Questions Module 5.2

Using the following equation, calculate the predicted removal for a part with an OD of 12 units.

Removal = 4.099 + 0.528 * OD

- *a.* 10.435
- *b.* 4.627
- *c.* 9.379
- *d.* 4.099

Incorrect.
The correct answer is **a**. 4.099 + 0.528 * 12 = 10.435.

Which of the following is a regression situation? Select all that apply.

- *a.* Comparing impurity for polymers produced using three different reactors
- *b.* Understanding the relationship between temperature and viscosity
- *c.* Determining whether there is a difference in yield for two machines
- *d.* Quantifying the change in pressure as humidity increases
- *e.* Modeling material thickness as a function of deposition time

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Incorrect.
The correct answer is **b**, **d**, and **e**. Situations (b), (d), and (e) all have a continuous response and a continuous predictor. For (a), **reactors** is a three-level categorical variable, so this would be an ANOVA situation. For (c), **machine** is a two-level categorical variable, so this would be a two-sample t test.

Recall that the White Polymer improvement team is tasked with improving **Yield**, and that **Yield** is related to both **MFI** and **CI**. The specification limits for **MFI** are 192-198, and the lower specification limit for **CI** is 80.

What have we learned from the regression analyses in the previous exercises (for **MFI** and **CI**) that might help the team achieve its goal?

There are many possible answers.

There are significant relationships between **MFI** and both **M%** and **Xf**, and a cubic relationship exists between **CI** and **Xf**.

We could use regression models to determine operating ranges for the predictors to enable us to achieve our specifications for **MFI** and **CI**. If we can achieve these specification limits, we will improve the yield.

We have not looked at all of the variables, so we should include the other variables in future analyses.