MASSACHUSETTS MATHEMATICS LEAGUE
CONTEST 6 - MARCH 2009
ROUND 6 ALG 2: PROBABILITY AND THE BINOMIAL THEOREM

ANSWERS

A) _____

B) (_____ , _____)

C) _____

A) A committee of 5 is chosen at random from 4 juniors and 7 seniors. What is the probability that this committee will contain exactly 2 juniors and 3 seniors?
Leave your answer as a simplified fraction.

B) The first term in the expansion of $\left(\frac{x^3}{4}+8x^{-n}\right)^5$ is $\frac{x^{15}}{2^{10}}$. For a unique integer n, the second term in the expansion is a constant c. Determine the ordered pair (n, c).

C) Four members of the *Jones* family and six members of the *Smith* family participate in a Superbowl pool every year. Every person has the same probability of winning the pool. What is the exact probability that a *Jones* family member will win at least 4 of the pools during the next 6 years?