

Math 135A: Homework Assignment #1

1. A student must choose exactly two out of three electives: art, French, and mathematics. He chooses art with probability $5/8$, French with probability $5/8$, and art and French together with probability $1/4$. What is the probability that he chooses mathematics?
2. Among the digits 1, 2, 3, 4, 5 first one is chosen, and then a second selection is made among the remaining four digits. Assume that all twenty possible results have the same probability. Find the probability that an odd digit will be selected (a) the first time, (b) the second time, (c) both times.
3. Let A , B and C be arbitrary events. Find the expressions for the events that of A , B , C :
 - (a) Only A occurs.
 - (b) Both A and B , but not C , occur.
 - (c) All three events occur.
 - (d) At least one occurs.
 - (e) At least two occur.
 - (f) One and no more occurs.
 - (g) Two and no more occur.
 - (h) None occurs.
 - (i) Not more than two occur.
4. Suppose that each of n sticks is broken into one long and one short part. The $2n$ parts are arranged into n pairs from which new sticks are formed. Find the probability (a) that the parts will be joined in the original order, (b) that all long parts are paired with short parts.
5. A throws six dice and wins if he scores at least one ace. B throws twelve dice and wins if he scores at least two aces. Who has the greater probability to win? Hint: Calculate the probabilities to lose.