Measuring the height of tall redwood trees can be difficult. One way to get a good estimate is to use the fact that the height (in feet) of a redwood tree can be related to the diameter (in inches) of the tree at five feet off of the ground. Here is JMP output from a regression of tree height on tree diameter, with questions on the back of this page.
1. (2 points) According to the scatterplot, do the data appear to be linear? Which variable is the dependent variable and which is the independent?

2. (7 points) Can diameter be used to predict height? Use the six-step method to test for a significant relationship between height and diameter. Be sure to define your notation.

3. (2 points) Provide the Regression equation for predicting the height of trees from the diameter of the tree.

4. (2 points) What is the predicted height of a tree that has a diameter of 39 inches?
5. (2 points) Interpret the value of the fitted slope.

6. (3 points) Interpret the value of the $r^2$. How good is this fit?

7. (2 points) What can we learn from this plot of residuals?