ANSC/TPSS 603
Assignment 11 - Transformations

1. Take the following data set discussed in class and perform the ANOVA. Break the treatment SS into main effects of vitamin and species and interactions. Perform appropriate F tests.

Weights, lb, of vitamin-treated and control animals in a RCBD (from Little and Hills)

	Block					
Treatment	I	II	III	IV	Total	Mean
Mice-control	0.18	0.30	0.28	0.44	1.2	0.3
Mice-vitamin	0.32	0.40	0.42	0.46	1.6	0.4
Subtotal	0.50	0.70	0.70	0.90	2.8	0.35
Chickens-control	2.0	3.0	1.8	2.8	9.6	2.40
Chickens-vitamin	2.5	3.3	2.5	3.3	11.6	2.90
Subtotal	4.5	6.3	4.3	6.1	21.2	2.65
Sheep-control	108.0	140.0	135.0	165.0	548.0	137.0
Sheep-vitamin	127.0	153.0	148.0	176.0	604.0	151.0
Subtotal	235.0	293.0	283.0	341.0	1152.0	144.0
Total	240.0	300.0	288.0	348.0	1176.0	
Mean	40.0	50.0	48.0	58.0		49.0

2. Transform the above data by taking the log of each observation. Recalculate the ANOVA, break down the treatment SS and perform F tests.

3. Test the assumptions in the analysis of variance on the transformed data.

   a. Calculate the errors for each observation, plot them, and describe whether they now meet the assumptions in the ANOVA.

   b. Perform Bartlett's test for homogeneity of variance. Do the variances meet the assumptions?

   c. Calculate the ratios of variances and standard deviations to the means. Are they independent of the means?

   d. Perform Tukey's test for additivity. Are the blocks and treatments additive?

4. State your conclusions regarding the effectiveness of the transformation and the results of the experiment.