Experiment 4 – Determination of Sodium Bicarbonate, Molar Mass of CO_2, and R – Data Sheet

Data Collection (1.4 points)

	Trial 1	Trial 2	Trial 3	Trial 4
Mass of empty gel capsule (g)				
Mass of capsule with sample (g)				
Mass of system before reaction (g)				
Mass of system after reaction (g)				
Temperature CO_2 (g) in °C				
Atmospheric pressure in lab (mmHg)				
Volume CO_2 (g) in mL				

Calculations (6.8 points)

	Trial 1	Trial 2	Trial 3	Trial 4
Mass of sample in capsule (g)				
Mass of capsule with sample (g)				
Mass of CO_2 gas (g)				
Mass of $NaHCO_3$ (g)				
% $NaHCO_3$ in sample				
Mass $NaHCO_3$ in 3.5 g tablet (g)				
Temperature CO_2 in K				
Pressure CO_2 in atm				
Moles CO_2 (from mass of CO_2)				
Volume CO_2 in Liters				
Density CO_2 (g/L)				

Gas Constant (1 point)

Calculate the gas constant, R, based on the ideal gas law and moles of CO_2 generated (determined from mass loss).

	Trial 1	Trial 2	Trial 3	Trial 4
Gas constant, R in L·atm/K·mol				

Molar Mass Carbon Dioxide (0.8 points)

Calculate the molar mass of CO_2 using the ideal gas law and mass of CO_2. Use the true gas constant, 0.08206 L·atm/K·mol.

	Trial 1	Trial 2	Trial 3	Trial 4
Molar mass CO_2 (g/mol)				