MASSACHUSETTS MATHEMATICS LEAGUE
CONTEST 6 - MARCH 2014
ROUND 6 ALG 2: PROBABILITY AND THE BINOMIAL THEOREM

ANSWERS

A) _____

B) _____

C) _____

A) Given: $\binom{n}{r} = \frac{n!}{r! \cdot (n-r)!}$ and 0! = 1

Evaluate $\binom{7}{1} + \binom{7}{2} + \binom{7}{3} + \binom{7}{4} + \binom{7}{5} + \binom{7}{6}$

B) Find the middle term in the expansion of $\left(2A - \frac{k}{A}\right)^{10}$.

C) Sequences of 5 letters (repetition allowed) are to be made up, using the letters A, B, C and D. Compute the number of these sequences in which there are an even number of As, including sequences containing only Bs, Cs and Ds.