

QUEEN MARY, UNIVERSITY OF LONDON

MAS 314

Design of Experiments

Assignment 8

For discussion on 8 March 2007

1 The report-writing department of a technical research station needs to replace its old word-processing system. It plans to evaluate 5 new word-processors. The vendors of each word-processor have agreed to make several copies of it available to the department for a one-week trial period: the first full week in March. The head of the department has decided to abandon all normal work for that week and devote it to testing and evaluating the new word-processors. There are 15 typists in the department's typing pool. The minimum amount of time that a typist can spend with a new word-processor and sensibly be asked to evaluate it for ease of use is one day.

Design the experiment and produce a plan for the head of the department.

2 On Monday 3rd March 1997 a surgeon sent an email message to all British statisticians, asking their advice. He said that he was going to use 9 animals in an experiment to compare three methods of grafting skin. He would use 3 animals for each method. After the graft was complete he would take a sample of new skin from each animal. He would cut each sample into 20 (tiny!) pieces and use a precision instrument to measure the thickness of each piece. He wanted to know how to analyse the data.

- (a) What are the observational units, and how many are there?
- (b) What are the experimental units, and how many are there?
- (c) What are the treatments, and how many are there?
- (d) Construct the skeleton analysis-of-variance table.