MASSACHUSETTS MATHEMATICS LEAGUE
CONTEST 1 - OCTOBER 2011
ROUND 2 PYTHAGOREAN RELATIONS IN RECTILINEAR FIGURES

ANSWERS

A) _____

B) _____

C) (_____, _____, _____)

******* NO CALCULATORS ON THIS ROUND ******

A) The hypotenuse and a leg of right triangle ΔABC has lengths $13\sqrt{2}$ and $6\sqrt{3}$ respectively. To the nearest integer, how long is the other leg?

B) Obtuse ΔABC has sides of length 25, 45 and 53. If the length of the shortest side is increased by the positive integer N (but still remains the shortest side), ΔABC becomes a right triangle. Compute the value of N.

C) We know right triangles exist in which the hypotenuse is 1 unit longer than a leg, e.g. 3 – 4 – 5. Compute the sides (a, b, c), where a, b and c are integers, c denotes the hypotenuse and $b > a$, of the smallest such triangle whose perimeter exceeds 100.