

1. Which of these is realistic? Explain why each scenario is or is not realistic. Be clear and be specific.
 - (a) Time in Bed: How much do Americans sleep each night? Based on a random sample of 1120 Americans 15 years of age or older, the mean amount of sleep per night is 8.17 hours according to the American Time Use Survey conducted by the Bureau of Labor Statistics. Assuming the population standard deviation for the amount of sleep per night is 1.2 hours, construct a 95% confidence interval for the mean amount of sleep per night for Americans 15 years of age or older.
 - (b) How Much TV Do Teenagers Watch? A Gallup poll conducted January 17 – February 6, 2005, asked 1028 teenagers 13 years of age to 17 years of age, “Typically, how many hours per week do you spend watching TV?” The teenagers who participated in the survey watched, on average, 13.0 hours of television per week with a standard deviation of 2.3 hours per week. Construct a 95% confidence interval for the average number of hours that teenagers watch TV each week.
2. What is the difference between the two scenarios given below? Be clear and be specific.
 - (a) How Much TV Do Teenagers Watch? A Gallup poll conducted January 17 – February 6, 2005, asked 1028 teenagers 13 years of age to 17 years of age, “Typically, how many hours per week do you spend watching TV?” The teenagers who participated in the survey watched, on average, 13.0 hours of television per week with a standard deviation of 2.3 hours per week. Construct a 95% confidence interval for the average number of hours that teenagers watch TV each week.
 - (b) In a poll conducted March 17 – 21, 2005, by the Pew Research Center for the People and the Press, a simple random sample of 1505 American adults was asked whether they were in favor of tighter enforcement of government rules on TV content during hours when children are most likely to be watching. Of the 1505 adults, 1129 responded that they were in favor of tighter enforcement of TV content rules. Determine a 95% confidence interval for the proportion of American adults who are in favor of tighter enforcement of government rules on TV content during hours when children are most likely to be watching.
3. How Much TV Do Teenagers Watch? A Gallup poll conducted January 17 – February 6, 2005, asked 1028 teenagers 13 years of age to 17 years of age, “Typically, how many hours per week do you spend watching TV?” The teenagers who participated in the survey watched, on average, 13.0 hours of television per week with a standard deviation of 2.3 hours per week.
 - (a) Construct a 95% confidence interval for the average number of hours that teenagers watch TV each week.
 - (b) Construct a 99% confidence interval for the average number of hours that teenagers watch TV each week.
4. In a poll conducted March 17 – 21, 2005, by the Pew Research Center for the People and the Press, a simple random sample of 1505 American adults was asked whether they were in favor of tighter enforcement of government rules on TV content during hours when children are most likely to be watching. Of the 1505 adults, 1129 responded that they were in favor of tighter enforcement of TV content rules.
 - (a) Determine a 95% confidence interval for the proportion of American adults who are in favor of tighter enforcement of government rules on TV content during hours when children are most likely to be watching.
 - (b) Determine a 96% confidence interval for the proportion of American adults who are in favor of tighter enforcement of government rules on TV content during hours when children are most likely to be watching.

5. A sociologist wants to estimate the percentage of the U.S. population living in poverty. What size sample should be obtained if (s)he wants to estimate within 2 percentage points with 99% confidence if
- (a) (s)he uses the 2003 estimate of 12.7% obtained from the American Community survey?
- (b) (s)he does not use any prior estimates?
6. The drug Lipitor is meant to lower cholesterol levels. In a clinical trial of 863 patients who received 10-mg doses of Lipitor daily, 47 reported a headache as a side effect. Construct the 90% confidence Interval for the population proportion of Lipitor users who will report a headache as a side effect.
7. In 1920, only 35% of U.S. households had telephones. A recent survey of 4276 randomly selected households showed that 4019 of them had telephones (based on data from the U.S. Census Bureau).
- (a) Construct and interpret the 99% confidence interval for the proportion of U.S. households having a telephone.
- (b) Based on this confidence interval, should those conducting surveys by telephone be concerned?
8. In a Gallup poll of 491 randomly selected U.S. adults asked whether or not they are in favor of the death penalty for a person convicted of murder, 320 responded in favor of the death penalty.
- (a) Determine the 95% confidence interval for the percentage of U.S. adults who are in favor of the death penalty.
- (b) Based on this confidence interval, explain why we can or cannot conclude that the majority of U.S. adults are in favor of the death penalty.
9. In a study of reading habits, 1017 people were surveyed regarding the number of books that they had read during the past year. The researcher found that those surveyed had read, on average approximately 11.3 books and the standard deviation for the number of books that those surveyed had read during the year was approximately 16.6 books
- (a) Construct and interpret (in the context of the problem/scenario) the 90% confidence interval for the mean number of books that people read during a year.
- (b) Construct and interpret (in the context of the problem/scenario) the 95% confidence interval for the average number of books that people read during a year.
10. In a study of reading habits, 1017 people were surveyed regarding the number of books that they had read during the past year. The researcher found that those surveyed had read, on average approximately 11.3 books and the standard deviation for the number of books that those surveyed had read during the year was approximately 16.6 books
- (a) Construct and interpret (in the context of the problem/scenario) the 90% confidence interval for the mean number of books that people read during a year.
- (b) Construct and interpret (in the context of the problem/scenario) the 95% confidence interval for the average number of books that people read during a year.
- (c) Construct and interpret (in the context of the problem/scenario) the 96% confidence interval for the average number of books that people read during a year.
- (d) Construct and interpret (in the context of the problem/scenario) the 98% confidence interval for the average number of books that people read during a year.
- (e) Construct and interpret (in the context of the problem/scenario) the 99% confidence interval for the mean number of books that people read during a year.