

- 19. Twins.** In 2001, one county reported that among 3132 white women who had babies, 94 were multiple births. There were also 20 multiple births to 606 black women. Does this indicate any racial difference in the likelihood of multiple births?
- a) Test an appropriate hypothesis and state your conclusion.
 - b) If your conclusion is incorrect, which type of error did you commit?

8. **Race and smoking.** In 1995, 24.8% of 550 white adults surveyed reported that they smoked cigarettes, while 25.7% of the 550 black adults surveyed were smokers.
- Create a 90% confidence interval for the difference in the percentages of smokers among black and white American adults.
 - Does this survey indicate a race-based difference in smoking among American adults? Explain, using your confidence interval to test an appropriate hypothesis.

16. Birthweight. In 2003 the *Journal of the American Medical Association* reported a study examining the possible impact of air pollution caused by the 9/11 attack on New York's World Trade Center on the weight of babies. Researchers found that 8% of 182 babies born to mothers who were exposed to heavy doses of soot and ash on September 11 were classified as having low birthweight. Only 4% of 2300 babies born in another New York City hospital whose mothers had not been near the site of the disaster were similarly classified. Does this indicate a possibility that air pollution might be linked to a significantly higher proportion of low weight babies?

- a) Test an appropriate hypothesis and state your conclusion.
- b) If you concluded there is a difference, estimate that difference with a confidence interval and interpret that interval in context.

- 4. Graduation.** In October 2000 the U.S. Department of Commerce reported the results of a large-scale survey on high school graduation. Researchers contacted more than 25,000 Americans aged 24 years to see if they had finished high school; 84.9% of the 12,460 males and 88.1% of the 12,678 females indicated that they had high school diplomas.
- Are the assumptions and conditions necessary for inference satisfied? Explain.
 - Create a 95% confidence interval for the difference in graduation rates between males and females.
 - Interpret your confidence interval.
 - Does this provide strong evidence that girls are more likely than boys to complete high school? Explain.

