

MASSACHUSETTS MATHEMATICS LEAGUE
CONTEST 3 - DECEMBER 2008
ROUND 6 PLANE GEOMETRY: POLYGONS (no areas)

ANSWERS

A) _____

B) _____ : _____

C) _____

- A) The vertices of rhombus $PQRS$ are midpoints of consecutive sides of square $ABCD$.
 J, K, L and M are midpoints of consecutive sides of rhombus $PQRS$.
If $AB = 4$, compute the perimeter of quadrilateral $JKLM$.
- B) All diagonals of regular polygon A with a sides are equal in length.
All diagonals of regular polygon B with b sides are also equal in length.
Regular polygon C has $a + b$ sides and $b > a$.
Let m and n denote the degree measures of an interior and exterior angles of polygon C respectively. Compute the ratio $m : n$.
- C) The diagonals of a rhombus have lengths in a $4 : 3$ ratio. If the ratio of the numerical value of the area to the numerical value of the perimeter is $9 : 4$, compute the length of the longer diagonal.