

Stat 145 Homework Solutions: Chapter 8

Problem 8.1

The subjects are the students living in the selected dormitory, the factor is the rate charged, the treatments are a low flat rate plan and a peak/off-peak rate plan, and the response variables are the amount and time of use and the effect on network congestion.

Problem 8.3

(a) The individuals are the batches of the product and the response variable is the yield of the process.

(b) There are two factors (temperature and stirring rate) and six treatments (all temperature-stirring rate combinations). The treatments are presented in the table below.

	50° C	60° C
60 rpm	Trt 1	Trt 2
90 rpm	Trt 3	Trt 4
120 rpm	Trt 5	Trt 6

(c) Two batches at each combination are needed, so $2 \times 6 = 12$ batches.

Problem 8.5

Randomly assign the rats to three groups of six rats each. Group 1 will receive black tea, Group 2 will receive green tea, and Group 3 will receive a placebo. After a period of six weeks observe the growth of cataracts.

Label the rats 01 through 18, enter Table B at line 142, and read two-digit groupings. Group 1 will include rats 02, 08, 17, 10, 05, and 09; Group 2 will include rats 06, 16, 01, 07, 18, 15; and Group 3 will include the remaining rats.

Problem 8.11

This experiment was not blind because the experimenter knew what group each subject was in. This knowledge may influence the diagnosis, as the experimenter may have certain expectations about the treatment.

Problem 8.15

Within each block, randomly assign one section to be taught using standard methods and the other to be taught with multimedia. At the end of the semester compare final exam scores and students' attitudes. The randomization can be done using Table B – or by flipping a coin – for each block.

Problem 8.23

(a) The subjects are the 22,000 male physicians, the factor is medication taken (aspirin or placebo), and the response variable is whether the subjects have heart attacks.

(b) Randomly assign the physicians to two groups of 11,000 physicians each. Group 1 will receive aspirin and Group 2 will receive a placebo. After several years observe the number of heart attacks.