FLINN SCIENTIFIC

Name_____

Determining a Balanced Chemical Equation

Data Table

Initial Temperature _____

mL NaClO	mL Sol. B	T_{Final}	ΔT (°C)	mL NaClO	mL Sol. B	T_{Final}	ΔT (°C)
0.0	50.0		0	45.0	5.0		
5.0	45.0			50.0	0.0		0
10.0	40.0						
20.0	30.0						
30.0	20.0						
40.0	10.0						

Post-Lab Questions

1. Based on the data in the graph, what is the stoichiometric mole ratio of reactants for the chemical equation?

   _____ NaClO(aq) + _____ B(aq) → Products

2. Why was the total volume of solutions used kept constant in all trials?

3. Is it necessary that the concentration of the two solutions be the same?

4. Why is it more accurate to use the point of intersection of the two lines to find the mole ratio rather than the ratio associated with the greatest temperature change?

5. Unbalanced chemical equations for three different oxidation–reduction reactions involving sodium hypochlorite are listed below. Balance each equation and then, based on your data, select the reaction that corresponds to your experiment. What is the identity of Solution B? Note that both solutions contained sodium hydroxide as a basic catalyst.

   $$\_\_NaClO(aq) + \_\_Na_2S_2O_3(aq) + \_\_NaOH(aq) \rightarrow \_\_Na_2SO_4(aq) + \_\_NaCl(aq) + H_2O(l)$$

   $$\_\_NaClO(aq) + \_\_KI(aq) \rightarrow \_\_NaCl(aq) + \_\_KIO_3(aq)$$

   $$\_\_NaClO(aq) + \_\_Na_2SO_3(aq) \rightarrow \_\_Na_2SO_4(aq) + \_\_NaCl(aq)$$