(based on data from the Genetics & IVF Institute). In analyzing these results, assume that the XSORT method has no effect so that boys and girls are equally likely.

a. Find the probability of getting exactly 879 girls in 945 births.

b. Find the probability of getting 879 or more girls in 945 births. If boys and girls are equally likely, is 879 girls in 945 births unusually high?

c. Which probability is relevant for trying to determine whether the XSORT method is effective: the result from part (a) or the result from part (b)?

d. Based on the results, does it appear that the XSORT method is effective? Why or why not?

18. Washing Hands Based on *observed* males using public restrooms, 85% of adult males wash their hands in a public restroom (based on data from the American Society for Microbiology and the American Cleaning Institute). In a survey of 523 adult males, 518 *reported* that they wash their hands in a public restroom. Assuming that the 85% observed rate is correct, find the probability that among 523 randomly selected adult males, 518 or more wash their hands in a public restroom. What do you conclude?

19. Voters Lying? In a survey of 1002 people, 701 said that they voted in a recent presidential election (based on data from ICR Research Group). Voting records show that 61% of eligible voters actually did vote. Given that 61% of eligible voters actually did vote, find the probability that among 1002 randomly selected eligible voters, at least 701 actually did vote. What does the result suggest?

20. Cell Phones and Brain Cancer In a study of 420,095 cell phone users in Denmark, it was found that 135 developed cancer of the brain or nervous system. Assuming that the use of cell phones has no effect on developing such cancers, there is a 0.000340 probability of a person developing cancer of the brain or nervous system. We therefore expect about 143 cases of such cancers in a group of 420,095 randomly selected people. Estimate the probability of 135 or fewer cases of such cancers in a group of 420,095 people. What do these results suggest about media reports that cell phones cause cancer of the brain or nervous system?

21. Smoking Based on a recent Harris Interactive survey, 20% of adults in the United States smoke. In a survey of 50 statistics students, it is found that 6 of them smoke. Find the probability that should be used for determining whether the 20% rate is correct for statistics students. What do you conclude?

22. Smoking Repeat the preceding exercise after changing the results so that among 50 statistics students, it is found that 3 smoke.

23. Online TV In a Comcast survey of 1000 adults, 17% said that they watch prime-time TV online. If we assume that 20% of adults watch prime-time TV online, find the probability that should be used to determine whether the 20% rate is correct or whether it should be lower than 20%? What do you conclude?

24. Internet Access Of U.S. households, 67% have Internet access (based on data from the Census Bureau). In a random sample of 250 households, 70% are found to have Internet access. Find the probability that should be used to determine whether the 67% rate is too low. What do you conclude?

6-7 Beyond the Basics

25. Decision Theory Marc Taylor plans to place 200 bets of $5 each on a game at the Mirage casino in Las Vegas.

a. One strategy is to bet on the number 7 at roulette. A win pays off with odds of 35:1 and, on any one spin, there is a probability of 1/38 that 7 will be the winning number. Among the