

**MASSACHUSETTS MATHEMATICS LEAGUE  
CONTEST 6 - MARCH 2010  
ROUND 4 ALG 1: ANYTHING**

**ANSWERS**

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

B) \_\_\_\_\_ years

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

<b>***** NO CALCULATORS IN THIS ROUND *****</b>
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- A) Determine all possible positive integral values of  $x$  for which  $236_8 = 134_x$ .  
The subscripts denote the base in which the numeral is written.

- B) Alice and her mother have the same birthday (MM/DD).  
Alice is 18 years younger than her mother.  
When her mother was as old as Alice is now, her mother was twice as old as Alice was then.  
In how many years from now will the ratio of Alice's age to her mother's age be 7 : 10?

- C) Compute the two rational roots of the following quadratic:

$$4A(48A + 1) = 5(16 - 201A).$$