(1) A standard poker deck is shuffled and the card on top is removed. What is the probability that the *second* card is an ace?

(2) Ashley is hoping to land a summer internship with a public relations firm. If her interview goes well, she has a 70% chance of getting an offer. If the interview is a bust, though, her chances of getting the position drop to 20%. Unfortunately, Ashley tends to babble incoherently when she is under stress, so the likelihood of the interview going well is only 0.10. What is the probability that Ashley gets the internship?

(3) A smoke detector system uses two devices, A and B. If smoke is present, the probability that it will be detected by device A is .95; by device B, .90; and by both devices, .88.
   (a) If smoke is present, find the probability that the smoke will be detected by either device A or B or both devices.
   (b) Find the probability that the smoke will be undetected.

(4) Articles coming through an inspection line are visually inspected by two successive inspectors. When a defective article comes through the inspection line, the probability that it gets by the first inspector is .1. The second inspector will "miss" five out of ten of the defective items that get past the first inspector. What is the probability that a defective item gets by both inspectors?

(5) A monkey is to demonstrate that she recognizes colors by tossing one red, one black, and one white ball into boxes of the same respective colors, one ball to a box. If the monkey has not learned the colors and merely tosses one ball into each box at random, find the probabilities of the following results:
   (a) There are no color matches.
   (b) There is exactly one color match.

(6) Of the voters in a city, 40% are Republicans and 60% are Democrats. Among the Republicans 70% are in favor of a bond issue, whereas 80% of the Democrats favor the issue. If a voter is selected at random in the city, what is the probability that he or she will favor the bond issue?

(7) An accident victim will die unless in the next 10 minutes he receives some type A, Rh-positive blood, which can be supplied by a single donor. The hospital requires 2 minutes to type a prospective donor's blood and 2 minutes to complete the transfer of blood. Many untyped donors are available, and 40% of them have type A, Rh-positive blood. What is the probability that the accident victim will be saved if only one blood-typing kit is available? Assume that the typing kit is reusable but can process only one donor at a time.

(8) A new secretary has been given n computer passwords, only one of which will permit access to a computer file. Because the secretary has no idea which password is correct, he chooses one of the passwords at random and tries it. If the password is incorrect, he discards it and randomly selects another password from among those remaining, proceeding in this manner until he finds the correct password.
   (a) What is the probability that he obtains the correct password on the first try?
   (b) What is the probability that he obtains the correct password on the second try? The third try?
   (c) A security system has been set up so that if three incorrect passwords are tried before the correct one, the computer file is locked and access to it denied. If $n = 7$, what is the probability that the secretary will gain access to the file?