Assignment # 1, Econ 253

Problems from Textbook

2.2, 2.14 (a, b), 2.16 (d) 2.17 (a) 2.23,

In problem 2.17 (f) check any two conditional probabilities to see if they satisfy the condition for X and Y to be independent.

Additional Problems

1. A single die is tossed twice. Let X denote the number of times a six occurs in the two tosses. (a) Write the probability distribution of X. (b) Write down the cumulative distribution function of X.

2. In a marketing study it has been found that on a fall Saturday afternoon 15% of adult men watch sports programming on network A from 1:00 p.m. to 2:00 p.m., 18% watch on network C from 2:00 p.m. to 3:00 p.m., and 7% watch both. For simplicity, assume that the viewers of these programs are sure to see advertisements if they are watching the program.

(a) If a company advertises on both networks, what is the probability the advertisement will be seen by a randomly chosen adult man?

(b) If the company advertises on both networks, what is the probability a randomly chosen adult man will see the advertisement only on network A?

3. In response to a campaign by the *Times* to increase circulation, Kyle, one of the carriers, has decided to call on families who recently moved into the area to see if they will subscribe to the *Times*. Assume that 75% of all families moving into the area have previously subscribed to a newspaper and that the probability a previous subscriber will buy a subscription from Kyle is 0.8. However, only 10% of those who did *not* previously subscribe will buy a subscription.

(a) If Kyle calls on a randomly selected new family, what is the probability they will buy a subscription?

(b) If a new family buys a subscription, what is the probability they were previous subscribers?

4. Under the right economic conditions, the probability that a customer who enters the showroom will actually purchase a car is 0.05. What is the probability that at least one of the next four customers entering the showroom will buy a car? (Assume that there is no connection between the decisions taken by different customers).