Chapter 6 Review and Tree Diagrams

Review and Section 6.5

April 5, 2016

Suppose that a pair of dice is rolled, and the result is written as a sequence. For example, one possible outcome is $(2, 6)$.

$E =$ sum of the dice is odd

$F =$ sum of the dice is even

1. Are E and F mutually exclusive?
2. Compute $Pr(E) + Pr(F)$

Suppose that $Pr(E) = .6$, $Pr(F) = .5$, and $Pr(E' \cup F') = .6$.
Use a Venn diagram to find the probability of:

1. $Pr(E \cap F)$
2. $Pr(E \cup F')$

In an experiment, four people are chosen at random and their birthdays are recorded.
What is the the probability that at least two of them were born in the same month?

Conditional Probability: Example

A sequence of two playing cards is drawn at random (without replacement) from a standard deck of 52 cards. Let E be the event: the first card is a king.
Let F be the event: the second card is a king.

1. Compute $Pr(E)$.
2. Compute $Pr(F|E)$.
3. What is the probability that both cards are kings?

Example

Suppose that the probability of an event E is .4, the probability of an event F is .5, and the probability of the event $E \cap F$ is .2.

1. Draw a two circle Venn diagram, label one circle E, the other F, and fill in the appropriate probability into each of the 4 regions of the diagram.
2. Use the Venn diagram to compute $Pr(E|F')$.
3. Are the events E and F' independent? Explain your answer.