Name: _____ Period: _____

Lab Partner: _____ Experiment Date: _____

Mole Ratios and Reaction Stoichiometry

Reaction A: Sodium Bicarbonate and Hydrochloric Acid

Experimental Data

(a) Mass of evaporating dish + watch glass	
(b) Mass of evaporating dish + watch glass + sodium bicarbonate	
(c) Mass of sodium bicarbonate used	
(d) Mass of evaporating dish + watch glass + sodium chloride	
(e) Mass of sodium chloride collected (experimental yield)	

Data Analysis

1) Use your data to determine the experimental mole-to-mole ratio between sodium bicarbonate and sodium chloride. Show your work for each step.

- Convert the mass of sodium bicarbonate used to moles.

- Convert the mass of sodium chloride collected to moles.

- Divide both of your results from the preceding two steps by the lower mole value to determine the simplest mole-to-mole ratio between sodium bicarbonate and sodium chloride.

Simplest mole ratio *before* rounding

_____ moles $NaHCO_3$ **:** _____ moles NaCl

Simplest whole number mole ratio *after* rounding

_____ moles $NaHCO_3$ **:** _____ moles NaCl

2) Determine your percent yield of sodium chloride in reaction A. Show your work for each step.

- Write the balanced equation for reaction A – the reaction between sodium bicarbonate and hydrochloric acid.

- Using mass-to-mass stoichiometry, calculate the theoretical yield of NaCl for reaction A. Use your initial mass of sodium bicarbonate reactant as a starting point, along with the relevant mole ratio from the balanced equation to perform this calculation.

- Calculate your percent yield of sodium chloride product.

Reaction B: Sodium Carbonate and Hydrochloric Acid

Experimental Data

(a) Mass of evaporating dish + watch glass	
(b) Mass of evaporating dish + watch glass + sodium carbonate	
(c) Mass of sodium carbonate used	
(d) Mass of evaporating dish + watch glass + sodium chloride	
(e) Mass of sodium chloride collected (experimental yield)	

Data Analysis

1) Use your data to determine the experimental mole-to-mole ratio between sodium carbonate and sodium chloride. Show your work for each step.

- Convert the mass of sodium carbonate used to moles.

- Convert the mass of sodium chloride collected to moles.

- Divide both of your results from the preceding two steps by the lower mole value to determine the simplest mole-to-mole ratio between sodium carbonate and sodium chloride.

Simplest mole ratio *before* rounding

_____ moles Na_2CO_3 **:** _____ moles NaCl

Simplest whole number mole ratio *after* rounding

_____ moles Na_2CO_3 **:** _____ moles NaCl

2) Determine your percent yield of sodium chloride in reaction B. Show your work for each step.

- Write the balanced equation for reaction B – the reaction between sodium carbonate and hydrochloric acid.

- Using mass-to-mass stoichiometry, calculate the theoretical yield of NaCl for reaction B. Use your initial mass of sodium carbonate reactant as a starting point, along with the relevant mole ratio from the balanced equation to perform this calculation.

- Calculate your percent yield of sodium chloride product.

3) Is your percent yield here for reaction B greater than or less than 100%? Give one possible source of error that could explain the percent yield you obtained.