INTERNAL ASSESSMENT – THE FACTS

The internal assessment component counts 20% towards the final mark with the external examinations counting 80%. The assessment is exactly the same for both SL and HL. Most of the work you do will not be assessed as the assessment will only be on **one** individual scientific investigation taking about 10 hours and its subsequent write-up, which should be about 6–12 pages long. This will be marked out of 24, which will then be scaled to a mark out of 20. It will be marked by your teacher but moderated externally by the IB.

GRADING OF INTERNAL ASSESSMENT

You will only gain good marks for your Individual Investigation if you address each criterion fully. The descriptors to gain the maximum mark for each criterion are given below.

Criterion	Max mark	Descriptor for maximum mark
Personal engagement	2	The evidence of personal engagement with the exploration is clear with significant independent thinking, initiative or creativity. The justification given for choosing the research question and/or the topic under investigation demonstrates personal significance, interest or curiosity. There is evidence of personal input and initiative in the designing, implementation or presentation of the investigation.
Exploration	6	The topic of the investigation is identified and a relevant and fully focused research question is clearly described. The background information provided for the investigation is entirely appropriate and relevant and enhances the understanding of the context of the investigation. The methodology of the investigation is highly appropriate to address the research question because it takes into consideration all, or nearly all, of the significant factors that may influence the relevance, reliability and sufficiency of the collected data. The report shows evidence of full awareness of the significant safety, ethical or environmental issues that are relevant to the methodology of the investigation (if appropriate).
Analysis	6	The report includes sufficient relevant quantitative and qualitative raw data that could support a detailed and valid conclusion to the research question. Appropriate and sufficient data processing is carried out with the accuracy required to enable a conclusion to the research question to be drawn that is fully consistent with the experimental data. The report shows evidence of full and appropriate consideration of the impact of measurement uncertainty on the analysis. The processed data is correctly interpreted so that a completely valid and detailed conclusion to the research question can be deduced.
Evaluation	6	A detailed conclusion is described and justified, which is entirely relevant to the research question and fully supported by the data presented. A conclusion is correctly described and justified through relevant comparison to the accepted scientific context. Strengths and weaknesses of the investigation, such as limitations of the data and sources of error, are discussed and provide evidence of a clear understanding of the methodological issues involved in establishing the conclusion. Realistic and relevant suggestions for the improvement and extension of the investigation have been discussed.
Communication	4	The presentation of the investigation is clear. Any errors do not hamper understanding of the focus, process and outcomes. The report is well-structured and clear: the necessary information on focus, process and outcomes is present and presented in a coherent way. The report is relevant and concise thereby facilitating a ready understanding of the focus, process and outcomes of the investigation. The use of subject-specific terminology and conventions is appropriate and correct. Any errors do not hamper understanding.

MAXIMIZING YOUR INTERNAL ASSESSMENT MARKS

General points

- Before you undertake your individual investigation, familiarize yourself with the assessment criteria. Remember this is not an Extended Essay and you are not using the EE criteria.
- Look at examples of excellent past Individual Investigations (available from your teacher).
- Determine the title of your investigation and discuss it with your teacher. For ideas you could refer to interesting developments from experiments you have already done, look at the suggestions for Extended Essay titles which are given on page 179 or base it upon something you have read in a newspaper, journal or online.
- Decide whether you are going to generate your own primary data by experiment or whether you are going to use secondary data from other sources.
- Record all your work as you proceed including precise details of references.
- If you are doing a 'hands on' investigation, record precise details of all equipment used, e.g. a balance weighing to ±0.001 g, a thermometer measuring from −10 to +110 °C to an accuracy of ±0.1°C, a 25.00 cm^3 pipette measuring to ±0.04 cm^3, etc. Also record precise details of any chemicals used, e.g. copper(II) sulfate pentahydrate $CuSO_4.5H_2O(s)$ and if it is a solution include the concentration, e.g. 0.100 mol dm^{-3} NaOH(aq).
- Record all measurements accurately to the correct number of significant figures and include all units.
- Record all observations. Include colour changes, solubility changes, whether heat was evolved or taken in.
- Draw up a checklist to cover each criterion being assessed. As you write up your individual investigation check that each criterion is addressed fully.
- Remember that academic honesty is paramount. You must always acknowledge the ideas of other people.

Specific points for each criterion

Personal engagement

Ideally generate your own research question. Make sure that in your report you justify why it was chosen and why it is significant to you personally. Show clearly how you have designed the investigation and, if you are using an experimental method, how you have adapted it to fit your particular investigation.

Exploration

Whether you are generating primary data by experiment or whether you are using secondary data you must set it into context by discussing your research on what is already known about the topic under investigation. The research question must be fully focused and the methodology chosen must address all the variables whether dependent, independent or controlled. Safety and environmental concerns must be identified and addressed.

Analysis

Make sure that you have sufficient relevant raw data to address your research question and that you have processed it correctly. This means that, for example, for graphs you should have a minimum of five readings and the readings repeated for accuracy. The processing should include attention to uncertainties and error in the individual measurements and the total uncertainty associated with the final outcome recorded. Assumptions made should be clearly stated.

Evaluation

Make sure your conclusion is justified from the data gathered and is relevant to your research question. Put your conclusion into context by comparing it with literature sources if possible and work out the percentage error. Identify the strengths and weaknesses of your method and suggest sensible ways in which weaknesses could be improved.

Communication

Write your report concisely and make it intellectually neat. It should be well-structured and present the information and argument logically and clearly. Make sure you use correct chemical language and terminology with attention to the use of correct units, significant figures and decimal places. Images, graphs and tables should all be correctly labelled.