(1) If eight identical blackboards are to be divided among four schools, how many divisions are possible? How many if each school must receive at least 1 blackboard?

(2) a) If there are twelve strangers in a room, what is the probability that no two of them celebrate their birthday in the same month? b) How many people have to be in a room in order for the probability that at least two of them celebrate their birthday in the same month is at least $\frac{1}{2}$? (Assume that all possible monthly outcomes are equally likely.)

(3) Urn A contains 3 red and 3 black balls, whereas urn B contains 4 red and 6 black balls. If a ball is randomly selected from each urn, what is the probability that the balls will be the same color?

(4) Suppose that we have 3 cards that are identical in form, except that both sides of the first card are colored red, both sides of the second card are colored black, and one side of the third card is colored red and the other side black. The 3 cards are mixed up in a hat, and 1 card is randomly selected and put down on the ground. If the upper side of the chosen card is colored red, what is the probability that the other side is colored black?

(5) In a certain community, 36 percent of the families own a dog and 22 percent of the families that own a dog also own a cat. In addition, 30 percent of the families own a cat. a) What is the probability that a randomly selected family owns both a cat and a dog? b) What is the conditional probability that a randomly selected family owns a dog given that it owns a cat?

(6) Student X is late to class with probability 0.3 on rainy days and with probability 0.1 on non-rainy days. a) If the probability of rain tomorrow is 0.7, what is the probability that student X will be on-time to class? b) If student X is on-time, what is the conditional probability that it rained?

(7) Players A and B alternate rolling a pair of dice, stopping either when A rolls the sum 9 or when B rolls the sum 6. Assuming that A rolls first, find the probability that the final roll is made by A.