STAT 516 - Spring 2001 - Homework 8
Due: Friday, May 4th by 2:00pm

The data set on the web is from Feynman (1988) and is reported in Ramsey (1997). It concerns the relationship between the temperature at the time the space shuttle was launched and whether or not an O-ring seal on the space shuttle failed (a 1 indicates a failure and a 0 indicates a successful launch).

a) Analyze this data using logistic regression. Report the parameter estimates, and give the equation you would use to predict the probability of O-ring failure.

b) Use the Hosmer-Lemeshow Statistic to judge whether a logistic form seems appropriate for this data set. State your conclusion.

c) Why can't you put too much faith into the result you found in b?

d) Assume that the logistic form is appropriate. Test whether there is a statistically significant relationship between temperature and O-ring failure at an α=0.05 level.

e) The temperature of the O-rings was estimated to be 29 degrees on January 27, 1986. What is the estimated probability of O-ring failure according to the model you fit.

f) What about the values of the independent variable makes you have some doubts about the accuracy of this prediction?