MASSACHUSETTS MATHEMATICS LEAGUE
CONTEST 6 - MARCH 2008
ROUND 6 ALG 2: PROBABILITY AND THE BINOMIAL THEOREM

ANSWERS

A) _____

B) _____

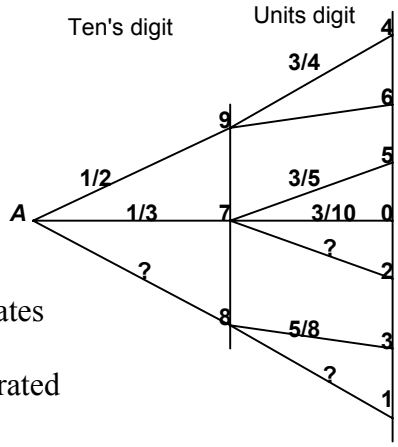
C) _____

A) A container has 5 blue balls and 4 red balls. If 3 balls are simultaneously chosen at random, what is the probability that one is blue and two are red?

B) $(3 + 2i)^5 = a + bi$, where a and b denote real numbers and $i = \sqrt{-1}$. Compute $\sqrt{b-1}$.

C) Given:

The ten's digit must be 9, 7 or 8.
The units digit must be
4 or 6, if the ten's digit is 9
5, 0 or 2, if the ten's digit is 7
3 or 1, if the ten's digit is 8.



The graph at the right, starting at A and traveling to the right, generates some, but not all, two-digit integers with unequal probabilities of formation. For example, the probability that the number 94 is generated is (1/2)(3/4) = 3/8.

What is the probability that the number generated is divisible by 3?