

practice Exam 1
Statistics 424

(Problem 1 is the only problem from last years test that is relevant)

- 1 The following are weight losses of machine parts(milligrams) due to friction when 3 different lubricants were used under controlled conditions.

Lubricant A : 6 4 5
Lubricant B : 13 10 13 12
Lubricant C : 7 9 11

- (a) There are 10 parts available but only one machine is available. The tests must be run one at a time using the same machine. How would you conduct the test with $n_1 = 3, n_2 = 4$ and $n_3 = 3$?
 - (b) Decompose the array of observations into grand mean, treatment, and residual or error arrays. Specify the sum of squares and degrees of freedom for each component.
 - (c) Construct an analysis-of-variance(ANOVA) Table.
 - (d) Test for equality of mean weight loss with $\alpha = .05$. What is the alternative hypothesis?
 - (e) Give a 95 % confidence interval for the difference in means for lubricant A and lubricant B.
- 2 Refer to lubricant A and C in problem 1. Explain how to obtain the randomization distribution for a two-sample test of no difference in weight loss.
- 3 no problem —review the paired t test homework both sampling distribution for confidence interval and randomization distribution.