EE381 Homework #1

1) An experiment consists of drawing 3 cards in succession from a well-shuffled ordinary deck of cards. Let A1 be the event "king on first draw", A2 the event "king on second draw", and A3 the event "king on third draw". State in words the meaning of each of the following:
   a) $P(A_1 \cap A_2')$
   b) $P(A_1' \cup A_2')$
   c) $P[(A_1 \cap A_2) \cup (A_2' \cap A_3)]$
2) What probabilities should be assigned to the outcomes H(heads) and T (tails) when the coin is biased so that heads comes up twice as often as tails?
3) Suppose that a die is biased (or loaded) so that 3 appears twice as often as each other number but that the other five outcomes are equally likely. What is the the probability that an odd number appears when we roll this die?
4) A card is drawn at random from an ordinary deck of 52 playing cards. Using sample space, events, and theorems on probability to find the probability that it is
   a) A three of clubs or a six of diamonds
   b) Any suit except hearts
   c) Neither a four nor a club
5) A ball is drawn at random from a box containing 6 red balls, 4 white balls, and 5 blue balls. Using sample space, events, and theorems on probability to determine the probability that it is:
   a) White
   b) Not red
   c) Red or white

Note: Your answers should show your step-by-step work. Anwers which have only final results are not accepted.