Exercises

1. **Lohr Chapter 2, Exercise 33** Use amazon.com to conduct the following exercise. This will also require you to self-teach confidence intervals for SRS (Lohr section 2.5)
    a. In the books search window, type in a genre you like, such as mystery or sports; you may want to narrow your search by selecting a subcategory since an upper bound is placed on the number of books that can be displayed. Choose a genre with at least 20 pages of listings. The list of books forms your population.
    b. What is your target population? What is the population size, *N*?
    c. Take an SRS of 50 books from your population. Describe how you selected the SRS, and record the amount of time you spent taking the sample and collecting the data.
    d. Record the following information for each book in your SRS: price, number of pages, and whether the book is paperback or hardback.
    e. Give a point estimate and a 95% CI for the mean price of books in the genre you selected.
    f. Give a point estimate and a 95% CI for the mean number of pages for books in the genre you selected.
    g. Interpret your confidence intervals.

2. **Lohr Chapter 3, Exercise 36** This is a continuation/extension of the previous SRS exercise. You should use the same book genre for this problem.
    a. Stratify the population into two categories: hardcover and paperback. You can obtain the population counts in the paperback category by refining your search to include the word paperback.
    b. Take a stratified random sample of 40 books from your population using proportional allocation. Record the price and number of pages for each book.
    c. Give a point estimate and a 95% CI for the mean price of books and the mean number of pages for books in the population.
    d. Compare your CI's to those from the previous exercise where you used an SRS. Does stratification appear to increase the precision of your estimate?
    e. BONUS: Use your SRS from Chapter 2 to estimate the within-stratum variance of book price for each stratum. In this case, you are using the SRS as a pilot sample to help design a subsequent sample. Find the optimal allocation for a stratified random sample of 40 books. How does the optimal allocation differ from the proportional allocation?