Definitions:

Conditional Probability: pg. 206

Multiplication Rule: pg. 209

Independent Events: pg. 211

Examples:

Conditional Probability: pg. 206 Suppose a collage class has 16 members, consisting of 10 women and 6 men. Four of the women are seniors and three of the men are seniors.

1. What is the probability that a student selected at random is a senior?
2. What is the probability that a student selected at random is a senior given that the selected student is a woman?

A Deck of Cards:

(a) If two cards are drawn at random from a standard deck of cards, what is the probability that both cards drawn are kings?

(b) If three cards are drawn what is the probability that all three cards are kings?

Rolling Dice: #9 pg. 217 What is the probability that the sum of two rolled dice is 9 given that at least one of the dice rolled is a 5? What if one of the dice rolled is a 3?

Carnival Game: # 28 pg. 218 If the probability of winning a carnival game is 3/7 and you play the game two times, what is the probability that you will win both times or you will lose both times?

AIDS Testing: Example 10 pg. 214 One of the standard tests for infection by HIV is the Elias test. The precise reliability of the test varies by laboratory and has improved over time. Assume the test returns a positive result for 99.8% of those with the HIV virus and that when the test is given to those not infected it returns a positive result 1.5% of the times (a false positive). Heterosexuals without specific risk factors for HIV have an infection rate of about 0.02%.

(a) What is the probability that a random person in this group would have positive Elias test?

(b) If a random person in this group has a positive Elias test, what is the probability the person is infected with HIV?