

**MASSACHUSETTS MATHEMATICS LEAGUE
CONTEST 1 - OCTOBER 2011
ROUND 4 ALG 1: FRACTIONS & MIXED NUMBERS**

ANSWERS

A) _____

B) _____

C) _____

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

- A) Gottfried is waiting in line to buy tickets to Calculus: The Musical. In front of him in line are $\frac{5}{6}$ of the total number of people in line. Behind him are $\frac{1}{8}$ of the people. Compute the least number of people in line waiting for tickets.

- B) A basketball team has won 46 out of the 60 games played so far. The team has 22 more games on the schedule. Find the minimum number of additional wins the team will need so their season record will exceed 0.800 for the first time in club history.

- C) Let t be an integer.

The equations $\begin{cases} x = 1 + \frac{4t-3}{9} \\ y = 3 - \frac{13-5t}{8} \end{cases}$ generate (x, y) coordinates of points that lie on a straight line.

For example, if $t = -15$, $x = 1 + (-63/9) = -6$ and $y = 3 - (88/8) = -8$.

So this straight line passes through the point $P(-6, -8)$.

Compute the next largest value of t for which x and y are both integers.