



Name: _____

Partner's Name(s): _____

Lab Date: _____ Lab Instructor Name: _____

APPLIED SPECTROSCOPY—DAY 2 LAB NOTEBOOK PAGES

All purpose, procedure(s), and data/observations must be recorded in the lab notebook in pen with permanent, waterproof ink (black or blue). Pencils, markers, highlighters, and correction fluid (white-out) are not permitted. No information can be recorded elsewhere and transferred after leaving the lab. Lab notebooks can be digital or paper; you may write directly on the lab notebook pages in your lab manual or download a digital copy onto your electronic device and then write in it. Refer to the Guide for Success in the General Chemistry Laboratory section in the front of this lab manual for more detailed instructions.

- ⦿ **Before Lab:** Make sure to complete the Purpose and Procedure sections in your lab notebook pages.
- ⦿ **After Lab:** Upload your notebook pages to the appropriate Carmen assignment within 48 hours after the start time of your in-person lab session. If you used the notebook pages in your paper copy of your lab manual, you should scan or take photos of the pages. Do not remove them from your lab manual. Refer to the XUF Day 2 Notebook upload assignment in Carmen for more detailed instructions.

PURPOSE _____

Describe the what, why, and how of the experiment in bullet points or a few sentences. Consult the Expected Learning Outcomes and the procedure for the experiment to develop the purpose.

PROCEDURE CITATION _____

Chemistry 1910H: General Chemistry Laboratory Manual, Fall 2025.; Weaver, T. A., Opoku-Agyeman, B., Fontes N. Da Silva, C., Welch, A. N., Stern, J. E., Wroblewski, R. A., Walter, C., van Helmond, A., Eds.; Van-Griner Learning: Cincinnati, OH; pp. 55–67.

PROCEDURE

DAY 2

PART E. PREPARATION OF FAAS PENNY SOLUTIONS

Write a summary or step-by-step procedure for this part of the experiment in the space below.

PART G. ANALYSIS OF PENNIES BY FAAS

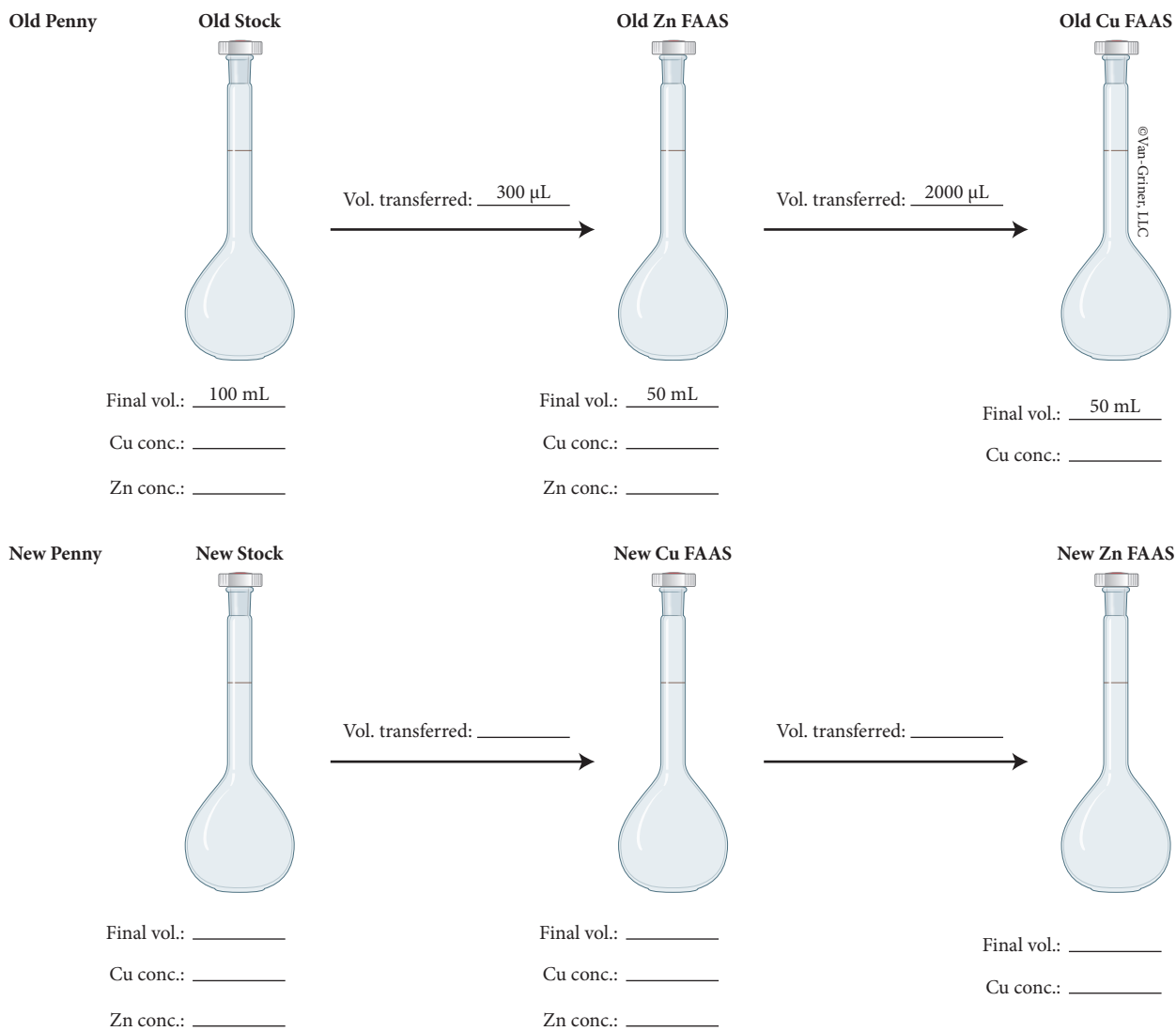
Write a summary or step-by-step procedure for this part of the experiment in the space below.

CLEAN UP AND WASTE DISPOSAL

All waste solutions should be collected in the class Chemical Waste beakers. Be sure to fill out the Chemical Waste Disposal form. Used micropipet tips and emptied plastic vials should be disposed of in the Blue Solid Waste bucket. Pasteur pipets should be discarded in the Orange Glass Waste bucket. Remove any markings from the volumetric flasks with 70% ethanol spray and a paper towel and return them. After cleaning up, wipe down your work area with 70% ethanol spray and a paper towel. Wash your hands thoroughly after completing this experiment.

DATA AND OBSERVATIONS

DIAGRAMS



CALCULATIONS, ETC.

CALCULATIONS, ETC. (CONT.)

SUMMARY OF ANALYSIS

DAY 2

PART F. EXPLORATION OF SPECTROSCOPIC TECHNIQUES

A CLOSER LOOK AT XRF

Based on the data included in **Table XUF.2**, what conclusions can you draw about how “deep” the instrument is able to probe an analyte?

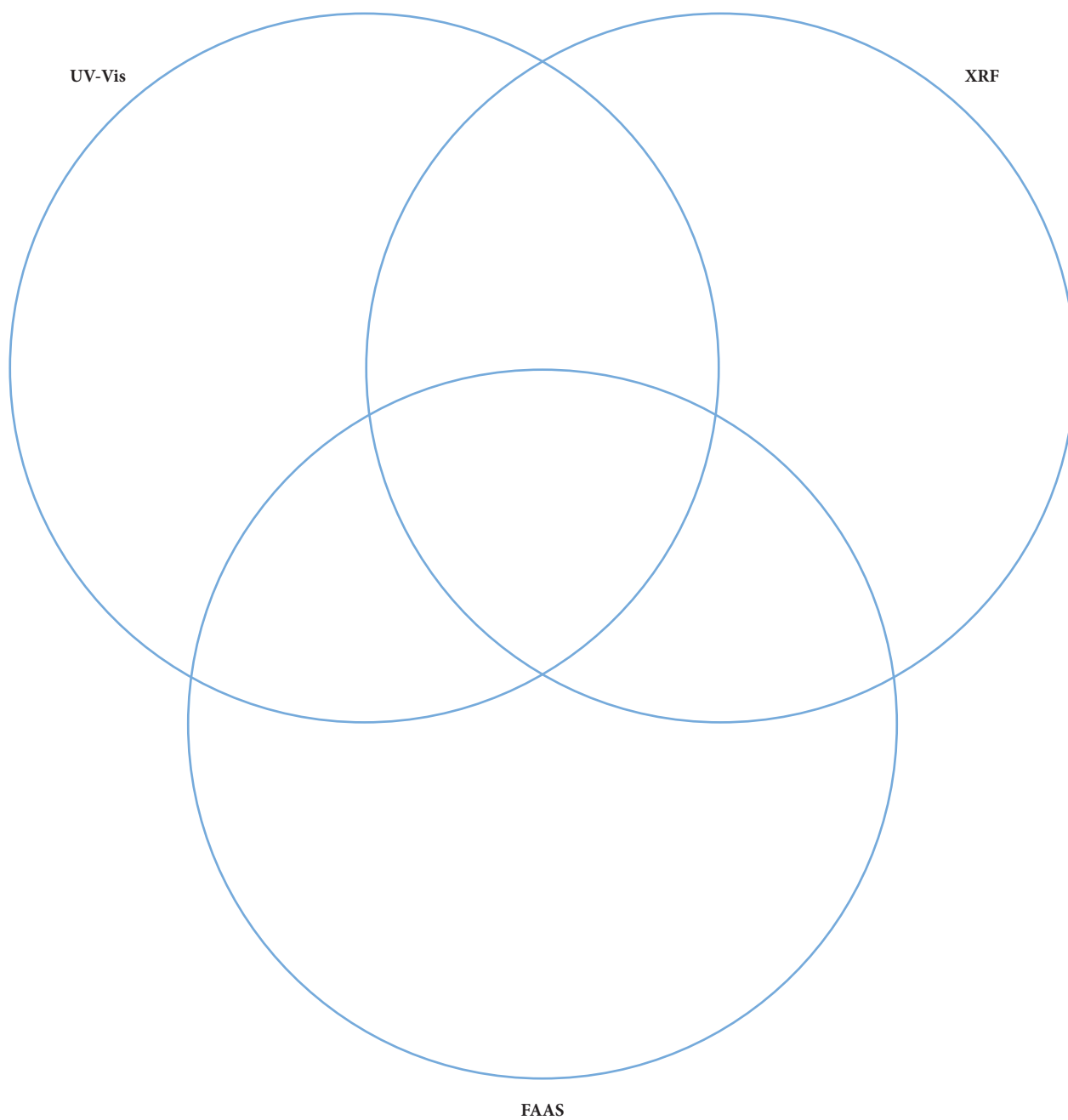
Based on the data included in **Table XUF.3**, do you think the identity and abundance of the metals in the bag changed while shaking? What implications does this have on the validity of XRF results?

EXAMPLE ANALYSIS OF FAAS CALIBRATION CURVES

Calculate the concentration of zinc in the “new Zn FAAS” solution. It may be helpful to review the information included in the Data Analysis section. Show your work.

Calculate the percentage of zinc in the penny if the penny had a mass of 2.4875 g. It may be helpful to review the dilution information provided in the procedure. Drawing a flow chart for each solution may also be useful. Show your work.

PUTTING IT ALL TOGETHER



PART G. ANALYSIS OF PENNIES BY FAAS

FAAS Cu CALIBRATION DATA (PROVIDED ON MARKER BOARD IN LAB)

CONCENTRATION Cu ²⁺ (ppm)	ABSORBANCE
0	0.000

	OLD Cu FAAS	NEW Cu FAAS
Absorbance		
Concentration of Cu ²⁺ in solution tested (ppm)		
Concentration of Cu ²⁺ in old Zn FAAS solution (ppm)		
Concentration of Cu ²⁺ in stock solution (ppm)		
Mass of Cu in stock solution (g)		
% Cu in penny		

FAAS Zn CALIBRATION DATA (PROVIDED ON MARKER BOARD IN LAB)

CONCENTRATION Zn ²⁺ (ppm)	ABSORBANCE
0	0.000

Do not use the Part G sample data here.

	OLD Zn FAAS	NEW Zn FAAS
Absorbance		
Concentration of Zn ²⁺ in solution tested (ppm)		
Concentration of Zn ²⁺ in new Cu FAAS solution (ppm)		
Concentration of Zn ²⁺ in stock solution (ppm)		
Mass of Zn in stock solution (g)		
% Zn in penny		

COMPLETE SUMMARY OF ANALYSIS

Fill in this table after completing the Day 2 Data Analysis in the XUF Day 2 Post-Lab. This will not be checked, but it's a great idea to keep this summary handy when working on your Post-Lab.

		"OLD" PENNY	"NEW" PENNY
Mass of Pennies, (g)			
XRF	% Cu		
	% Zn		
UV-Vis	% Cu		
	% Zn		
FAAS	% Cu		
	% Zn		