

ELEG 3143 Assignment # 2

- Let E, F, G be three events. Find expressions for the events that of E, F, G .
 - Only F occurs.
 - At least two events occur.
 - At most two events occur.
- A card is drawn at random from a standard deck of 52 cards. Let A be the event that a king is drawn, B the event that a spade is drawn, and C the event that a ten of spades is drawn. Describe each of the events listed below and calculate its probability.
 - $A \cup B$
 - $B \cup C$
 - $A \cap C$
 - $A \cap B \cap C$
- An experiment consists of randomly drawing three cards in succession without replacement from a standard deck of 52 cards. Let A be the event of a king on the first draw, B the event of a king on the second draw, and C the event of a king on the third draw. Describe each of the events listed below and calculate its probability.
 - $A \cap B^c$
 - $A^c \cap B^c$
 - $A^c \cap B^c \cap C^c$
- Tossing two dice. What is the probability that the first die is six given that the sum of the dice is seven?

5. A family has two children. What is the conditional probability that both are boys given that at least one of them is a boy? Assume that boy and girl are equally likely.
6. You have a shuffled deck of three cards: 2, 3, and 4. You draw one card. Let C_i denote the event that card i is picked, for $i = 2, 3$, or 4. Let E denote the event that the card is an even-numbered card.
 - (a) What is $\Pr(C_2|E)$?
 - (b) What is $\Pr(E|C_2)$?
7. When a pair of dice are rolled, let A be the event of obtaining a number of 6 or greater and let B be the event of obtaining a number of 6 or less. Are events A and B independent or dependent?