

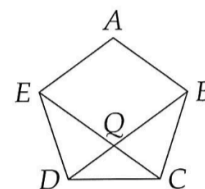
More polygon problems
Geometry Research Honors

9.4.1 $ABCDE$ at right is a regular pentagon. Show that $AEQB$ is a rhombus.

9.4.2 $UVWXYZ$ is a regular hexagon with center O . $UOWABC$ is also a regular hexagon with $AB = 12$.

(a) Find $[UOWABC]$.

(b) Find $[UVWO]$.



9.4.3 All of the interior angles of octagon $EFGHIJKL$ are 135° , $EF = GH = IJ = KL = 2$ and $FG = HI = JK = LE = 6$.

(a) Find the perimeter of the octagon.

(b)★ Find the area of the octagon. **Hints:** 277

(c)★ Find EL . **Hints:** 406

9.4.4 Let $ABCDEF$ be a regular hexagon. Find the ratio of the area of $ABCE$ to the area of the hexagon. (Source: ARML) **Hints:** 74

9.4.5 $ABCDEFGH$ is a regular octagon. Prove that $ACEG$ is a square.

9.4.6 Explicitly prove that $ABDG$ of Problem 9.14 is a trapezoid.

9.4.7 Explicitly prove that $\angle FXG$ is a right angle in Problem 9.14.

9.4.8 The midpoints of the sides of a regular hexagon $ABCDEF$ are joined in order to form a smaller regular hexagon. What fraction of the area of $ABCDEF$ is enclosed by the smaller hexagon? (Source: AMC 12)