14. Births in China In China, the probability of a baby being a boy is 0.545. Many couples are allowed to have only one child. Among the next five randomly selected births in China, what is the probability that at least one of them is a girl? Can this system continue to work indefinitely?

15. Car Crashes The probability of a randomly selected car crashing during a year is 0.0423 (based on data from the *Statistical Abstract of the United States*). If a family has three cars, find the probability that at least one of them has a crash during the year. Is there any reason why this probability might be wrong?

16. Cleared Burglaries According to FBI data, 12.4% of burglaries are cleared with arrests. A new detective is assigned to five different burglaries.

a. What is the probability that at least one of them is cleared with an arrest?

b. What is the probability that the detective clears five burglaries with arrests?

c. What should we conclude if the detective clears all five burglaries with arrests?

17. Wi-Fi Based on a poll conducted through the e-edition of *USA Today*, 67% of Internet users are more careful about personal information when using a public Wi-Fi hotspot. What is the probability that among four randomly selected Internet users, at least one is more careful about personal information when using a public Wi-Fi hotspot? How is the result affected by the additional information that the survey subjects volunteered to respond?

18. Compliments at Work Based on a poll conducted through e-mail by *USA Today*, 41% of survey respondents most liked to get compliments at work from their co-workers. Among 12 randomly selected workers, what is the probability of getting at least 1 who most likes to get compliments from co-workers? How is the result affected by the additional information that the survey subjects volunteered to respond?

In Exercises 19–24, refer to Table 4-1, included with the Chapter Problem. In each case, assume that 1 of the 1000 test subjects is randomly selected.

19. False Positive Find the probability of selecting a subject with a positive test result, given that the subject does not use drugs. Why is this particular case problematic for test subjects?

20. False Negative Find the probability of selecting a subject with a negative test result, given that the subject uses drugs. Who would suffer from this type of error?

21. Inverse Probabilities Find $P(\text{subject uses drugs} \mid \text{negative test result})$. Compare this result to the result found in Exercise 20. Are $P(\text{subject uses drugs} \mid \text{negative test result})$ *and* $P(\text{negative test result} \mid \text{subject uses drugs})$ equal?

22. Inverse Probabilities

a. Find $P(\text{negative test result} \mid \text{subject does not use drugs})$.

b. Find $P(\text{subject does not use drugs} \mid \text{negative test result})$.

c. Compare the results from parts (a) and (b). Are they equal?

23. Positive Predictive Value Find the positive predictive value for the test. That is, find the probability that a subject uses drugs, given that the test yields a positive result.

24. Negative Predictive Value Find the negative predictive value for the test. That is, find the probability that a subject does not use drugs, given that the test yields a negative result.

Identical and Fraternal Twins. ***In Exercises 25–28, use the data in the following table. Instead of summarizing observed results, the entries reflect the actual probabilities based on births of twins (based on data from the Northern California Twin Registry and the article "Bayesians, Frequentists, and Scientists" by Bradley Efron,*** **Journal of the American Statistical Association,** ***Vol. 100, No. 469). Identical twins come from a single egg that***