Lab: Vinegar Serial Dilution
Key Concept: Effect of Concentration on Reaction Rate

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PASS:

Discipline:	Physical Science/Chemistry
Level:	Middle School/High School
Content Standard:	Grade 8: 1-2
	H.S. Physical Science: 1.3
	Chemistry: 1.4, 2.2
Process Standard:	Middle School – 1.1 -3, 3.2-3, 4.1-3, 5.1-3
	High School – 1.1-3, 3.2-3, 4.1-5

Equipment:

- 5 clear containers
- graduated cylinder
- water
- food coloring
- alka seltzer
- stopwatch

Procedure:

1. Measure 100 mL of water and pour into one of the clear containers.
2. Add one drop of food coloring. Stir. (We found that blue made the best contrast for visual acuity.)
3. Add one alka-seltzer tablet, use a stop watch to measure the amount of time it takes for the tablet to completely dissolve.
4. Record the time.
5. Create a data table with columns for concentration and time.
6. Repeat the above procedure using 100 mL of 3% vinegar.

7. Repeat the procedures using the following solutions (1 solution per container): The 25% solution consists of 25 mL of 3% vinegar and 75 mL of water, the 50% solution consists of 50 mL of 3% vinegar and 50 mL of water, and the 75% solution consists of 75mL of 3% vinegar and 25 mL of water.
8. Graph your results.

Questions:

1. Will time be the dependent or independent variable in this experiment?

2. What conclusions can you draw from the percentages of vinegar in dissolving time?

Discussion: Why is the vinegar concentration placed on the X axis instead of time?