

**MASSACHUSETTS MATHEMATICS LEAGUE
CONTEST 2 - NOVEMBER 2011
ROUND 4 ALG 1: FACTORING AND ITS APPLICATIONS**

ANSWERS

A) _____

B) _____

C) _____

**** NO CALCULATORS IN THIS ROUND ****

A) How many positive integer divisors does $N = 2^4 \cdot 3^2 \cdot 6$ have?

B) $4x^4 + 1 - 5x^2$ is to be completely factored over the integers, where each factor is of the form $ax + b$, a and b are integers and $a > 0$. Express the sum of the factors in terms of x .

C) If $x + y = 6$ and $x^3 + y^3 = 58.5$, compute the numerical value of xy .