**Interpreting Computer Output, Regression to the Mean**

When Mentos are dropped into a newly opened bottle of Diet Coke, carbon dioxide is released from the Diet Coke very rapidly, causing the Diet Coke to be expelled from the bottle. Will more Diet Coke be expelled when there is a larger number of Mentos dropped in the bottle? Two statistics students, Brittany and Allie, decided to find out. Using 16 ounce (2 cup) bottles of Diet Coke, they dropped either 2, 3, 4, or 5 Mentos into a randomly selected bottle, waited for the fizzing to die down, and measured the number of cups remaining in the bottle. Then, they subtracted this measurement from the original amount in the bottle to calculate the amount of Diet Coke expelled (in cups). Output from a regression analysis is shown below.

 

1. What is the equation of the least-squares regression line? Define any variables you use.

Predictor Coef SE Coef T P

Constant 1.00208 0.04511 22.21 0.000

Mentos 0.07083 0.01228 5.77 0.000

S = 0.0672442 R-Sq = 60.2% R-Sq(adj) = 58.4%

1. Interpret the slope of the least-squares regression line.
2. What is the correlation?
3. Is a linear model appropriate for this data? Explain.

1. Would you be willing to use the linear model to predict the amount of Diet Coke expelled when 10 mentos are used? Explain.
2. Calculate and interpret the residual for bottle of diet coke that had 2 mentos and lost 1.25 cups.
3. Interpret the values of **** and *s*.
4. If the amount expelled was measured in ounces instead of cups, how would the values of **** and s be affected? Explain.