

Exercises 9

1. A clothing manufacturer wishes to test the effect of four different dyes (1 to 4) on the tensile strength of denim. Experimentation takes place on five different brands of denim (A,B,C,D, and E). It is decided to use a randomized block design in which the brands of denim are considered to be the blocks.

The data arising from this experiment are summarized in the table below:

		Brand				
		A	B	C	D	E
Dye	1	60	55	61	58	54
	2	60	54	62	59	57
	3	62	55	65	60	55
	4	60	58	62	62	56

- Briefly discuss the practical implementation of the design strategy for this problem, emphasizing which procedures need to be performed in random order.
- Determine whether there are differences between the 4 dyes in the effects they have on the tensile strength of denim.

2. A study is performed to compare the effectiveness of three different tests (T1 to T3) for determining the amount of BSE infectivity in cattle. The tests are performed on 4 different cows (labelled 1 to 4) that are known to possess the disease. The experimenter decides to use a randomized block design with the cows forming the blocks. The data from the tests (expressed in appropriate units) are summarized below:

		Cow			
		1	2	3	4
Test	T1	20	29	25	46
	T2	23	31	24	51
	T3	12	11	8	29

- Why do you suppose that the experimenter decided to treat the cows as *blocking* factors?
- Can it be argued that the three tests are equally effective in detecting BSE infectivity? Justify your answer.