CH30S/40S Lab Report Rubric

	Far Below Expectations	Below Expectations	Meets Expectations	Exceeds Expectations
1. Title, Date, Name	The lab report fails to meet more than one of the expectations for this section. ***Points = 0***	The lab report fails to meet one of the expectations for this section. ***Points = 1***	**1. Title is present and is descriptive of the lab.** **2. Date is recorded and accurate.** **3. Student name (first and last) is present.** ***Points = 2***	
2. Abstract	The abstract fails to address two or more of the five expected topics or is missing altogether. ***Points = 0***	The abstract fails to address any ONE of the five expected topics. ***Points = 4***	**The abstract addresses all FIVE of the expected topics, including:** **1. Background** **2. Statement of Purpose** **3. Summary of Procedure** **4. Summary of Results** **5. Concluding Statement and Error Analysis** ***Points = 6***	The student demonstrates exceptional accuracy in thought while connecting the experimental results to the theories or laws being examined. ***Points = 7***
3. Procedure	Procedure is mostly copied directly from the experiment handout with little attempt at brevity or is missing altogether. ***Points = 0***	Procedure represents a summary of the written procedure in the experiment handout, but omits important details. ***Points = 2***	**Procedure is a brief summary of each of the steps taken in completing the experiment written in the students own words. Does not contain minute detail.** ***Points = 4***	
4. Results	The results fail to meet two or more of the expectations for this section or are missing altogether. ***Points = 0***	The results fail to meet one of the four expectations for this section. ***Points = 4***	**1. All data and observations are neatly organized (in tables if appropriate) and easy to interpret.** **2. All data is correctly labeled and represents to limits of the measuring instrument.** **3. The student makes no more than 2 errors in graphing, labeling and calculations.** **4. All calculations are titled and all steps in the calculation are shown.** ***Points = 6***	The student demonstrates exceptional attention to detail, neatness, and accuracy in presenting the results. This includes excellence in graphing, calculations, and presentation of data. ***Points = 7***
5. Discussion	Discussion of theory is missing or does not adequately address both of the expectations for this section. ***Points = 0***	Discussion of theory is present, but fails to correctly address on of the two expectations of this section. ***Points = 3***	**1. Discussion relates to the topic or theory demonstrated by the experiment.** **2. Attempts to explain how and why the results occurred based on knowledge obtained in class.** **3. Attempts to explain discrepancies in results by identifying errors in the experimental procedure and providing possible future improvements.** ***Points = 5***	
6. Neatness and Organization	The lab report fails to meet two or more of the expectations for this section. ***Points = 0***	The lab report fails to meet one of the four expectations for this section. ***Points = 1***	**1. Lab report is legibly written.** **2. The sections are in the correct order.** **3. No more than five spelling/grammar mistakes.** ***Points = 2***	

Samples

Samples of lab report sections from an experiment to determine if there is a relationship between concentration and density in solutions

<table>
<tr><th></th><th>Below Expectations</th><th>Meets or Exceeds Expectations</th></tr>
<tr><td>Title, Date, Name</td><td>Salt Solution Density Lab</td><td>Determination of the Relationship Between the Density and the Concentration of Sodium Chloride Solutions</td></tr>
<tr><td>Abstract</td><td>The purpose of this experiment is to find the density of salt solutions. We measured out 10.00 mL of 5% salt solution and weighed it. We calculated the density. We demonstrated that it is possible to find the density of a solution. Human error was present in our experiment.</td><td>Density is a property of matter that relates mass to a unit of volume. All matter has its own unique density. As the mass changes, so does the matters density. In this experiment, we attempted to relate the concentration of a solution to its density and to use this relationship to determine the concentration of unknown solutions from their densities. To do this, we determined the masses of three NaCl solutions of different concentrations and recorded their masses. We determined that there was a positive linear relationship between concentration and density and that this linear relationship could allow us to predict concentrations of unknown NaCl solutions. During this experiment, we failed to take into account the mass of the graduated cylinder and this affected our results.</td></tr>
<tr><td>Procedure</td><td>Measure out 10.00 mL of the 5% NaCl solution using a pipet and a graduated cylinder, being careful not to spill any solution. Place the graduated cylinder on the balance and determine its mass to 3 decimal places. Record the mass in your results. Repeat for 10.00% and 15.00% solutions of NaCl solution.</td><td>Using an analytical balance, we determined the masses of 10.00 mL of three different concentrations of NaCl solution.</td></tr>
<tr><td>Results</td><td>5% solution = 10.012 g
10% = 10.180 g
15% = 10.230

Density = 10.012g/10.00mL = 1.0012g.mL
(sig dig errors, all on one line)

Density = 10.180/10 = 1.02
(naked numbers, sig digs)</td><td><u>Masses of 10.00mL of NaCl Solution Samples</u>
<table><tr><th>Concentration (%)</th><th>Mass (g)</th></tr><tr><td>5</td><td>10.012</td></tr><tr><td>10</td><td>10.180</td></tr><tr><td>15</td><td>10.230</td></tr></table>
<u>Density of 5% NaCl Solution</u>
D=m/V
D = 10.012g/10.00mL
D = 1.001 g/mL</td></tr>
<tr><td>5. Discussion</td><td>We showed that it is possible to find the densities of different solutions and find their relationships. Our data supported this. The purpose of the experiment was fulfilled.</td><td>In this experiment we demonstrated that there is a linear relationship between concentration of a sodium chloride solution and its density. As the concentration of a NaCl solution increases, the density increases proportionally. Our data supports this conclusion within reasonable margins of error. The purpose of this experiment was fulfilled when we were able to use this relationship to predict the concentration of unknown NaCl solutions under the same conditions.</td></tr>
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