34. Screening for Marijuana Use If one of the test subjects is randomly selected, find the probability that the subject tested positive or used marijuana.

35. Screening for Marijuana Use If one of the test subjects is randomly selected, find the probability that the subject tested negative or did not use marijuana.

36. Screening for Marijuana Use If one of the test subjects is randomly selected, find the probability that the subject actually used marijuana. Do you think that the result reflects the marijuana use rate in the general population?

37. Screening for Marijuana Use Find the probability of a false positive or false negative. What does the result suggest about the test's accuracy?

38. Screening for Marijuana Use Find the probability of a correct result by finding the probability of a true positive or a true negative. How does this result relate to the result from Exercise 37?

4-3 Beyond the Basics

39. Gender Selection When analyzing results from a test of the MicroSort gender-selection technique developed by the Genetics IVF Institute, a researcher wants to compare the results to those obtained from a coin toss. Assume that boys and girls are equally likely and find $P(G \text{ or } H)$, which is the probability of getting a baby girl *or* getting heads from a coin toss.

40. Disjoint Events If events A and B are disjoint and events B and C are disjoint, must events A and C be disjoint? Give an example supporting your answer.

41. Exclusive Or The formal addition rule expressed the probability of A or B as follows: $P(A \text{ or } B) = P(A) + (B) - P(A \text{ and } B)$. The *exclusive or* means either one or the other events occurs, but not both. Rewrite the expression for $P(A \text{ or } B)$ assuming that the addition rule uses the *exclusive or* instead of the *inclusive or.* (*Hint:* Draw a Venn diagram.)

42. Extending the Addition Rule Extend the formal addition rule to develop an expression for $P(A \text{ or } B \text{ or } C)$. (*Hint:* Draw a Venn diagram.)

43. Complements and the Addition Rule

a. Develop a formula for the probability of not getting either A or B on a single trial. That is, find an expression for $P(\overline{A} \text{ or } \overline{B})$.

b. Develop a formula for the probability of not getting A or not getting B on a single trial. That is, find an expression for $P(\overline{A} \text{ or } \overline{B})$.

c. Compare the results from parts (a) and (b). Does $P(\overline{A \text{ or } B}) = P(\overline{A} \text{ or } \overline{B})$?

4-4 Multiplication Rule: Basics

Key Concept This section presents the basic multiplication rule used for finding $P(A \text{ and } B)$, which is the probability that event A occurs and event B occurs. If the outcome of event A somehow affects the probability of event B, it is important to adjust the probability of B to reflect the occurrence of event A. The rule for finding $P(A \text{ and } B)$ is called the *multiplication rule* because it involves the multiplication of the probability of event A and the probability of event B (where, if necessary, the probability of event B is adjusted because of the outcome of event A). In Section 4-3 we associated use of the word *or* with addition; in this section we associate use of the word *and* with multiplication.