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Statistics for laboratory scientists

Homework problems for lecture 13

1. [Problem 7.3, Sokal & Rohlf, pg 177] The 95% confidence limits for μ as obtained in a given sample were 4.91 and 5.67g. Is it correct to say that 95 times out of 100 the population mean, μ , falls inside the interval from 4.91 to 5.67g? If not, what would the correct statement be?
2. We are interested in estimating the concentration of substance X in the Baltimore water supply on the basis of measurements of a number of samples. Suppose measurements of such samples will be approximately normally distributed with unknown mean (the true concentration) and **known** SD = 1.5 ppb.

How many samples should we measure if we wish our 95% confidence interval for the true concentration to have width < 1 ppb?

3. We obtain the \log_{10} gene expression for 5 tissue samples, as follows:
3.52 3.89 3.13 3.66 3.28

Suppose that such measurements are independent and are normally distributed with mean μ and SD σ .

Provide a 95% confidence interval for μ .

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