
Pre-laboratory Assignment
Chemical Kinetics: The Method of Initial Rates

Name _____

Section _____

1. Suppose a student prepares reaction mixture 2 (see Table 1 in Part A). When the contents of the reaction flasks 1 and 2 are mixed together it takes 75 seconds for the blue color to appear.

- (a) Calculate the initial concentrations of the reactants after mixing. For example, the concentration of $\text{S}_2\text{O}_3^{2-}$ is calculated as follows.

$$[\text{S}_2\text{O}_3^{2-}] = (0.010 \text{ L})(0.0010 \text{ mol/L}) / (0.050 \text{ L}) = 2.0 \times 10^{-4} \text{ M}$$

$$[\text{I}^-] =$$

$$[\text{BrO}_3^-] =$$

$$[\text{H}^+] =$$

- (b) Calculate the initial rate of the reaction $(-\Delta[\text{BrO}_3^-]/\Delta t)$ in units of mol $(\text{BrO}_3^-)/\text{L s}$.

2. Suppose that the amount of time needed for reaction mixture 1 to turn blue is 145 seconds. Calculate the initial concentrations of the reactants after mixing for reaction mixture 1 and use the method of initial rates to determine the reaction order, x , with respect to $[I^-]$.