Name _____ Lab Partner _____

TA Name _____ Section _____ Date _____

Chemical Kinetics Worksheet

As you work through the steps in the lab procedures, record your experimental values and the results on this worksheet.

Data Table A: Determination of Rate Law: $2\ I^- + S_2O_8^{2-} \rightarrow I_2 + 2\ SO_4^{2-}$

Run #	mL of 0.200 M KI	mL of 0.100 M $(NH_4)_2S_2O_8$	mL of 0.0050 M $Na_2S_2O_3$	mL of 0.2 M KCl	mL of 0.100 M $(NH_4)_2SO_4$	Elapsed time (sec)
1	20.0	20.0	10.0	0.0	0.0	
2	10.0	20.0	10.0	10.0	0.0	
3	5.0	20.0	10.0	15.0	0.0	
4	20.0	10.0	10.0	0.0	10.0	
5	20.0	5.0	10.0	0.0	15.0	

1. What are the initial concentrations of iodide, persulfate, and thiosulfate in the first run? Account for dilution and show your work.

2. What is $\Delta[S_2O_3^{2-}]$ at the time of the color change in the first run?

3. What is the rate of the reaction in the first run? Show your work.

Table B: Calculations for Determination of Rate Law

Run #	Initial $[I^-]$	Initial $[S_2O_8^{2-}]$	Initial $[S_2O_3^{2-}]$	Rate	k
1					
2					
3					
4					
5					

4. Inspect the data in Data Table B. What is the order of the reaction with respect to iodide ions? Explain how you arrived at your answer.

5. Inspect the data in Data Table B. What is the order of the reaction with respect to persulfate ions? Explain how you arrived at your answer.

6. Write the rate law for this reaction, showing the proper exponents.

7. Calculate the rate constant for the first run. Include units. Show your work, and record the result in Data Table B.