Psychology 407
Assignment I

1) Suppose we are investigating the effect of *school* on the performance of students on a specific arithmetic test. We select grades 5, 6, 7, and 8 in each of four schools. The schools were randomly selected from the population of all schools of interest, and 5 subjects from each grade and school were randomly assigned to take the test. A high score implies a good performance on the test.

		School		
	1	2	3	4
Grade				
5	110,87,79,102,73	51,76,43,91,74	56,50,64,61,43	67,60,50,80,40
6	118,96,104,94,126	93,64,57,116,84	83,72,60,47,105	126,101,100,103,126
7	82,84,74,60,70	111,117,91,105,76	102,100,97,131,89	68,87,69,65,69
8	115,76,85,89,77	79,105,106,102,92	91,77,98,100,61	90,111,91,86,74

Between School SS: 1,264.94
Between Grades SS: 8,090.14
Interaction SS: 12,265.51
Total SS: 37,198.19

i) Construct the appropriate ANOVA table based upon Model III.

ii) Estimate whatever variance components you can.

iii) Is Paull's criterion (as discussed in class) applicable? If so, use it. Do the results differ?

2) Suppose we give three exams in a statistics course consisting of 26 students. Again, a high score indicates a good performance on the test. Using the data given below, construct the appropriate ANOVA table based on a mixed model design without replication. Can you test all main effects? Why or why not? Is your result still the same if you use the conservative Geisser-Greenhouse test as discussed in class?

	Test		
	1	2	3
Student			
1	63	71	64
2	75	62	63
3	64	55	54
4	75	71	32
5	73	67	58
6	73	62	62
7	75	70	62
8	75	70	72
9	68	60	44
10	77	68	52
11	60	60	50
12	76	78	56
13	75	79	62
14	77	70	64
15	49	50	39
16	74	62	58
17	67	55	42
18	59	66	48
19	76	62	48
20	79	73	67
21	54	53	49
22	77	69	53
23	83	84	72
24	65	51	37
25	63	52	24
26	78	67	58

Between Tests SS: 3,867.31
Between Students SS: 5,421.91
Residual: 1,932.74