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Practice: Exploring Correlations (Case Study)

In this exercise, you revisit the White Polymer case study. The team has addressed issues with the measurement system and collected new data to study potential causes of low yield.

In JMP, open the file **VSSTeamData.jmp**. Make sure that the five outliers for **Yield** are excluded and hidden. To confirm this, look at the bottom left corner of the data table. Five observations should show as "Excluded and Hidden."

Recall that **MFI** (Melt Flow Index) and **CI** (Color Index) are two important output measures for the molding process. The continuous input measures are **SA**, **M%**, **pH**, **Viscosity**, and **Ambient Temp**.

1. Use **Graph Builder** to create a scatterplot and calculate the correlation coefficient for **MFI** and **Xf**. What is the correlation coefficient?

   The correlation coefficient is -0.515.

2. Select the **Multivariate platform** on the Analyze, Multivariate Methods menu to study the correlations between **MFI** and all of the continuous inputs. Which input is most strongly correlated with **MFI**?

   The correlation between **MFI** and **M%** is 0.8011. The next strongest correlation is between **MFI** and **Xf**, that is, -0.5145.

3. How would you describe relationship between **MFI** and **M%**? Weak or strong? Positive or negative? Curvilinear? No relationship? Other?

   The relationship is strong positive.

4. Select the **Multivariate platform** on the Analyze, Multivariate Methods menu to study the correlations between **CI** and all of the continuous inputs. Which input is most strongly correlated with **CI**?

   The correlation between **CI** and **Xf** is -0.4806, although there is a curvilinear relationship between the variables. The next highest correlation is between **CI** and **Viscosity**, that is, -0.1523.

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