

**MASSACHUSETTS MATHEMATICS LEAGUE
CONTEST 4 – JANUARY 2007
ROUND 6 ALG 1: ANYTHING**

ANSWERS

A) _____ oz

B) _____

C) _____

A) A chemist needs to make 30 oz. of a 25% alcohol solution by mixing together a 15% alcohol solution and a 40% alcohol solution. How many ounces of the 40% solution should be used?

B) Determine the sum of all values of x for which $|x| = \frac{6}{|x+5|}$.

C) Find the product of all possible solutions over the reals:

$$(x^2 - 7x + 11)^{2x^2 + 11x - 6} = 1$$

Consider 3 cases: $N^0 = 1$, provided $N \neq 0$
 $1^N = 1$, for all real values of N
 $(-1)^N = 1$ for all even values of N