Consider question 3.46 form the textbook and the data set: SNOWGEESE. Botanists at the University of Toronto conducted a series of experiments to investigate the feeding habits of baby snow geese (Journal of Applied Ecology, Vol. 32, 1995). Goslings were deprived of food until their guts were empty, then were allowed to feed for 6 hours
on a diet of plants or Purina Duck Chow. For each of 42 feeding trials, the change in the weight
of the gosling after 2.5 hours was recorded as a percentage of initial weight. Two other variables recorded were digestion efficiency (measured as a percentage) and amount of acid-detergent fiber in the digestive tract (also measured as a percentage). The data for selected feeding trials are listed in the table below.

1) [1] List the variable(s) of interest in this study along with their types, list of categories, unit of measurements when appropriate. (Note: To identify how many categories and what categories the categorical variable(s) have, use an R code.)

2) [1] Create a scatterplot and describe a possible relationship between weight change and digestion efficiency.

3) [1] Calculate the coefficient of correlation relating weight change to digestion efficiency. Interpret this value.

4) [7] Conduct a test to determine whether weight change is correlated with a digestion efficiency. Use alpha = :01.

5) [4] Assuming the relationship between the variables mentioned in part (2) is best described by a straight line, use the method of least squares to estimate the y-intercept and slope of the line. (Also, provide the Least Squares Regression Line in the context of the question.)

6) [2] Provide an interpretation of the slope estimate and intercept of the Least Square Regression Line in the context of the question.

7) [4] Find a 90% confidence interval for the slope and provide an interpretation for the calculated interval.

8) [4] Find a 90% confidence interval for the mean weight change of all goslings with digestion efficiency of 17%. Interpret the result.

9) [4] Find a 90% prediction interval for the weight change of a gosling with digestion efficiency of 17%. Interpret the result.

10) [5] Plot the least squares line on your scatterplot and depict 90% confidence intervals for mean values and prediction intervals for new values over the entire range of the regression line.

11) [1] Find the coefficient of determination from the RSudio output and interpret the value.