**Design Practical Investigation – Concentration of active chlorine in pool water**

In this practical investigation you have the opportunity to:

* deconstruct a problem to determine the most appropriate method for investigation
* formulate an investigable question or hypothesis
* select and use appropriate equipment, apparatus, and techniques
* identify variables
* collect, represent, analyse, and interpret data
* evaluate procedures and consider their impact on the results
* draw and justify a conclusion
* communicate knowledge and understanding of concepts.

**The problem**

What factors might affect the concentration of active chlorine in pool water?

**Part A: Deconstruct the problem to determine the most appropriate method for investigation (in pairs)**

* Brainstorm factors that could affect the concentration of active chlorine in pool water.
* Use the laboratory time to perform preliminary trials with one or more variables.
* Record your observations and consider aspects of the procedure that need to be modified.

**Investigation Design (individually)**IAE1

* Select one variable to investigate and write an appropriate hypothesis.
* List the independent and dependent variables, factors to be held constant (including how and why) and factors that may not be able to be controlled (including why not).
* List the materials required and a detailed procedure.
* Use the results of your trials to justify the details of your method.
* Identify ethical and safety considerations
* Present your deconstruction ideas, your proposed method and a justification of your method on a maximum of 4 sides of an A4 page. Consider using a concept map, flow chart, tables etc. to present your ideas succinctly.

Submit your deconstruction evidence for teacher feedback.

***Part B: Conduct the investigation* (individually)**

Use the laboratory time to conduct your investigation and record your results.

***Part C: Report* (individually)** IAE2, IAE3, IAE4, KA4

The practical report should include:

* introduction with relevant chemistry concepts, hypothesis and variables
* materials/apparatus
* method that was implemented
* identification and management of safety and/or ethical risks\*
* results, including table(s) and/or graph(s)
* analysis of results, identifying trends, and linking results to concepts
* evaluation of procedures and their effect on data, and identifying sources of uncertainty
* conclusion, with justification.

The report should be a maximum of 1500 words if written, or a maximum of 10 minutes for an oral presentation, or the equivalent in multimodal form.

Your deconstruction evidence should be attached to your report.

Only the following sections of the report are included in the word count:

introduction, analysis, evaluation and conclusion.