

Physics Practical Investigation Rubric

	A	B	C	D
Aim and hypothesis	Very specific, including a mathematical relationship	Mathematical relationship given in vague terms	No mathematical relationship included	Vague hypothesis given
Equipment list	Complete, dot point list, no irrelevant equipment	One or two details missing or irrelevant	More than two items missing or irrelevant	Few relevant items listed
Procedure (method)	Detailed, numbered steps, clearly labelled diagram(s). Instructions included about how to maintain constants	Steps not clear to follow, one step missing, or diagram(s) not clearly labelled.	Steps missing, not numbered or out of order. No diagram given.	Only a basic or unclear summary of procedure given
Selection of information	Information chosen from at least three different types of source . Information provides a variety of relevant information.	Relevant information chosen from only two different types of source, or information is not all relevant.	Relevant and irrelevant information or chosen from two different sources of the same type	Partly relevant Information or chosen from one source
Acknowledgement of information	Information referenced in-text and with a reference list, with formatting that matches the referencing guide	Information referenced in-text and in reference list, but not all consistent with referencing guide	Reference list only, some formatting matches reference guide	Reference list provided but no references correctly formatted
Manipulation of apparatus	Careful not to damage equipment, safe handling of equipment, sensible social behaviour, effective measurement of results	Equipment mostly handled carefully but some damage or incorrect measurement	Some lack of care shown either socially or in handling equipment	General lack of care for equipment or others
Organisation	Procedure read and equipment gathered before starting	Procedure read or equipment gathered before starting	Procedure followed correctly	Procedure not followed correctly
Tables of results	Left column is independent variable, right column is dependent. Units given only in column headings Appropriate and consistent use of significant figures	One or two mistakes in values or formatting	More than two mistakes in values or formatting	Incorrect formatting and more values incorrect than correct
Graphs	Horizontal axis is independent variable, vertical axis is dependent. Title, axis labels, units, and scale all given appropriately. Data points equally spread above and below line of best fit (outliers ignored). Graph uses all the space available (fills the page).	Up to two features missing from graph and possibly one point incorrect	More than two features missing from graph, or two or more incorrect points	Data plotted and formatted incorrectly
Evaluation of procedure	Independent/dependent variables and constants discussed. At least three possible sources of error and their effect explained in-depth. Both random and systematic error are discussed	At least three possible sources of error described. Both random and systematic error	At least three possible sources of error stated	One or two possible sources of error stated
Suggestion for improvements	At least four improvements suggested and their effect explained (or three in-depth). Improvements are specific and could be physically done if the experiment was repeated.	At least three improvements suggested, but not possible or their effect not explained. Or, two explained in depth.	Two or three improvements described	One or two improvements stated
Analysis of data	Evidence of random and systematic error from graph and/or data Clear working to obtain mathematical relationship from data	The effect of error mentioned but not related to the data. At least some clear working toward mathematical relationship	Pattern or relationship vaguely described	No reference made to graph or data
Conclusion	Hypothesis restated and related to results in terms of support, particularly of the mathematical relationship. Any relevant limitations of the experiment are discussed.	Hypothesis related to result and support described	Conclusion appropriate but simple and support only stated	Conclusion vague or lacking support
Problem solving	Complex and unfamiliar problems are solved correctly	All but the complex or unfamiliar problems solved correctly	Simple problems solved correctly	Some correct answers or working
Use of terms, conventions, formulae and equations	All working clearly shown. Physics terminology used correctly and commonly in explanations and discussion	Some working missing. Physics terminology used correctly in explanations and discussion.	Some working shown. Some physics terminology used correctly.	Little or no working shown. Physics terminology used incorrectly.
Work skills	Laboratory environment treated seriously. Interaction with others is positive and focused on the investigation. Report handed in on time or early.	Generally positive and focussed attitude but with one or two distractions. Report handed in on time.	Mostly constructive contribution to practical work but often distracting. Report handed in late.	Some constructive contribution but mostly distracting. Report handed in late.
Knowledge and understanding of concepts	Various concepts related to the investigation correctly explained. Sources of error and improvements to procedure are correctly explained in terms of physics concepts.	At least two relevant concepts or issues are explained clearly.	Some concepts are described or referred to, or explanations are unclear.	Concepts either not explained or explained poorly.
Explaining contemporary applications	Contemporary applications are explained correctly, either two clearly or one in depth.	One contemporary application is explained clearly but not in much depth.	One contemporary application is described and partly explained.	Explanations of contemporary applications missing or unclear.
Communication	Report is written in neutral, scientific language. Layout is neat and includes clear headings and paragraphing. Spelling and grammar are thoroughly checked.	Report includes some personal language, not all layout is clear, or there are a number of spelling mistakes.	Report is organised in a layout but without clear headings. Spelling and grammar is not well checked.	Report poorly organised with few or no headings. Many spelling and grammar mistakes.