

**MASSACHUSETTS MATHEMATICS LEAGUE
CONTEST 5 - FEBRUARY 2011
ROUND 2 ARITHMETIC / NUMBER THEORY**

ANSWERS

A) (_____ , _____)

B) _____

C) _____

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

- A) The number 312 is a multiple of 13.
The number 688 is a multiple of 43.
Their sum is 1000.
Find the other pair of positive integers (a, b) , where $a < b$, $a + b = 1000$, if one of these numbers must be a multiple of 13 and the other a multiple of 43.
- B) Given: a and b are base 10 digits.
Determine the ordered pair (a, b) such that $N = 33650ab97$ is divisible by 99.

Note: N is a 9-digit integer.
- C) When $129600_{(10)}$ is converted to base 12, its rightmost digits are k consecutive zeros.
Determine the value of k .