Homework 10: Wednesday April 27

You may use R to assist you in your solutions for questions marked with *.

1. * As part of an industrial study on paper-making, the finish on coated paper was measured. Three paper machines A_1, A_2 and A_3 used four different coatings for paper: B_1, B_2, B_3 and B_4. Two repeat measurements were made per combination.

	A_1	A_2	A_3
B_1	42.5, 42.6	42.1, 42.3	43.6, 43.8
B_2	42.0, 42.2	41.7, 41.5	43.6, 43.2
B_3	43.9, 43.6	43.1, 43.0	44.1, 44.2
B_4	42.2, 42.5	41.5, 41.6	42.9, 43.0

   Analyse these data, making any appropriate tests and estimations.

2. * Suppose I were given the following data

x	y
3	4, 6, 2
5	9, 12, 11
8	13, 14, 14
10	18, 16, 15

   Using an appropriate F-test, test the goodness of fit for a linear regression.

3. * Given the following data:

x	2	6	7	7	14	15	17	17	18	18
y	52	127	-61	-100	24	63	110	464	196	82

   Using an F-test, decide whether a quadratic regression is preferable to a linear regression.

4. * An experiment to test the effects of various drugs on IQ was undertaken and the results have been summarised as follows.

	placebo	muricatoxicicaljuice	australawesomesauce
male	105, 102	93, 86, 97	106, 110, 114
female	103	96, 89	110, 108, 112

   (a) Test for interaction terms.

   (b) Test for row and column effects.

   (c) What complication does the unequal number of observations in each cell produce?

5. Problems from the book: 9.5.10*, 9.6.17.