

=All Work Must Be Original and Your Own=

IA Report Guidelines

Submit to [turnitin.com](https://www.turnitin.com)

First draft due: **March 19 (Friday)**

Final draft due: **April 2 (Friday)**

General guidelines:

- Your report has a 12 page limit, with most reports around 6-10 pages.
- Only put your name on the first page of your report, and do not include a cover page.
- IB has no set format for your report, although reasonable font size, spacing, and margins is expected.
- Cite all reference material using a bibliography at the end. Best to have over 10 references.
- Be as clear and concise as possible in all your discussions. Do not ramble on and on, taking a paragraph to say what could be said in one or two sentences. (Edit your work!)
- Use appropriate scientific terms throughout your report. Look up unfamiliar words to make sure you are using them correctly.
- Write chemical formulas and symbols with proper subscripts and superscripts - e.g., PO_4^{3-} .
- Do not try to be funny, clever, or cute. This is a science paper, not a creative writing assignment.

Specific Guidelines (Your report must include these exact numbered headings!)

1.) **Research question** (1 sentence)

Clearly state the purpose of your investigation in a single research question. Be very specific, including both independent and dependent variables. For example: *How does temperature affect the reaction rate in the decomposition of hydrogen peroxide?*

2.) **Topic significance** (1-2 paragraphs)

Discuss your topic's significance and why you found it a topic worthy of investigation. (Do not discuss any personal meaning it may have to you. Sorry, no one cares.)

3.) **Background information** (2-3 paragraphs)

Discuss the background of your topic and the scientific concepts necessary for your investigation to be understood by someone unfamiliar with its subject matter. Include all relevant chemical formulas, structures, chemical equations, etc..

4.) **Investigation overview** (1-2 paragraphs)

Provide a general overview of your investigation, the basics of what you did.

5.) **Variables** (list each separately)

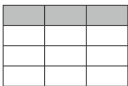
- independent variable(s): what was changed
- dependent variable(s): what was affected by the change - i.e., independent variable(s)
- controlled variable(s): what needed to be held constant so as not to affect your data. However, this is difficult to discern with database and simulation investigations and will not be required.

Note: You do not have to be limited to the traditional independent vs dependent setup (you can have multiple variables and study various interconnected relationships).

6.) Methodology

- i.) Discuss all the steps you took to collect your data - this should be written in the past tense as a historical record of what you actually did and reflecting on all the decisions you made as the investigation progressed, as well as your thought process that guided those decisions and any changes that made.
- ii.) Provide enough detail that your investigation could be repeated by another researcher.
- iii.) You should state that there was no safety, ethical, or environmental considerations with your IA, as it was a virtual investigation.

7.) Data Collection

- i) You should have many manipulations (variations) of your independent variable(s) (it would be best to have at least three different sources for the same data).
- ii) Collect more data than you would with a traditional hands-on experiment.
- iii) Present all raw, quantitative data within a well-organized and labeled **data table** → 
 - Include proper units, significant figures, and uncertainties.
 - Incorporate uncertainties based off of ranges in database values (or include recorded values)
 - Use clear and concise column and row headings so that your tables can be easily read.

Hint: If you have to repeat the same words over and over again, such as "Mass of..." "Mass of..." "Mass of..." you need to revise your table!

8.) Data Processing (showing work)

- Use clear headings for your work to be easily followed and understood.
(**Bad:** "Trial 1 calculation," **Better:** "Rate Determination, Trial 1")
- Show all calculations with proper units and significant figures.

9.) Data Presentation (graphs and charts)

- Present processed data using informative graphs or charts that clearly summarize findings.
- All graphs and charts should have an appropriate title, with each axis labeled with proper units and uncertainties. Error bars are not required, but still good to include.

10.) Conclusion

- Clearly state your findings, reflecting back to the purpose of your investigation (research Q).
- If helpful for your reader, use a table to summarize your findings. (Do not put into paragraph form all your calculated results. No one will be able to follow that!)
- Review the chemistry concepts relating to your investigation, discussing the extent to which your results align with your understanding. If your findings are inconsistent with what you had expected, offer one or more possible explanations.
- Try to compare your results to known or expected values. Calculate your percent error and try to offer an explanation for any discrepancy. (For database investigations, such discrepancies would be related to the differences in the data obtained from different sources.)

11.) **Evaluation & Extensions** (this is limited in a database/simulation investigation)

- Review the procedures of your investigation and identify any problematic steps that may have limited your success. (systematic, procedural problems, not accidents or mishaps.)
- Suggest how the procedures or method you followed could be realistically improved and how your investigation could be extended. Be very specific, giving detailed procedural changes. (What would you do differently? What other information could you explore?)
- Suggest other investigations that could be done to enhance or further extend what you studied.

Communication

You will also be scored on how effectively you communicated your work and findings:

Clarity of presentation	REPORT IS EASY TO FOLLOW: The presentation of the investigation is clear. Any errors do not hamper understanding of the focus, process and outcomes.
Structure and coherence	REPORT IS EASY TO UNDERSTAND: The report is well structured and clear: the necessary information on focus, process and outcomes is present and presented in a coherent way.
Relevant and concise	REPORT REMAINS FOCUSED: The report is relevant and concise thereby facilitating a ready understanding of the focus, process and outcomes of the investigation.
Subject specific terminology	REPORT CONTAINS APPROPRIATE SCIENTIFIC TERMINOLOGY: The use of subject specific terminology and conventions is appropriate and correct. Any errors do not hamper understanding.