

### PISc 724 - HOMEWORK #3

The following two problems were adapted from the text *Principals and Procedures of Statistics - A Biometrical Approach*: 3<sup>rd</sup> Edition. 1997. R.G.D. Steel, J.H. Torrie, and D.A. Dickey.

**In order to keep the answers consistent, use three numbers past the decimal point.**

1. F.R. Urey, Department of Zoology, University of Wisconsin, made an estrogen assay of several solutions which had been subjected to an in vitro inactivation technique. The uterine weight of the mouse was used as a measure of estrogenic activity. Uterine weights in milligrams of four mice for seven treatments (one control and six different solutions) are shown in the accompanying table.

Control	1	2	3	4	5	6
89.8	84.4	64.4	75.2	88.4	56.4	65.6
93.8	116.0	79.8	62.4	90.2	83.3	79.4
88.4	84.0	88.0	62.4	73.2	90.4	65.6
112.6	68.6	69.4	73.8	87.8	85.6	70.2

Given this information:

- a. Write the null and alternate hypotheses.
- b. Compute the analysis of variance for these data at the 95 and 99 % levels of confidence.
- c. Calculate the coefficient of variation

2. Wexelsen studied the effects of inbreeding on plant weight in red clover. Given below is the average plant weight in grams of noninbred ( $F_1$  lines and three groups of inbred families arranged in increasing order of inbreeding.

$F_1$	Slightly inbred	$F_2$	$F_3$
254	236	253	173
263	191	192	164
266	209	141	183
249	252	160	138
337	212	229	146
277	224	221	125
289		150	178
244		215	199
265		232	170
		234	172
		193	198
		188	

Given this information:

- Write the null and alternate hypotheses.
- Compute the analysis of variance for these data at the 95 and 99 % levels of confidence.
- Calculate the coefficient of variation