

Problem 6.1 A sample of 40 observations has a standard deviation of 20. Estimate the 95% confidence interval for the standard deviation of the population.

Problem 6.2 Using the data $n = 70$, $s = 15$, construct a 99% confidence interval for the true standard deviation.

Problem 6.10 A roadside survey of the roadworthiness of vehicles obtained the following results:

	Roadworthy	Not roadworthy
Private cars	114	30
Company cars	84	24
Vans	36	12
Lorries	44	20
Buses	36	12

Is there any association between the type of vehicle and the likelihood of it being unfit for the road?

Problem 6.11 Given the following data on two sample variances, test whether there is any significant difference. Use the 1% significance level.

$$\begin{array}{ll} s_1^2 = 55 & s_2^2 = 48 \\ n_1 = 25 & n_2 = 30 \end{array}$$

Problem 6.14 Lottery tickets are sold in different outlets: supermarkets, smaller shops and outdoor kiosks. Sales were sampled from several of each of these, with the following results:

Supermarkets	355	251	408	302
Small shops	288	257	225	299
Kiosks	155	352	240	

Does the evidence indicate a significant difference in sales? Use the 5% significance level.