

MASSACHUSETTS MATHEMATICS LEAGUE
FEBRUARY 2006
ROUND 2 ELEMENTARY NUMBER THEORY

ANSWERS

A) _____

B) _____

C) (_____, _____)

- A) If abc is a three digit prime, find the sum of the second largest prime factor and the second smallest prime factor of the six digit number $abcabc$.
- B) If $A \odot B$ is defined as the sum of all composite numbers strictly between A and B , that is, including neither A nor B , evaluate:
- $$(15 \odot 21) \odot (28 \odot 33)$$
- B) If x and y are integers satisfying $2xy - 4x - y - 1 = 0$, which ordered pair (x, y) is furthest from the origin?