MASSACHUSETTS MATHEMATICS LEAGUE
CONTEST 2 - NOVEMBER 2014
ROUND 3 PLANE GEOMETRY: AREAS OF RECTILINEAR FIGURES

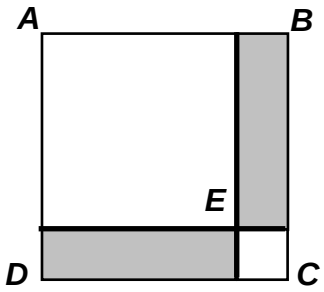
ANSWERS

A) _____

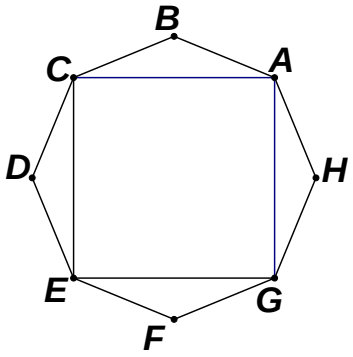
B) _____

C) _____

A) *ABCD*, a square with area 225, is subdivided into 2 squares and 2 rectangles by perpendiculars that intersect at point *E*. If $CE = \sqrt{32}$, compute the area of the shaded region.



B) A side of the regular octagon *ABCDEFGH* is $\sqrt{2}$. Compute the area of the square *ACEG*.



C) In ΔABC, the altitude is drawn to the hypotenuse of a 3 – 4 – 5 right triangle, intersecting the hypotenuse in point *D*. From point *D*, altitudes are drawn to the legs, intersecting $\overline{AB}$ in point *P* and intersecting $\overline{BC}$ in point *Q*. Compute the area of rectangle *DPBQ*, as a ratio of relatively prime integers.