claim that the selection process is biased against Americans of Mexican ancestry. Does the jury selection system appear to be fair?

**30. Finding a Job Through Networking** In a survey of 703 randomly selected workers, 61% got their jobs through networking (based on data from Taylor Nelson Sofres Research). Use the sample data with a 0.05 significance level to test the claim that most (more than 50%) workers get their jobs through networking. What does the result suggest about the strategy for finding a job after graduation?

**31. Nielsen Ratings** A recent Super Bowl football game between the New Orleans Saints and the Indianapolis Colts set a record for the number of television viewers. According to the Nielsen company, that game had a share of 77%, meaning that among the television sets in use at the time of the game, 77% were tuned to the game. Nielsen's sample size is 25,000 households. Use a 0.01 significance level to test the claim of a media report that more than 75% of television sets in use were tuned to the Super Bowl.

**32. HDTV Penetration** In a survey of 1500 households, it is found that 47% of them have a high-definition television (based on data from the Consumer Electronics Association). Use a 0.01 significance level to test the claim that fewer than half of all households have a high-definition television. Is the result from a few years ago likely to be valid today?

**Large Data Sets.** ***In Exercises 33 and 34, use the data set from Appendix B to test the given claim.***

**33. M&Ms** Refer to Data Set 20 in Appendix B and find the sample proportion of M&Ms that are green. Use that result to test the claim of Mars, Inc., that 16% of its plain M&M candies are green.

**34. On-Time Flights** Consider a flight to be on time if it arrives no later than 15 minutes after the scheduled arrival time. Refer to Data Set 15 in Appendix B, and use the sample data to test the claim made by CNN that 79.5% of flights are on time. Use a 0.05 significance level.

## 8-3 Beyond the Basics

**35. Binomial Distribution** We want to use a 0.05 significance level to test the claim that a coin favors heads, and sample data consist of 7 heads in 8 tosses. We can't use the normal approximation method because we violate the requirement that $np \geq 5$ and $nq \geq 5$. Use the binomial probability distribution to test the claim.

**36. Using Confidence Intervals to Test Hypotheses** When analyzing the last digits of telephone numbers in Port Jefferson, it is found that among 1000 randomly selected digits, 119 are zeros. If the digits are randomly selected, the proportion of zeros should be 0.1.

**a.** Use the critical value method with a 0.05 significance level to test the claim that the proportion of zeros equals 0.1.

**b.** Use the *P*-value method with a 0.05 significance level to test the claim that the proportion of zeros equals 0.1.

**c.** Use the sample data to construct a 95% confidence interval estimate of the proportion of zeros. What does the confidence interval suggest about the claim that the proportion of zeros equals 0.1?

**d.** Compare the results from the critical value method, the *P*-value method, and the confidence interval method. Do they all lead to the same conclusion?

**37. Power** For a hypothesis test with a specified significance level $\alpha$, the probability of a type I error is $\alpha$, whereas the probability $\beta$ of a type II error depends on the particular value of $p$ that is used as an alternative to the null hypothesis.

*continued*