CS 206 , Spring 2007, Quiz 4 April 5th , 2007

Name :

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A box contains 5 red and 5 blue marbles. Two marbles are withdrawn randomly.
Let X denotes a random variable defined as the number of red marbles chosen.

a- What is the probability mass function of X

P{X=0}= 5/10*4/9=2/9
P{X=1}= Pr{RB}+Pr{BR}= 2*5/10*5/9= 5/9
P{X=2}= 5/10*4/9= 2/9

Suppose that you win $1.10 if the marbles chosen are the same color and you lose $1.00 if the marbles chosen are different colors

b- Find the expected value of the amount you win

$E[X] = (1.1)4/9 - (1)\ 5/9 = -.6/9 \approx = -.067$

c- Find the variance of the amount you win

$\mathrm{Var}(X) = (1.1)^2(4/9) + 5/9 - (.6/9)^2 \approx 1.089$