

**MASSACHUSETTS MATHEMATICS LEAGUE
DECEMBER 2004
ROUND 3 ANALYTIC GEOM OF LINE**

ANSWERS

A) _____

B) _____

C) _____

Definition: A lattice point is one whose coordinates are each integers.

- A) A line passes through $P(-8, 3)$ with slope $-\frac{5}{2}$. Moving from P to the right along the line, what are the coordinates of the next lattice point on the line?
- B) A line whose equation is $7x - 3y = c$ passes through the lattice points $(9, 16)$ and (a, b) where $a > 100$. Find the minimum possible value of the sum $a + b$.
- C) A triangular region is bounded by the lines $y = 0$, $3x - 2y = 0$, and $3x + 4y = 108$. Find the number of lattice points strictly in the interior of the triangle (that is, do not count points on the boundary.)