
Show relevant work for credit. No work = little or no credit.

1. Find the critical value $z_{\alpha/2}$ that corresponds to confidence level 88%.

The serum cholesterol level for a population of boys follows a normal distribution with mean 170 mg/dl and standard deviation 30 mg/dl.

2. What is the probability that a randomly chosen boy has serum cholesterol level below 182 mg/dl?

3. What is the probability that the mean serum cholesterol level of a random sample of 25 boys will be below 182 mg/dl?

To determine the frequency of type O blood (the universal donor) in a population, a random sample of 100 people were blood typed and 42 were found to be type O.

4. Find a 95% confidence interval for the proportion of this population that has type O blood.

5. Write a one sentence interpretation of your confidence interval.

6. How many additional people would have to be typed to reduce the margin of error in your estimate to 2%? Use your previous estimate of the proportion.

According to a sample of 200 insurance brokers, the average childbirth costs \$9500. In a previous study, the standard deviation was found to be about \$2500 so take this as an estimate of the population standard deviation. Assume the sample is a simple random sample and that childbirth costs are normally distributed.

7. Construct a 99% confidence interval estimate of the population mean childbirth cost.

8. Write a one sentence interpretation of this result.