thus (subtract equations) it must be that $\beta1 = \beta2$.
5. In triangle ABD, $(\beta1+\beta2)+2\ \alpha1 = 180$ degrees.
   In triangle BED, $(\beta1+\beta2)+2\ \alpha2 = 180$ degrees.
   Thus it must be that $\alpha1 = \alpha2$.
6. Now all 4 small triangles are congruent by ASA.
7. Thus the small triangles' parts are congruent, in particular AC=BC, and AB is bisected.
   Also all 4 angles at C are congruent and thus right.