1. Textbook exercise 5.22.

2. A product developer is investigating the tensile strength of a new synthetic fiber that will be used to make cloth for men's shirts. The strength is usually affected by the percent of cotton used in the blend of materials for the fiber. The engineer conducts a completely randomized experiment with five levels of cotton content and replicates the experiment five times. The data are shown in the following table:

Cotton Weight Percent	Observations				
15	7	7	15	11	9
20	12	17	12	18	18
25	14	19	19	18	18
30	19	25	22	19	23
35	7	10	11	15	11

a) Write the *effects model* and the associated hypotheses to assess whether the cotton weight percent has a significant effect on the mean tensile strength. Clearly define the limits on your subscripts (e.g. what numbers can k and j be in).

b) For these data, find the estimated effects (alpha-hats). Clearly indicate how the effects are calculated.

3. In an experiment to investigate the effect of the paper color (blue, green, orange) on the mean response rates for questionnaires placed on windshields of cars parked in parking lots, 15 representative supermarket parking lots were chosen in a metropolitan area. Each color was assigned at random to five of the lots and questionnaires of that color were placed on all parked cars. The response rates (in percents) were recorded. Also recorded was the number of spaces in each lot.

a) Does this analysis meet the conditions for inference? Clearly state each condition and assess whether it has been met.

Descriptive statistics for the response rate for each paper color				
color	Mean	StDev	Minimum	Maximum
blue	29.4	3.65	26	35
green	30	2.65	27	34
orange	28	2.24	25	31

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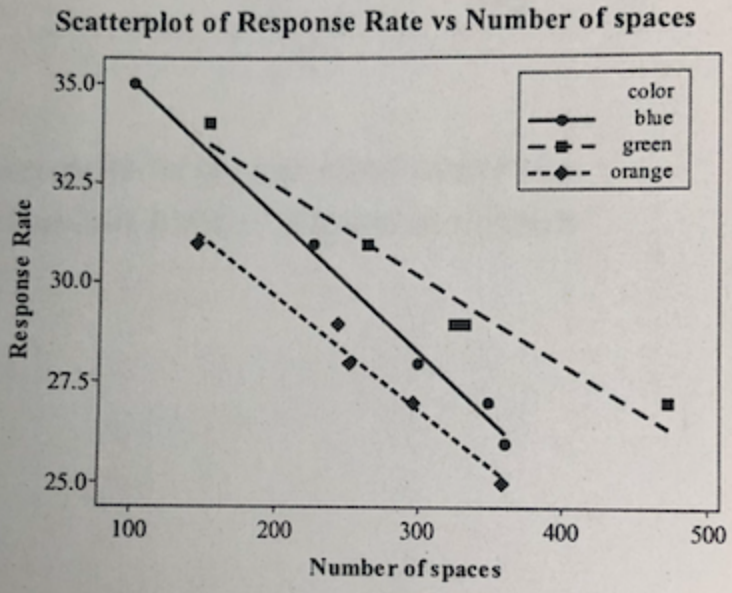

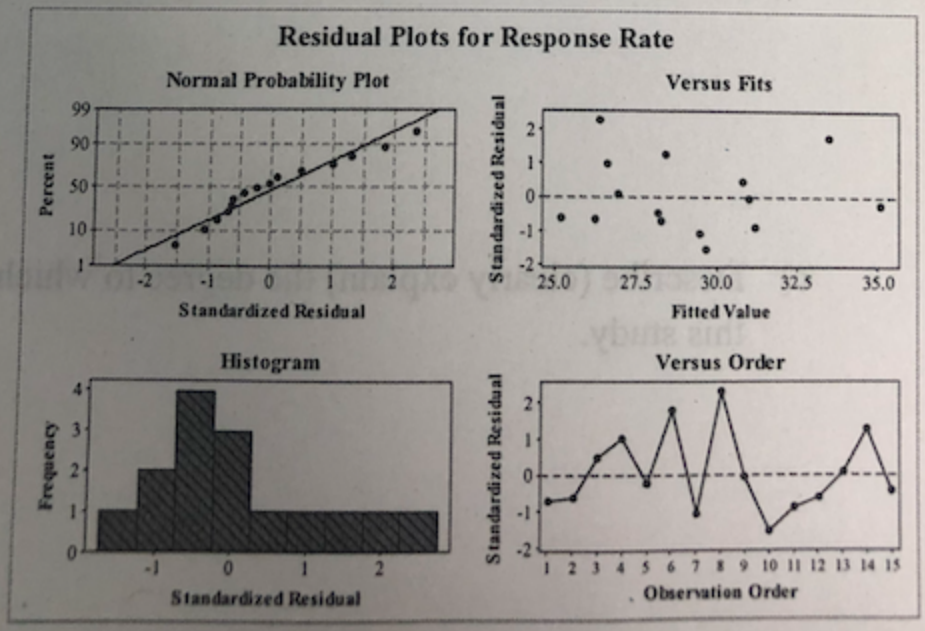

b) Complete the ANOVA table.

Factor Information

Factor	Type	Levels	Values
color	Fixed	3	blue, green, orange

Analysis of Variance

Source	DF	Adj SS	Adj MS	F-Value	P-Value
# of spaces			19.57		
color		2.213			
# of spaces*color					
Error			0.2317		
Total		111.733			

Coefficients

Term	Coef	SE Coef	T-Value	P-Value	VIF
Constant	35.255	0.818	43.08	0.000	
# of spaces	-0.02803	0.00305	-9.19	0.000	5.34
color					
blue	3.17	1.04	3.06	0.014	15.44
green	1.62	1.06	1.53	0.160	16.21
# of spaces*color					
blue	-0.00572	0.00378	-1.51	0.164	17.57
green	0.00583	0.00369	1.58	0.148	21.93

c) Calculate the equation for each color paper. Clearly show all work.