MASSACHUSETTS MATHEMATICS LEAGUE
CONTEST 5 - FEBRUARY 2017
ROUND 2 ARITHMETIC / NUMBER THEORY

ANSWERS

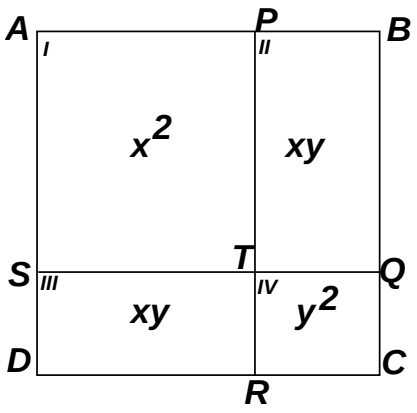
A) _____

B) _____

C) _____

A) Let A and B be nonzero 1-digit or 2-digit natural numbers, where $A+B=13$.
Let $N=\underline{A}\,\underline{B}$ denote either a 2-digit or 3-digit natural number.
Find all possible primes of the form $\underline{A}\,\underline{B}$.

B) Square $ABCD$ has an area of 361.
The 4 rectangles inside $ABCD$ have integer dimensions, but none have areas which are multiples of 3.
Compute all possible areas for rectangle II.



C) Suppose \$17.76 is paid out using any combination of pennies, nickels, dimes and/or quarters, with at most 45 of each type of coin. Compute the positive difference between the greatest and least number of coins possible.