

**Statistics 506**  
**Test 1**

1. An experimenter provided an analyst with the following data table. Answer the questions using the table provided.

(A,B,C)	Satisfaction
(-1,-1,-1)	75.9
(1,-1,-1)	76.2
(-1,1,-1)	97.2
(1,1,-1)	78.0
(-1,-1,1)	78.6
(1,-1,1)	79.7
(-1,1,1)	81.1
(1,1,1)	82.6

- (a) Compute effects and construct an effects plot for the experiment.
- (b) The analyst realized after the initial experiment that the runs had not been converted to standard order. The correct ordering for the responses should have been: 79.7, 82.6, 76.2, 81.1, 78.6, 78.0, 75.9, 97.2. Reanalyze your results.
- (c) The analyst was then told by the experimenter that the observation recorded as 97.2 should have been recorded as 77.2. Reanalyze the experiment.
- (d) Comment on the effects plots. Discuss how the outlying responses value of 97.2 affected analysis and interpretation.

2. Male and female students in the United States and South Korea were asked to rate one of two colors (pink or blue) on a scale from 0 to 10, with low scores indicating a “masculine” color and high scores indicating a “feminine” color. In all, 10 students of each gender/nationality were randomly assigned to rate one of the two colors; their average ratings were recorded.
- (a) Compute the factor effects and construct a normal plot. Which effects are important? If any two-way effects are important, construct an interaction plot and interpret the plot.
- (b) Which combination of significant main effects generates the most masculine score? Which combination of main effects generates the most feminine score? How would your conclusions change if you included significant interactions?

Gender	Country	Color	Average Score
Male	South Korea	Blue	5.4
Male	South Korea	Pink	6.2
Female	USA	Blue	3.5
Female	USA	Pink	8.0
Male	USA	Pink	9.8
Female	South Korea	Blue	4.9
Female	South Korea	Pink	5.1
Male	USA	Blue	2.7