AP Chemistry Laboratory Report

In AP chemistry, formal laboratory reports must be TYPED and submitted in the proper format. Students are expected to use appropriate spelling and grammar on all submitted work. Every formal laboratory report must include a cover page with a title, name, date, and period. Point totals for each section of the lab should be copied onto the **all** laboratory reports on the **right** hand side of the page (for both formal and informal/fill-in). **Late laboratory reports will not be accepted**. When graded labs are returned, students are expected to keep and file their reports. A comprehensive laboratory book (containing all graded labs) will be submitted at the end of the year. This laboratory book may be necessary to receive college credit for the course and should be used in studying for the AP chemistry exam.

Format for Formal Laboratory Reports

To be completed before the lab:
Purpose:
Give a concise statement of the objectives of the experiment.

Principle of Method:
Give a brief description of the experimental method being used and the chemical principles being examined. Explain how the collected data will allow for determination of the experimental result. Note: the principle of method is NOT a step-by-step explanation of the procedure.

Data:
All data should be recorded with appropriate significant figures and units. Where possible, data should be organized into tables.

The purpose, principle of method, and data chart should be formatted to fit on ONE PAGE. You will write in the data by hand during the lab and your instructor will sign this page. Only the signed page will be accepted when submitting your report.

To be completed after the lab:
Questions:
Written answers should be given in complete sentences and show a clear depth of understanding of chemical principles.

Calculations should be easy to follow and TYPED. Any equation used in calculations must be given. All values must have the appropriate significant figures and units.

Graphs should be generated using a graphing program (i.e. Excel) and have a title with all axes labelled.

Conclusion:
Make a statement that answers the objectives of the experiment.

Error Analysis:
Discuss the experimental sources of error by *specifically describing how it would effect the obtained result (i.e. would it increase or decrease the experimental value)*. If required, calculate the percent error (see below). Human error should not be discussed. Mistakes in calculations are not an acceptable error.

Many experiments will ask for percent error.
Percent error can be calculated according to the following equation:

$$Percent\ error = \frac{Experimental\ Value - Accepted\ Value}{Accepted\ Value} \text{ x } 100\%$$

Where the experimental value is the result obtained from the experiment and the accepted value is the actual (i.e. published) value. Percent error is generally reported as a positive value and described as "___ % higher than the actual value" (when the calculation gives a positive result) or "___ % lower than the actual value" (when the calculation gives a negative result). You must provide a statement that compares the experimental value to the accepted vale.
For example:
The experimental result was ___ % higher or lower? than the accepted result.

/24 Lab #1: Density of Isopropyl Alcohol

/1 purpose
/2 principle
/5 data
Questions:
/5 #1
/2 #2
/1 #3
/1 #4
/2 #5
/1 #6
/1 Conclusion
/3 Error Analysis
Actual Value = 0.884 g/mL

/20 Lab #2: Gravimetric Analysis

/5 data
Questions:
/3 #1
/2 #2
/1 #3
/1 #4
/1 #5
/1 #6
/2 #7
/1 Conclusion
/3 Error Analysis

/15 Lab #3: Equilibrium and Le Châtelier's Principle

/5 data
Questions:
/1 #1
/2 #2
/5 #3

/2 Conclusion

/40 Lab #4: Determination of an Equilibrium constant for the formation of a complex ion

/1 purpose
/2 principle
/5 data
Questions:
/5 #1 /1 #2 /5 #3
/5 #4 /10 #5 /1 #6
/1 Conclusion
/4 Error Analysis
Actual K = 40.

/18 Lab #5: Determination of the solubility product constant of an ionic compound

Data/Questions:
/5 Data and #1
/1 #2
/2 #3
/2 #4
/2 #5
/2 #6

/1 Conclusion
/3 Error Analysis
Actual Ksp = 5.5×10^{-6}

/20 Lab #6: Buffers

/5 data
Questions:
/3 #1
/1 #2
/3 #3
/3 #4
/3 #5

/2 Conclusion

/34 Lab #7: Acid-Base Titration

/1 purpose
/2 principle
/5 data
Questions:
/1 #1 /3 #2 /2 #3
/5 #4 /5 #5 /4 #6 /1 #7

/1 Conclusion
/4 Error Analysis
Actual content on bottle
Actual $K_a = 3.23 \times 10^{-4}$

/20 Lab #8: Redox Titration

/5 data

Questions
/2 #1
/2 #2
/6 #3
/1 #4

/1 Conclusion
/3 Error Analysis
Actual value on bottle

/30 Lab #9: Electrochemical Cells

/6 data
Questions:
/12 #1
/2 #2
/3 #3
/5 #4

/2 Conclusion

/23 Lab #10: Thermochemistry

/5 data

Questions:
/3 #1 /1 #2 /3 #3
/3 #4 /3 #5

/1 Conclusion
/4 Error Analysis

/40 Lab #11: Kinetics

/1 purpose
/2 principle
/5 data
Questions
/2 #1 /3 #2a /5 #2b
/4 #3 /4 #4
/3 #5 /4 #6
/2 #7 /3 #8

/1 Conclusion
/1 Error Analysis
Actual k = 26

/36 Lab #12
Periodic Trends and Bonding

/1 Data
Questions
/3 #1
/2 #2
/4 #3
/2 #4
/20 #5
/2 #6
/1 #7

/1 Conclusion

/35 Lab #13 Heat of Solution

/5 Data

Questions:

lithium chloride	*ammonium nitrate*
/5 #1	**/5 #1**
/3 #2	**/3 #2**
/5 #3	**/5 #3**

/2 Conclusion

/2 Error Analysis

/28 Lab #14
Chromatography

/10 Procedure
/1 Purpose
/5 Data

/10 Calculations and Discussion

/2 Conclusion