1. A start-up company is about to market a new computer printer. It decides to gamble by running commercials during the Super Bowl. The day after the game, a pollster contacts 420 randomly chosen adults, and finds that 160 of them know that this company manufactures printers. Construct a 90% confidence interval for the population proportion of adults who know that this company manufactures printers. The company needs a 40% awareness (population) rate to make their Super Bowl investment worthwhile. What would you tell them?

2. A random sample of 500 subscribers to a magazine was asked if they would like an online version of the magazine. 137 of the subscribers said yes. Construct a 95% confidence interval for the proportion of subscribers who would like an online version. The magazine will do it if they are convinced 35% of their subscribers would like an online version. What would you advise and why?

3. It is believed that young people are waiting longer to get married. A random sample of 40 men who were married for the first time last year was taken. The mean age of marriage in the sample was 24.2 years with a standard deviation of 5.3 years. Construct a 95% confidence interval for the age of marriage. If the mean age of marriage in 1960 was 23.3, do you believe that men are waiting longer to get married? Why or why not?

4. A manufacturer of a new portable phone claims that his new design has increased the range to 150 feet from the base station. You test a random sample of 44 of these phones and find an average range to be 142 feet with a standard deviation of 12 feet. By using your results from a 90% confidence interval, do you doubt the manufacturer’s claim?
5. Many Americans think it does not matter which political party controls Congress. In an Associated press article (San Luis-Obispo Tribune, Sept. 6, 1995), it was reported that 442 individuals in a random sample of 1005 US adults said it wouldn’t make a difference who was in power.

a. Construct a 90% confidence interval for the proportion of US adults who believe that it wouldn’t make a difference which party is in power.

b. Based on your interval in a), is it likely that a majority of US adults feel that it makes no difference which party is in control? Explain your reasoning.

6. Seventy-seven students at the University of Virginia were asked to keep a diary of a conversation with their mothers, recording any lies they told during these conversations. It was reported that the mean number of lies per conversation was .5 with a standard deviation of .4.

a. Suppose that this group of 77 is a simple random sample from the population of students at this university. Construct a 95% confidence interval for the mean number of lies per conversation for this population.

b. The interval in part a) does not include 0. Does this imply that all students lie to their mothers? Explain.

7. Five students visiting the student health center for a free dental examination during National Dental Hygiene Month were asked how many months had passed since their last visit to the dentist. Their responses were as follows:

6 17 11 22 29

Assuming that these students were a random sample of all students participating in the free checkup program, construct a 95% confidence interval for the mean number of months elapsed since the last visit to a dentist for the population of students participating in the program.