

MASSACHUSETTS MATHEMATICS LEAGUE
CONTEST 5 - FEBRUARY 2010
ROUND 2 ARITHMETIC / NUMBER THEORY

***** NO CALCULATORS IN THIS ROUND *****

ANSWERS

A) _____

B) _____

C) _____

A) Let P equal the product of $A = 3,481,760,415,523$ and $B = 28,576,423,814$.
Determine the number of digits in the product P .

B) Find all positive integers with the property that the sum of all its divisors is exactly the same as the number of divisors of 360.

C) The 258th natural number that is not divisible by either 3 or 7 is k .
Compute the sum of the prime factors of k .