

Laboratory Performance Task

Typically, students work very diligently to acquire a deep and vast understanding of concepts presented in science in the hopes of entering a science-related field in a post-secondary setting. However, considerably less attention is given to developing the investigative aspect of a science course and some would argue, this is the true point of science. Concepts can also be researched and studied, but thriving in a laboratory to solve a scientific puzzle is the true nature of science; this is where the answers are found and where concepts are developed. When we think of a scientist, we envision them in the lab working methodically to find a hidden or unknown connection to make the world a better place.



However, before this type of investigative work can be freely conducted, scientists must master their craft and that takes years of practice and exposure to all sorts of techniques. Experimentation takes years and costs a considerable amount of money so knowing what to do, when to do it and how to do it efficiently is critical. This performance task is designed to set you on the journey to becoming a confident and competent scientist.

This performance task will be a three-day experiment designed to provide you with an opportunity to demonstrate the successful accumulation of laboratory skills necessary for future work in chemistry. You will work individually each period and you will have to determine the best course of action to complete the experimental portion of the work each day. At the end of each period, a write-up/analysis is due. The entire work for each period should be completed within that period; no extra time will be granted, so you must work intelligently, diligently and efficiently. Some students find this work stressful and it is certainly not meant to be so; however, this is a very realistic situation. If you apply for a job in a lab, you may very well have to demonstrate your skills to secure the job and once you are working in a lab, you may have to continually demonstrate proficiency to keep that job. Often, chemicals used in working laboratories are unique and quite expensive; there is little room for error. The entire three-day lab adds up to a lot of marks so no single event is as critical as it might seem; take a breath, relax and apply your acquired skills as best you can. We believe we have prepared you well and are very confident in your ability to succeed.

The specific nature and expectations of your task will be revealed when we begin this work. However, you need to be aware of the types of experimental procedures you engage in throughout the year to demonstrate your skill during this performance task. The experiments you work on in class provide an opportunity to practice and perfect your technique; make sure you are an active participant. Some of these key skills include (not a complete list and only presented alphabetically):

- Decanting/Filtration: various methods of separating filtrates and residues for further analysis
- Gravimetric Analysis: comparative massing to determine stoichiometric amounts
- Qualitative Analysis: using indicator tests such as flame colour and precipitation reactions to identify unknown chemicals
- Solution Preparation: various methods of ensuring proper concentrations of solutes using dissolving techniques, volumetric dilutions and reactions using a wide variety of proper equipment
- Volumetric Analysis: progressive addition, typically via titration, of solutions to determine exact amounts of chemicals in other solids or solutions

You may bring with you:

- personal notes from the year (to use with the report)
- your textbook (to use with the report)
- printouts from our class website (not others—to use with the report)
- non-programmable calculator (you cannot use the internet or a computer)



You will be provided:

- specific experiment instructions each period
- ample glassware and equipment to conduct the experiment
- specific write-up instructions each period
- paper to complete your report
- a periodic table

