

AP Stats

More Chap 18

Textbook Questions Name _____ Pd _____

Show all necessary work and place your answers on the spaces provided.

Rickets.

Vitamin D, whether ingested as a dietary supplement or produced naturally when sunlight falls upon the skin, is essential for strong, healthy bones. The bone disease rickets was largely eliminated in England during the 1950s, but now there is a concern that a generation of children more likely to watch TV or play computer games than spend time outdoors is at increased risk. A recent study of 2700 children randomly selected from all parts of England found 20% of them deficient in vitamin D.

- a. Find a 98% confidence interval. a. _____
- b. Explain carefully what your interval means.
- c. Explain what “98% confidence” means.

Pregnancy.

In 1998 a San Diego reproductive clinic reported 49 live births to 207 women under the age of 40 who had previously been unable to conceive.

- a. Find a 90% confidence interval for the success rate at this clinic. a. _____
- b. Interpret your interval in this context.
- c. Explain what “90% confidence” means.
- d. Would it be misleading for the clinic to advertise a 25% success rate? Explain.

Legal Music.

A random sample of 169 college students were asked how many songs were in their digital music library and what fraction of them were legally purchased. Overall, they reported having a total of 117,079 songs, of which 23.1% were legal. The music industry would like a good estimate of the fraction of songs in students' digital music libraries that are legal.

- a. Think carefully. What is the parameter being estimated? What is the population? What is the sample size?
- b. Check the conditions for making a confidence interval.
- c. Construct a 95% confidence interval for the fraction of legal digital music. c. _____
- d. Explain what this interval means. Do you believe that you can be this confident about your result? Why or why not?

Graduation.

It's believed that as many as 25% of adults over 50 never graduated from high school. We wish to see if this percentage is the same among the 25 to 30 age group.

- a. How many of this younger age group must we survey in order to estimate the proportion of non-grads to within 6% with 90% confidence? a. _____
- b. Suppose we want to cut the margin of error to 4%. What's the necessary sample size? b. _____
- c. What sample size would produce a margin of error of 3%? c. _____

More Grads.

Above we hoped to estimate the percentage of adults aged 25 to 30 who never graduated from high school. What sample size would allow us to increase our confidence level to 95% while reducing the margin of error to only 2%?