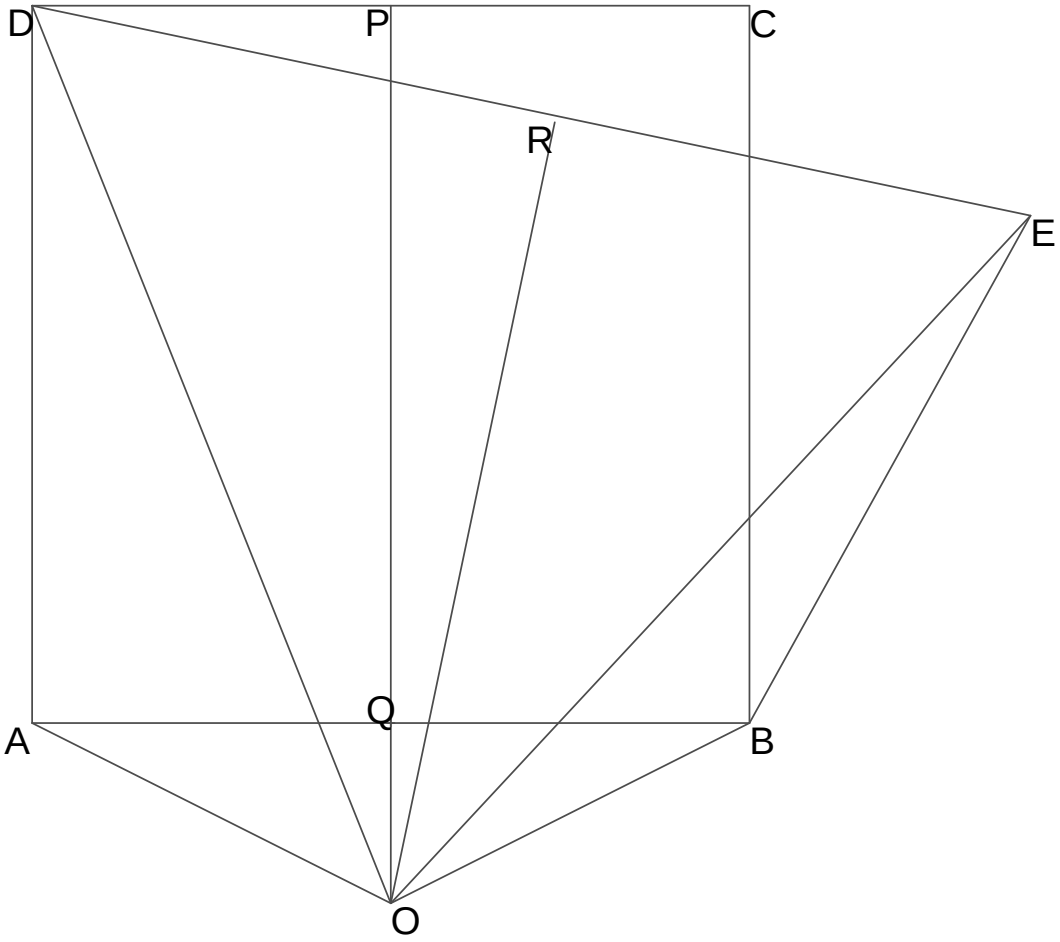
Every Angle is a Right Angle!?

Let $ABCD$ be a square and E be a point with $BC = BE$. We will show that $\angle ABE$ is a right angle. Take R to be the midpoint of DE, P to be the midpoint of DC, Q to be the midpoint of AB, and O to be the point where the lines PQ and the perpendicular bisector of DE intersect. (See figure.)



The triangles AQO and BQO are congruent since OQ is the perpendicular bisector of AB; it follows that $AO = BO$. The triangles DRO and ERO are congruent since RO is the perpendicular bisector of DE; it follows that $DO = EO$. Now $DA = BE$ as $ABCD$ is a square and E is a point with $BC = BE$. Hence the triangles OAD and OBE are congruent because the corresponding sides are equal. It follows that $\angle ABE = \angle OBE - \angle ABO = \angle OAD - \angle BAO = \angle BAD$.