Kevlar, How Tough Are You?
Student Worksheet

Name:_____

Kevlar can breakdown when exposed to strong acids and bases. The following data was observed as a result of exposing Kevlar for 16 hours to steam from water at varying pH levels. A pH of 7 is neutral. The lower the pH, the more acidic, and the higher the pH, the more basic.

Data

pH of Water	% Breakdown Strength Remaining
2.9	23
3.0	40
3.4	60
4.0	70
4.7	79
5.0	81
5.5	86
6.0	87
6.5	89
7.0	88
7.5	83
8.0	74
9.0	60
10.0	43

1. Enter the data into your calculator. Use the regression capabilities to determine the best-fit function.

a.) Find the best equation to model the data.

Linear Correlation Coefficient:_____

Quadratic Correlation Coefficient:_____

Cubic Regression = _____

Exponential Regression = _____

Best Fit:_____

2) If the percent breakdown is 53% find the pH of the water.

3. Use your equation of best-fit to compute   in the breakdown.

a. the pH is 4.5

b. the pH is 6.5