

**MASSACHUSETTS MATHEMATICS LEAGUE  
FEBRUARY 2006  
ROUND 4 ALGEBRA ONE: WORD PROBLEMS  
ANSWERS**

A)\_\_\_\_\_

B)\_\_\_\_\_mins

C)\_\_\_\_\_

- A) I have a mixture of quarters and Sacagawea dollar coins the same size. I gave \$16.50 worth of these coins to a teller, but he mistakenly counted 3 of the quarters as dollars. If he credited me  $X$  **cents** for these coins and the minimum number of coins I could have given the teller is  $K$ , find the numeric value of  $X + K$ .
- B) I jog at 12 feet per second and my little sister jogs at a constant slower rate. If we run in opposite directions on a quarter mile track, we pass each other every minute. If we run in the same direction, how many minutes will it take me to lap her? (Recall: 1 mile = 5280 feet!)
- C) A chemist adds 20 liters of an alcohol and water solution that is 30% alcohol to 10 liters of an original solution of alcohol and water. He finds the percentage of alcohol in the resulting mixture is 6 percentage points higher than in the original solution. What was the percentage of alcohol of the original solution?