Factors that Affect Reaction Rate Lab

Name:_____
Date:_____ **Per:**_____

Directions: Each of the reactions you will observe varies by one factor. As you carry out each procedure, record your observations. Then explain what varied between the two reactions and how changing the variable changed the rate of reaction.

Factor 1: Addition of a Catalyst

Liquid hydrogen peroxide decomposes naturally into hydrogen gas and oxygen gas by the following equation:

$$H_2O_2\ (l) \rightarrow H_2\ (g) + O_2\ (g)$$

Reaction System	Procedure	Observation	Which system reacted more quickly? Why?
#1	Fill a test tube ½ full with hydrogen peroxide. Observe any changes.		
#2	Fill a test tube ½ full with hydrogen peroxide. Add a small scoop of potassium iodide. Observe any changes.		

Factor 2: Temperature

Alka Seltzer dissociated in water to form a basic solution to help combat heart burn.

Reaction System	Procedure	Observation	Which system reacted more quickly? Why?
#1	Place ½ an Alka Seltzer tablet into 100mL of ice water.		
#2	Place ½ an Alka Seltzer tablet into 100 mL of hot water.		

Factor 3: Concentration of Reactants

Reaction System	Procedure	Observation	Which system reacted more quickly? Why?
#1	Place a ribbon of magnesium in one well of a well plate. Add 2-3 drops of 0.5M HCl. Observe.		
#2	Place a ribbon of magnesium in one well of a well plate. Add 2-3 drops of 5.0M HCl. Observe.		

Factor 4: Surface Area

Reaction System	Procedure	Observation	Which system reacted more quickly? Why?
#1	Hold a nail with some tongs and place it into a flame. Observe.		
#2	Pull apart a small piece of steel wool until it is somewhat fluffy. Hold the steel wool in the flame with the tongs. Observe.		

Analysis Questions:

1. Summarize the factors that you changed to make the reaction happen more quickly.

2. In the wintertime, an old car battery sometimes fails to produce enough energy to start your car. Why would lowering the temperature of a car battery make it not work properly?

3. In the room you are sitting in is a great deal of paper and a great deal of oxygen. Why are you not concerned that the paper and oxygen will react?

4. Explain why a pile of wood chips will burn faster than a wood log.

5. Why are reaction rates important to your everyday life? Give an example other than those listed above.