

MASSACHUSETTS MATHEMATICS LEAGUE
CONTEST 5 – FEBRUARY 2008
ROUND 2 ARITHMETIC / NUMBER THEORY

ANSWERS

A) _____

B) _____

C) _____

A) What is the units digit of the product $7^{218}(3^{507})$?

B) Let $x^2 - y^2 = 31$, where x and y are positive integers.
If $N = xy$, how many positive factors does N have?

C) Using only the prime digits 2, 3, 5 and 7 without repetition, form all possible positive integers in base 10 with at most 4 digits (i.e. less than 10,000), that will be divisible by 15.
What is the sum of all these positive integers?