Math 393 Homework Due 11/16/2009

1. On a 4 question multiple choice exam there are 5 possible answers for each question (1 is correct, 4 are incorrect). Suppose you answer each question randomly. Let X be the number correct.
    a. Find the probability that you get 2 correct, P(X=2).
    b. Find the probability that you get all 4 correct.
    c. Find the probability that you get at most 3 correct.
    d. How many do you expect to get correct (i.e. what is the expected value of X)?

2. Roll 2 die and record the sum of the faces showing.
    a. Find the probability that the sum is even.
    b. Suppose you roll the 2 die a total of 10 times. How many times would you expect to get an even sum? Explain.

3. According to a recent survey, 53% of Americans approve of a Health care plan with a “public option”. Suppose you randomly ask 8 Americans whether or not they approve of a Health care plan with a “public option”. Let X be the number who say “yes”.
    a. Find the probability that X is 4, P(X=4).
    b. Find the probability that X is at least 6.
    c. How many do you expect to say “yes”? Explain.