Honors Chemistry: Skill / Laboratory Report Rubric

	Meets or Exceeds Expectations 4 to 5 points	Below Expectations 2 to 3 points	Far Below Expectations 0 to 1 point
1. Heading, Names, Date and Title	The Header contains all the appropriate information: Name, Date, Period, Partners, and Title. The Font used is professional and appropriate. The Title is descriptive.	Header is missing appropriate information. The font is not appropriate or the title is not proper.	Header missing a significant amount of the required data
2. Neatness, and Organization.	1. The report uses appropriate size font 2. The sections are in correct order, clearly labeled, and presented in a professional manner 3. No spelling/grammatical errors in the report	The report fails to meet one of the expectations for neatness or organization.	The report fails to meet two or more of the expectations for neatness, organization, title and date, experiment #,
3. Purpose	Purpose accurately describes the theory that is intended to be reinforced by performing the lab.	The Purpose addresses the procedural aspects of the lab, but does not accurately summarize the theoretical foundation of the experiment.	Purpose is missing, or is only loosely related to the lab being performed.
4. Methods	Methods are a brief summary of the steps taken in completing the lab. It is NOT an exhaustive description containing minute detail.	Methods are mostly copied directly from the lab description, with little attempt at brevity. Or the procedure lacks sufficient content.	Methods are missing altogether; missing important steps, or is wrong.
5. Data	1. All data from experiment is included 2. Data is neatly organized (in tables if appropriate), and is easy to interpret. 3. All data is correct with regard to significant figures and labels.	The report fails to meet one or two of the of the Data section.	The student has copies or makes up data after the experiment. The data section is missing, or fails to meet 2 or 3 of the expectations.
6. Calculations and Graphs	1. The report includes all of the required graphs and all calculations (with correct labels, descriptions, significant figures, etc…) 2. The Results are collected in a Results Table 3. Shows the appropriate statistics (mean, standard deviation, relative deviation, etc…)	The student makes several errors in graphing, labeling, calculations, and/or significant figures.	The student omits graphs or calculations, or makes significant errors to making the graphs/calculations incomprehensible
7. Conclusions	The Conclusion succinctly describes what can be concluded from the **experimental results**. It is aligned with a well-written statement of Purpose at the beginning of the lab.	Conclusion is present, and does not conflict with the student's experimental findings, but fails to address the theoretical basis for the lab.	Conclusion is missing, or is in conflict with the student's experimental results.
8. Discussion of Theory	1. **Addresses the theory demonstrated** by the lab 2. **Explains how the calculations** do/do not support the theory and fulfill the purpose of the lab	Discussion of theory is present, but fails to correctly address one of the two expectations of this section.	Discussion of theory is missing, or does not adequately address both of the expectations for this section.
9. Error Analysis	1. Relative error, if appropriate, has been calculated. 2. Specific sources of experimental error are addressed. 3. Analyzes the effect of errors on the magnitude of calculated quantities.	The report fails to meet all the expectations for error analysis. The error is given as ***personal observation rather then quantitative value***s.	The report fails to meet multiple expectations for error analysis. Or the error analysis section is omitted.
10. Questions	Post-lab questions contain no errors.	Post-lab questions contain some errors.	Post-lab questions contain multiple errors, or are omitted.

Honors Chemistry: Skill / Laboratory Report Score Sheet

EXP: _____ NAME: _____ Per: _____   TOTAL: _____

	Meets or Exceeds Expectations 4 to 5 points		Below Expectations 2 to 3 points		Far Below Expectations 0 to 1 point	
1. Heading, Names, Date and Title	5	4	3	2	1	0
2. Neatness, and Organization.	5	4	3	2	1	0
3. Purpose	5	4	3	2	1	0
4. Methods	5	4	3	2	1	0
5. Data	5	4	3	2	1	0
6. Calculations and Graphs	5	4	3	2	1	0
7. Conclusions	5	4	3	2	1	0
8. Discussion of Theory	5	4	3	2	1	0
9. Error Analysis	5	4	3	2	1	0
10. Questions	5	4	3	2	1	0

The following table gives examples of laboratory answers for a "Density of Salt Solutions" lab.

	Meets or Exceeds Expectations – 4 to 5 points	Below Expectations – 2 to 3 points	Far Below 0 to 1
Title. Date, Neatness, and Organization.	"Determination of the Relationship Between the Density and Concentration of Sodium Chloride Solutions"	"Salt Solution Density Lab"	
Purpose	The purpose of the lab is to develop a mathematical model relating the concentration of a solution to its density, and to use this model to determine the concentration of solutions of unknown concentration from their densities."	"The purpose of the lab is to learn to find the density of salt solutions."	
Methods	"Using an analytical balance, masses of 10.00 mL NaCl samples of each of the solutions of known concentration and 2 unknown concentrations were measured."	"I measured out 10.00 mL of the 5% NaCl solution using a pipet and a graduated cylinder, being careful not to lose any solution. I placed the graduated cylinder on an analytical balance and determine its mass to three decimal places. I recorded the mass in the lab book."	
Data	(see table below)	5% solution = 10.012 g 10% solution = 10.180 g 15% solution = 10.230	
Calculations and Graphs	(see calculations below)	Density = 10.012 g/10.00 mL = 1.0012 g/mL (significant figures error) Density = 10.012/10.00 = 1.001 g/mL (labels not present in calculation)	

Data table (Meets or Exceeds Expectations):

Concentration	Trial 1 Mass (g)	Trial 2 Mass (g)	Trial 3 Mass (g)
5%	10.012	10.017	10.005
10%	10.180	10.204	10.174
15%	10.230	10.242	10.233
U1	10.074	10.062	10.085

Calculations and Graphs (Meets or Exceeds Expectations):

Density = m/V (fundamental equation shown)
Density 5%
Trial 1 = 10.012 g/10.00 mL = 1.001 g/mL
Trial 2 = 10.017 g/10.00 mL = 1.002 g/mL
Trial 3 = 10.005 g/10.00 mL = 1.001 g/mL
(labels present throughout calculation, significant figures rules observed)

	Trial 1 Density (g/mL)	Trial 2 Density (g/mL)	Trial 3 Density (g/mL)
5%	1.001	1.002	1.001
10%	1.016	1.015	1.017
15%	1.029	1.031	1.027
U1	1.010	1.012	1.008

	Mean %	Standard Deviation	Relative Precision (ppt)
U1	8.2 +/- 0.7	0.684931	83.33

Graphs and Stats (mean, standard deviation and relative precision) are included.

Conclusions	"It is demonstrated that a linear relationship exists between the density and concentration of sodium chloride solutions, and that the relationship can be used to make predictions about the properties of solutions of unknown concentration. The concentration of Unknown Solution 1 was 8.2% +/- 0.7%."	"We demonstrated that it is possible to measure the densities of solutions, and to find the concentrations of unknowns."	
Discussion of Theory	"As the concentration of a solution increases, the density of the solution increases in linear fashion. The data supports this concept, within reasonable margins of error. The purpose of the lab was fulfilled by using the mathematical model for this linear relationship to predict the concentration of solutions of unknown concentration based on their densities."	"We showed that as the concentration of a solution increases, the density of the solution also increases linearly. Our data supports this conclusion. The purpose of the lab was fulfilled."	
Error Analysis	"The mass of the empty graduated cylinder was not recorded when finding the mass of the solutions. As a result, the mass of each solution was too high, and the resulting density was also too large."	"We failed to take into account the mass of the graduated cylinder when finding the mass of the solutions."	