

**MASSACHUSETTS MATHEMATICS LEAGUE
CONTEST 6 - MARCH 2011
ROUND 6 ALG 2: PROBABILITY AND THE BINOMIAL THEOREM**

ANSWERS

A) _____

B) _____

C) _____

***** NO CALCULATORS ON THIS ROUND *****

A) The probability of hitting the bull's-eye of a target is 0.4 . Compute the probability of missing the bull's-eye three times with five shots.

B) The simplified ratio of the middle terms in the expansion of $(2x - 3y)^{11}$ is $a : b$.

If $\frac{y}{x} = \frac{7}{3}$, compute ab .

C) The probability that Tom will solve a particular problem is $1/2$, that Dick will solve it is $2/3$ and that Harry will solve it is k . If all three try to solve the problem independently, the probability that at least two of them will solve the problem is $\frac{3}{4}$. Compute k .