MASSACHUSETTS MATHEMATICS LEAGUE
DECEMBER 2003
ROUND 2: NUMBER THEORY

ANSWERS

A) 300

B) 100

C) 7

A) On a particular section of Route 314 there were three exits. During rush hour on December fourth, 20% of the cars on Route 314 took exit 1, 25% of those remaining took exit 2, and 10% remaining after that took exit 3. If 162 cars continued on Route 314, how many cars traveled the route during rush hour that day?

$X(.80)(.75)(.90) = 162 \quad X = 300$

B) A palindrome reads the same from right to left or vice versa. For example, 37673 is a palindrome. How many palindromes are there between 10,000 and 20,000?

MUST be of the form 1ABA1 ANS $10 \cdot 10 = 100$

C) The length of each side of a triangle is a prime, and its perimeter is also a prime. What is the smallest possible perimeter that the triangle could have?

2, 2, 3 $P = 7$