MASSACHUSETTS MATHEMATICS LEAGUE
CONTEST 1 - OCTOBER 2015
ROUND 2 PYTHAGOREAN RELATIONS IN RECTILINEAR FIGURES

ANSWERS

A) _____

B) _____

C) _____

A) Right triangle *ABC* has legs of length 8 and 15.
$\Delta DEF \sim \Delta ABC$ and the sides of ΔDEF have integer lengths. If the perimeter of ΔDEF is greater than 2^{10}, compute the minimum length of the hypotenuse of ΔDEF.

B) A kite has diagonals of lengths 18 and 52.
Its sides also have integer lengths. The perimeter of the kite is 112.
The short diagonal divides the long diagonal into a reduced ratio of $a : b$, where $a > b$. Compute $a + b$.

C) In right triangle *ABC*, $AB = 2\sqrt{k}$, $AC = \sqrt{30}$, and $BC = k\sqrt{2}$.
Compute all possible areas of ΔABC.