**Kinetics Virtual Lab**

**Objective:** Describe how temperature and initial concentration affect the rate of a reaction.

Go to the Phet simulations page. In the search box type in Reactions & Rates. Open the simulation. Click on the tab at the top that says Rate Experiments.

# I. Initial Concentration

1. Design an experiment that shows how the initial concentrations of A and BC affect the rate of the reaction.

2. Compare your experiment set-up with another group and discuss if the experimental design will work.

3. Run your experiment and collect data in a table.

4. Discuss your procedure. Some of you may need to change your experimental design and redo the experiment to collect new data.

5. Use your experimental data to make a statement describing how reaction rate depends on initial concentration. Compare your statement with those in other groups to see if you all ended up with the same results. If not, discuss what happened.

**II. Temperature**

6. Design an experiment that shows how the temperature of a reaction affects the rate of the reaction.

7. Run your experiment and collect data in a table.

8. Make a statement about how temperature affects the rate of a reaction.

**III. Energy Diagrams**

9. In the top right corner, click on the drop box for Select a reaction. Choose the last option “design your own”. This will allow you to adjust the potential energy diagram.

10. Design an experiment to see how the energy diagram affects the rate of a reaction.

11. Run your experiment and collect data in a table.

12. Explain why you think temperature changes affect reactions differently depending on the energy diagram for that particular reaction.

**IV. Discussion**

13. Discuss collision theory and explain how and WHY all three of these factors affect the rate of a reaction.