

Sample Quiz 4

1. In a certain town, 25% of the citizens drive red cars, 45% of the citizens have received a speeding ticket, and 20% have both received a speeding ticket and drive red cars. A citizen is selected at random.
 - (a) If she drives a red car, what is the probability that she has received a speeding ticket?
 - (b) What is the probability that she drives a red car if she did *not* receive a speeding ticket?

2. There are two urns with the following initial distribution:
Urn A contains 7 red marbles and 3 white marbles
Urn B contains 2 red marbles and 4 white marbles

First, one marble is drawn from A and placed into B.
Second, another marble is drawn from A and placed into B.
Third, one marble is drawn from B.
 - (a) What is the probability that all three marbles drawn were the same color?
 - (b) What is the probability of drawing at most two reds if the first marble drawn is red?

3. Consider a 5-day weather pattern where it is equally likely to be rainy as it is to be sunny
Let A = event that three or more days are rainy.
Let B = event that the first two days are sunny.
Let C = event that all days have the same weather.
 - (a) Find the probability of each event.
 - (b) For each pair of events, decide whether they are independent. Defend your answer.