

IA Investigation Proposal for _____

Next fall you will return to campus a few days earlier than the underclassmen to receive guidance on your college essays and to meet with your HL classes for a two-hour block. This will ensure that we can finish the topics in the syllabus, complete our internal assessment (IA) experiments comfortably, and have time to review for the exams. We will use our time during Senior Start Week to test our IA ideas, so you will need to do some work on this over the summer break in order to have something to test on that first day. **You must submit/share this completed form with me by August 1** so that I can order any chemicals and/or equipment needed for your investigation. The IA is the one part of the Diploma Programme that you completely control: you pick the topic, you design the experiment, you analyze the data, and you evaluate your methods and results. A well-written IA secures 20% of your overall IB score for chemistry before you even sit for the exams next May.

Chemical reaction: In the space below give the chemical equation for the reaction that will be the focus of your experiment.

If you are studying how a particular product responds when you add something to it or how it changes under certain conditions, you should be able to represent this change with a chemical equation. If you cannot come up with a chemical equation for what you want to study, it is probably not a good chemistry IA investigation.

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Variables: The variables you choose must be quantifiable: they must be measurable (like pH, concentration, or temperature) or derived (calculated) from measurable data (like a reaction rate, an equilibrium constant, or percent yield). Keep in mind that you are required to show calculations and error propagation as part of your IA, so one of your variables should be a calculated result or you must use your data to calculate some value that you discuss in your conclusion.

The independent variable is the variable that you will change. In the space below, identify this variable, explain how you will measure it, and how you will change it.

The independent variable	
How you will measure the independent variable	
How you will change the independent variable	

The dependent variable is the outcome you will measure. In the space below, identify this variable, and explain either how you will measure it or how you will calculate it.

The independent variable	
How you will measure the independent variable (If you have chosen a variable that you must calculate, include what measurements you must make and how you plan to calculate the independent variable.)	

There are other variables that could affect the results of your experiment. As such these variables should be identified and kept constant. (In your IA, you will have to explain why it is important for you to keep them constant. You do not need to include that here, but if you already know why, you can add it in the provided space.) You should identify a minimum of two of these controlled variables and how you plan to keep them constant. (You should be prepared to discuss why it is important to keep the variable constant as part of your IA.)

Controlled Variable	The plan to keep the variable constant

Drafted Research Question:

The research question should include both variables and indicate how you plan to investigate the correlation between them.

Example: How does the concentration of sodium hydroxide, NaOH, affect the rate of nucleophilic substitution when reacted with tert-butylbromide, (CH₃)₃CBr, in diethyl ether at 298K?

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Methodology: The methodology is your procedure. Provide a list of steps you will follow to complete your experiment. If you are using a procedure you found in a lab manual or on the internet, you need to cite the source. (You may also insert a link to it if the procedure is online.) Do not worry too much about specific amounts. These can be adjusted once you are certain that your procedure works in the scope of your experiment. Remember that you will need to complete 25 total repetitions: you want to find a procedure that does not require a significant amount of time per trial.

Materials

In the space provided, sketch (or include a picture of) your experimental set-up, and label each of the pieces of equipment.

Equipment (This should include a list of everything in your drawing/picture)	Chemicals (This should include all chemicals mentioned in your methodology.)