

Experiment 03
Density of Solutions
Report Form

Name: _____

Date: _____

Data

Class Ticket: _____

Table 1: Raw Data

Data	Mass of NaCl \approx 5 g	Mass of NaCl \approx 3.5 g
Temperature of the water		
Part A and B: Prepare a solution with a Known Concentration		
Mass of 50 mL grad cylinder		
Mass of 50 mL grad cylinder and NaCl		
Mass of 50 mL beaker		
Mass of 50 mL beaker and 10 mL solution		
Mass of 50 mL beaker and 20 mL solution		
Mass of 50 mL beaker and 30 mL solution		
Part C and D: Dilute a solution to a Known Concentration		
Mass of 50 mL beaker		
Mass of 50 mL beaker and 10 mL solution		
Mass of 50 mL beaker and 20 mL solution		
Mass of 50 mL beaker and 30 mL solution		

Your calculations

Please show your calculations below and then transfer them to Table 2.

1. Mass of NaCl
2. Molarity of NaCl solution
3. Average and standard deviation of the *density* of the NaCl solution
4. Average and standard deviation of the *percent composition* of the NaCl solution
5. Molarity of the diluted NaCl solution
6. Average and standard deviation of the *density* of the diluted NaCl solution
7. Average and standard deviation of the *percent composition* of the diluted NaCl solution

Table 2: Your Calculations

Calculations:	Mass of NaCl \approx 5 g	Mass of NaCl \approx 3.5 g
Part A and B: Prep a solution with Known Concentration		
Mass of NaCl		
Molarity of NaCl solution		
Average and standard deviation of the density of the NaCl solution		
Average and standard deviation of the percent composition of the NaCl solution		
Part C and D: Dilute to a Known Concentration		
Molarity of the diluted NaCl solution		
Average and standard deviation of the density of the diluted NaCl solution		
Average and standard deviation of the percent composition of the diluted NaCl solution		

Questions

1. Based on your graphs, what would the molarity be of a solution with a density of 1.025 g/mL?
 - a. To do this:
 - i. Graph by hand: draw a line that goes vertically from 1.025 g/mL until it crosses your hand drawn best fit line. From the point at which these two lines cross, draw a horizontal line to the left until it crosses the vertical scale. Using the point at which the line crosses the vertical scale, estimate the molar concentration of your unknown. Watch those sig figs! If each box on your graph is 0.05 M, then write your answer for the molarity to the nearest 0.01 M.
 - ii. Graph in spreadsheet program: using the equation for the trendline, plug 1.025 g/mL in as the "x". Solve for "y". "y" is your molarity.

2. Based on your graphs, what would be the % NaCl (m/m) of a solution with a density of 1.025 g/mL?

Please do not forget to provide your Excel graph

