MASSACHUSETTS MATHEMATICS LEAGUE
CONTEST 3 - DECEMBER 2010
ROUND 5 ALG 1: RATIO, PROPORTION OR VARIATION

ANSWERS

A) $y =$ _____

B) Ben: $_____ Joe: $_____

C) (_____ , _____)

****** NO CALCULATORS ON THIS ROUND ******

A) Given: y varies directly as x and z.
If $y = 5$, when $(x, z) = (3, 4)$, then compute y when $(x, z) = (36, 134)$.

B) Two brothers, Ben and Joe, bought a single family home for $180,000.
Ben invested $3,600 of his own money in repairs.
Joe invested $2,000 of his own money in repairs.
The house was sold for $227,000 and $12,000 covered all expenses (closing costs, real estate commissions, etc.). If the brothers split the profit based on the contributions of their own money towards repairs, how much should each brother receive?

C) Given: A and B are integers,
$60 < A < 70$, but the units' digit is illegible.
$20 < B < 30$, but the units' digit is illegible.

Two students computed the ratio of $\frac{A}{B}$ incorrectly.

The first student reversed the digits of A, but not B.
The second student reversed the digits of B, but not A.

Amazingly, both students get an answer of $\frac{3}{2}$. Compute the ordered pair (A, B)