MASSACHUSETTS MATHEMATICS LEAGUE
CONTEST 3 - DECEMBER 2006
ROUND 2 ARITHMETIC/ ELEMENTARY NUMBER THEORY

ANSWERS

A) _____

B) _____

C) _____

A) *W* is the units digit of a base 10 integer *N*. When *N* is raised to a positive integer power, the units digit may equal exactly two distinct values. Find all values of *W* for which this is true.

B) A positive integer has exactly 8 positive factors. Two of them are 77 and 119. Find this integer.

C) The 4-digit base 10 positive integer *ABBA* (where $A > 0$) is divisible by 12. A and B are distinct digits. Find the sum of all integers satisfying this condition.