You must show all work for your answers to receive full credit. If you use a calculator to find a probability, please write the function as you typed it into your calculator.

Problems

1. Suppose that birth weights for boys are normally distributed with unknown mean and known standard deviation of 12 oz. We want to estimate the population mean, the overall average birth weight for boys. A random sample of 16 newborn boys yields the sample mean of 122 oz.

(a) Construct a 98% confidence interval for the overall average birth weight for boys. Interpret the bound in the context of the problem.

(b) Find the sample size required if the width of the 98% confidence interval is 6.

(c) Suppose now that the population distribution is in fact unknown (may not be normal), and the population standard deviation is also unknown. Suppose we now have a random sample of 45 newborn boys that yields sample mean of 122 oz. and sample standard deviation of 12.1 oz. Construct a 95% confidence interval for overall average birth weight for boys.

2. Construct the score interval for Problem 3 in the class handout for Chapter 7.2.


(a) Calculate and interpret a confidence interval at the 99% confidence level for the proportion of all adult Americans who believe in astrology.

(b) What sample size would be required for the width of a 99% CI to be .05?


5. Problem 7-33 in the book.

6. Problem 7-35 in the book. (Note: part (a) wants a confidence interval, and part (b) wants a prediction interval)

Staple your homework before coming to class!