25. M&Ms The Mars candy company claims that 13% of its M&M candies are brown, but Data Set 20 in Appendix B lists data from 100 M&Ms, and 8% of them are brown. Use the sample data to construct a 98% confidence interval estimate of the proportion of brown M&Ms. Does it appear that the claimed rate of 13% rate is wrong? Why or why not?

26. Misleading Survey Responses In a survey of 1002 people, 70% 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.

a. Find a 98% confidence interval estimate of the proportion of people who say that they voted.

b. Are the survey results consistent with the actual voter turnout of 61%? Why or why not?

27. Cell Phones and Cancer A study of 420,095 Danish cell phone users found that 0.0321% of them developed cancer of the brain or nervous system. Prior to this study of cell phone use, the rate of such cancer was found to be 0.0340% for those not using cell phones. The data are from the *Journal of the National Cancer Institute*.

a. Use the sample data to construct a 90% confidence interval estimate of the *percentage* of cell phone users who develop cancer of the brain or nervous system.

b. Do cell phone users appear to have a rate of cancer of the brain or nervous system that is different from the rate of such cancer among those not using cell phones? Why or why not?

28. Medication Usage In a survey of 3005 adults aged 57 through 85 years, it was found that 81.7% of them used at least one prescription medication (based on data from "Use of Prescription and Over-the-Counter Medications and Dietary Supplements Among Older Adults in the United States," by Qato et al., *Journal of the American Medical Association,* Vol. 300, No. 24).

a. How many of the 3005 subjects used at least one prescription medication?

b. Construct a 90% confidence interval estimate of the *percentage* of adults aged 57 through 85 years who use at least one prescription medication.

c. What do the results tell us about the proportion of college students who use at least one prescription medication?

Determining Sample Size. ***In Exercises 29–36, use the given data to find the minimum sample size required to estimate a population proportion or percentage.***

29. Republicans Find the sample size needed to estimate the percentage of Republicans among registered voters in California. Use a 0.03 margin of error, use a confidence level of 90%, and assume that $\hat{p}$ and $\hat{q}$ are unknown.

30. Robberies Find the sample size needed to estimate the percentage of robberies in Texas that result in arrests. Use a 0.04 margin of error, use a confidence level of 80%, and assume that $\hat{p}$ and $\hat{q}$ are unknown.

31. Tattooed Democrats Find the sample size needed to estimate the percentage of Democrats who have tattoos. Use a 0.05 margin of error, use a confidence level of 99%, and use results from a prior Harris poll suggesting that 15% of Democrats have tattoos.

32. Fortune Tellers Find the sample size needed to estimate the percentage of adults who have consulted fortune tellers. Use a 0.03 margin of error, use a confidence level of 98%, and use results from a prior Pew Research Center poll suggesting that 15% of adults have consulted fortune tellers.