

	Year 10	Year 10	Year 10	Year 10	Year 10	Year 10	Year 10	
	1	2	3	4	5	6	7	
	I can develop simple explanations on my own but need help with using some scientific theories and models.	I can explain things using simple scientific ideas and simple models.	I can develop extended (two-step) explanations using scientific ideas and knowledge and use abstract models to explain things. But I need to be prompted to extend my explanations.	I can confidently develop my own extended explanations using scientific ideas, models and theories.	I can confidently develop my own extended explanations using scientific ideas, models and theories and I can link my ideas.	I can use detailed, secure knowledge, and a range of models and theories to give detailed explanations. I have started to link ideas from other things I have studied in Science.	I can use detailed, secure knowledge, and a range of concepts, models and theories to give detailed explanations, even when I am explaining something completely new to me. I can use and link ideas from other things I have studied in Science.	I can communicate precise, detailed knowledge and understanding of science and its applications in a range of contexts. I can use a range of abstract ideas and models to make clear and detailed explanations of all phenomena. I can link Scientific ideas from other topics to explain phenomena in novel contexts. I can communicate these ideas in a range of contexts including using symbols and diagrams and referring to multiple sources of information appropriately and consistently.
Planning	I can predict what I think will happen in an experiment. I can plan a fair test and I can follow instructions and work safely. I can identify a control variable needed to keep an experiment fair.	I can explain my hypotheses and plan controlled experiments. I can use skills I've learned to plan investigations that answer scientific questions. I can identify the Independent and Dependent Variables. I can identify more than one control variable and can explain how to control them. I can identify most risks, follow procedures and work safely.	I can use scientific ideas to independently develop hypotheses and plan experiments. I can explain my hypotheses in detail (more than one step). I can write detailed plans. I can identify the IV, DV and at least 2 control variables and explain why they need to be controlled without just saying "to make it a fair test". I can independently identify all risks, follow procedures and work safely.	I can use scientific theories to independently develop hypotheses and plan experiments. I can explain my hypotheses in a detailed, extended way. I can use theories and explanations to independently plan controlled experiments which yield valid results. I can identify the IV, DV and various control variables and explain why they need to be controlled without any help. I can follow procedures and suggest improvements and weaknesses as I work. I manage risks whilst working.	I can use scientific theories to independently develop hypotheses and plan experiments. I can explain my hypotheses in a detailed, extended way. I can use theories and explanations to independently plan controlled experiments which yield valid results. I can identify the IV, DV and various control variables and explain why they need to be controlled. I can identify sources of error when I am doing the work. I can follow procedures and suggest improvements and weaknesses as I work. I manage risks whilst working.	I can use scientific models and theories to independently develop hypotheses and plan experiments. I can explain my hypotheses in a detailed, extended way. I can use scientific ideas to independently plan controlled experiments which yield valid results and I can identify sources of error in my plan before starting practical work and work out how to minimise errors. I can identify the IV, DV and various control variables and explain why they need to be controlled. I can follow procedures and suggest improvements and weaknesses as I work. I manage risks whilst working. I take care to ensure the accuracy of measurements at all times. I include risk assessments in all my plans.	I can use scientific models and theories to independently develop hypotheses and plan experiments. I can explain my hypotheses in a detailed, extended way. I can use scientific ideas to independently plan controlled experiments which yield valid results and I can identify sources of error in my plan before starting practical work and work out how to minimise errors. I can identify the IV, DV and various control variables and explain why they need to be controlled. I can follow procedures and suggest improvements and weaknesses as I work. I manage risks whilst working. I take care to ensure the accuracy of measurements at all times. I include risk assessments in all my plans.	I can use scientific models and theories to independently develop hypotheses and plan experiments. I can explain my hypotheses in a detailed, extended way. I can use scientific ideas to independently plan controlled experiments which yield valid results and I can identify sources of error in my plan before starting practical work and work out how to minimise errors. I can identify the IV, DV and various control variables and explain why they need to be controlled. I can follow procedures and suggest improvements and weaknesses as I work. I manage risks whilst working. I take care to ensure the accuracy of measurements at all times. I include risk assessments in all my plans.
Analysing Data	I can put data into results tables and draw bar charts with confidence but I sometimes need help with the scale. I can read graphs and tables and describe the main patterns that I see. I can describe what I saw (observed) in an experiment and I can say what I think caused this. I use units and keywords in my work.	I can present data in the form of tables and graphs and can translate from one form to another. I can choose the best type of graph to use. I can interpret data and can make basic conclusions based on evidence. I can calculate the mean, range and interval.	I always present data in the most appropriate way and use appropriate units and language. I can interpret data, identify patterns and trends, make conclusions and justify my conclusions. I can calculate the mean, range and interval.	I always present data in the most appropriate way and use appropriate units and language. I can quickly understand lots of different types of tables and graphs. I can write broad conclusions by looking at my data. I can calculate the mean, range and interval.	I always present data in the most appropriate way and use appropriate units and language. I can write detailed conclusions consistent with data. I can identify anomalous results in my data. I can calculate the mean, range and interval.	I always present data in the most appropriate way and use appropriate units and language. I can draw conclusions consistent with available evidence and can give reasoned, detailed explanations related to hypotheses. I can identify anomalous results by looking at data and take into account weaknesses when writing my conclusions. I can calculate the mean, range and interval and comment on these numbers.	I always present data in the most appropriate way and use appropriate units and language. I can analyse, interpret and evaluate a wide range of information to present detailed conclusions related to hypotheses. I can identify anomalous results and random and systematic errors by looking at data and take these into account. I can calculate the mean, range and interval and comment on these numbers.	I always present data in the most appropriate way and use appropriate units and language. I can critically analyse, interpret and evaluate a wide range of quantitative and qualitative information to present thoughtful, detailed conclusions. I understand the limitations of evidence and can develop arguments with supporting explanations. I can make estimations of uncertainty and can make inferences from data. I can calculate the mean, range and interval and use these statistics in a meaningful way.
Evaluating	I can explain why my experiment was not completely fair. I know why science is important. I know that scientific ideas change over time.	I can identify a weakness in my investigation and say how to improve it next time. I can say how science can change people's ideas. I know that scientific ideas change over time and can explain how scientific ideas can be used to make money and/or help the environment.	I can identify more than one weakness in my investigation and suggest improvements. I can say how much I trust my data based on the weaknesses I've identified. I understand how scientific advances may have benefits and risks. I know that scientific ideas change over time and can describe how science affects people on personal, economic and environmental levels.	I can say if my data is accurate, precise, repeatable and reproducible. I can say what might have caused errors in experiments. I have started to criticise data and understand the limitations of evidence. I understand how scientific advances may have ethical implications, benefits and risks. I can explain why scientific ideas change over time and can describe how science affects people on personal, economic and environmental levels.	I can evaluate data based on accuracy, precision, repeatability and reproducibility. I can recognise bias and weaknesses in experiments. I understand how scientific advances may have ethical implications, benefits and risks. I can explain why scientific ideas change over time and can explain personal, social, economic and environmental implications of scientific advances. I can write detailed evaluations of experiments in terms of the quality of the data and the implications of the findings on the real world.	I can evaluate data based on accuracy, precision, repeatability and reproducibility. I can quickly recognise bias and weaknesses in experiments. I understand the limitations of the evidence and can write detailed evaluations of data based on all these factors. I understand how scientific advances may have ethical implications, benefits and risks. I can explain why scientific ideas change over time and can suggest and explain potential personal, social, economic and environmental implications of scientific advances. I can evaluate these benefits and risks and come to balanced conclusions in my opinions about scientific advances.	I can evaluate data based on accuracy, precision, repeatability and reproducibility. I can quickly recognise bias and weaknesses in experiments. I understand the limitations of the evidence and can write detailed evaluations of data based on all these factors. I understand the nature of science and how science and society interact. I understand how scientific advances may have ethical implications, benefits and risks. I can evaluate these benefits and risks and come to balanced conclusions in my opinions about scientific advances. I can explain why scientific ideas change over time and can suggest and explain potential personal, social, economic and environmental implications of scientific advances.	I can evaluate data in terms of accuracy, precision, repeatability and reproducibility. I can identify potential sources of random and systematic error and can comment in detail on how these things affect the data. I can quickly recognise bias and weaknesses in experiments. I understand the limitations of the evidence and can write detailed evaluations of data based on all these factors. I can understand and can evaluate the effects and risks of scientific developments and its applications on society, industry, the economy and the environment. I can evaluate ethical, moral and social issues surrounding scientific or technological developments. I can clearly explain why and how scientific applications techniques and technologies change over time and the need for regulation.