	Knowledge and Understanding	Data Analysis	Planning and Evaluation	Practical Skills
Mastered (X)	X4.1 Can confidently use all key facts from a topic to answer questions in a clear way. X4.2 Can confidently use scientific models to explain concepts, evaluating the strengths and weaknesses of the models used. X4.3 Can independently link key scientific ideas across different topics to explain observations. X4.4 Scientific terminology is used fluently in explanations.	X4.1 Collects data from an investigation and records appropriately in a table and displays results on an appropriate graph with accurate scales, including negative values and decimals, and correctly plots data as line and bar charts, depending on use of continuous or categoric data. X4.2/4.3 Can confidently identify quantitative (using numbers) patterns when describing data, extrapolating (estimating beyond) and interpolating (estimating between) results accurately to prove or disprove a hypothesis. X4.4 Can use and confidently rearrange formulae, including compound formulae and can accurately convert between units. X4.5 Can confidently calculate means and percentages.	X4.1 Errors identified as systematic / random and uncertainties in investigations clearly identified. A detailed description of how to resolve these errors enables more accurate results. X4.2 Independent, dependent and control variables identified and ways to monitor control variables stared and explained. X4.3 Stated whether or not investigations are reproducible / repeatable and shows a critical and accurate understanding of accuracy, precision, errors and resolution within their investigations. X4.4 Investigations are planned to solve questions about everyday life with confidence and links between investigation and context are strong.	X4.1 Can use a range of challenging techniques, including using high resolution measuring equipment accurately. Can identify the resolution of a piece of equipment. X4.2 Assesses all risks and is able to independently suggest and monitor the control measures needed to safe work.
Good (G)	G3.1 Can confidently recall nearly all key facts from a topic to answer questions in a clear way. G3.2 Can explain nearly all concepts from a topic using key scientific ideas. G3.3 Can independently link key scientific ideas across different topics to explain observations. G3.4 Scientific terminology is used fluently in explanations.	G3.1 Can collect data from an investigation, record in an appropriate table and display results in an appropriate graph. G3.2 Patterns in results are described, examples of results given and any anomalous results identified. G3.3 Can confidently interpret data to prove or disprove a hypothesis. G3.4 Can use scientific formulae with no errors. G3.5 Means are calculated with no errors.	G3.1 Errors and uncertainties in investigations clearly identified. A description of how to resolve these errors are described. G3.2 Independent variable, dependent variable and control variables identified and ways to monitor control variables stated. G3.3 Attempts have been made to state whether or not investigations are reproducible / repeatable without support. G3.4 Investigations are planned to solve questions about everyday life.	G3.1 Uses a range of difficult practical techniques accurately, including reading complex scales on measuring equipment. G3.2 Assesses risks and can suggest the control measures needed for safe work
Developing (D)	D2.1 Can recall most of the key facts from a topic to answer questions. D2.2 Can explain most concepts from a topic using key scientific ideas D2.3 May be able to link ideas of scientific concepts across topics. D2.4 Scientific terminology is used well in explanations, with few exceptions.	D2.1 Can collect data from an investigation, record in an appropriate table and display results in an appropriate graph, with few errors. D2.2 Patterns in results are described and examples of results given. D2.3 Can use some data to prove or disprove a hypothesis D2.4 Can use scientific formulae with few errors. D2.5 Means are calculated with few errors.	D2.1 Errors/uncertainties identified and ways to resolve errors suggested. D2.2 Independent variable, dependent variable and control variables identified without help. D2.3 An attempt to discuss reproducibility or repeatability can be made with support. D2.4 An attempt at linking an investigation to a given context has been made.	D2.1 Uses several difficult practical techniques with increasing confidence, including reading difficult scales on measuring equipment. D2.2 Assesses risks and follows safety guidance
Emerging (M)	M1.1 Can recall some of the key facts from a topic. M1.2 Can describe scientific concepts from a topic with some support. M1.3 May be able to explain some concepts using key words. M1.4 Not yet confident is using scientific terminology in explanations	M1.1 Can collect data from an investigation and record in an appropriate table. M1.2 Descriptions of patterns attempted, possibly using data. M1.3 Is not yet confident in using data to prove or disprove a hypothesis. M1.4 Can perform basic calculations. M1.5 Is not yet confident in calculating means.	M1.1 Can make comments about how good an investigation was with some errors / uncertainties identified. M1.2 Variables are identified with help. M1.3 Not yet able to discuss reproducibility or repeatability. M1.4 Not yet able to link an investigation to a given context.	M1.1 Uses some basic practical techniques, including using measuring equipment with increasing accuracy. M1.2 Is able to conduct practical work safely.