Practice Test 1

1 A half a deck of cards containing two complete suits is dealt out to two players. What is the probability that each player receives a 3?

2 5 cards from a standard are dealt out. What is the probability of getting a full house (a pair and three of kind in the same hand)

3 Suppose an urn contains 40 balls, 12 of which are red and the rest blue. Eight balls are selected at random from the group of 40. What is the probability **at least 3** are red if the selection is done
(a) without replacement   (b) with replacement?

4 Consider the trial on which a 2 is observed in successive rolls of a four-sided die. Let A be the event that 2 is observed on the first trial. Let B be the event that at least two trials required to observe a 2. Assume the die is fair find
(a) $P(A)$ (b) $P(B)$ (c) $P(A \cup B)$.

5 Joe throws six dice and wins if he obtains at least 1 ace. Fred throws twelve dice and wins if he obtains at least 2 aces. Who has the greater probability of winning? Show work.

6 A large operator of timeshare complexes requires anyone interested making a purchase to first visit the site of interest. Historical data indicate that 20 percent of potential purchasers select a day visit, 50 percent a one night visit, and 30 percent opt for a 2 night visit. In addition, 10 percent of day visitors, 30 percent of one night visitors, and 20 percent of two night visitors end up deciding to buy. Find the prior and posterior probabilities that if a purchase is made it is by a day visitor, night visitor, or two night visitor.

7 An urn contains 20 chips, 8 marked H and 11 marked C. 7 chips are randomly selected one at a time without replacement. Let X equal the number of H chips choosen. Find its pmf.