Overview

In this lab you use **Fit Model** in JMP to look at no interaction and interaction models. You will also look at having JMP center the explanatory variables before creating the interaction term.

Warm-up Exercise

**Fit Model** allows you to construct multiple regression models. Some of these models can contain interaction terms. The **Fit Model** platform automatically centers explanatory variables before creating the interaction term. In order to create a model with an interaction term made up of un-centered explanatory variables you must tell JMP to turn off the centering option. To do this select **Analyze – Fit Model**. The red triangle next to **Model Specification** contains the option to **Center Polynomials**. This option is checked (active) by default. To turn this option off, click on the option and the check mark should disappear. To turn this option back on, click on the option and the check mark should reappear.

In class we looked at the relationship between the auction prices of antique clocks (Y) and the age of the clock. There was a second explanatory variable, the number of bidders at the auction. The data appear on the course web site

[www.public.iastate.edu/~wrstephe/stat301.html](http://www.public.iastate.edu/~wrstephe/stat301.html)

Open up the data set on the auction price, age and number of bidders.

1. To fit a simple linear model of price on age, cast Price into the role of the Y (response) variable and add the variable Age to the Construct Model Effects box. Be sure to make the emphasis – Minimal Report.
2. To fit the no interaction model of price on age and bidders, add both Bidders and Age to the Construct Model Effects box.
3. Go to the Model Specification red triangle pull down and turn off (un-check) the Center Polynomials option. Highlight both Age and Bidders in the Select Columns box and click on Cross. This will add the Age*Bidders interaction term to the model with Age and Bidders.
4. Go back and try to remove Age from the model with Age, Bidders, and Age*Bidders. What happens?
5. Go to the Model Specification red triangle pull down and turn on (check) the Center Polynomials option. Fit the model with Age, Bidders and Age*Bidders in the Construct Model Effects box. What do you notice about the Terms in the Parameter Estimates portion of the output compared to the Sources in the Effect Tests portion of the output?
6. Compare the t-ratio and F-ratio for the interaction term in the centered and un-centered models. What do you notice?