7	8	9	Knowing and understanding science. **I CAN:**	Investigating and applying science. **I CAN:**	Analysing; interpreting & evaluating science **I CAN:**
		9	• demonstrate both breadth and depth of knowledge and understanding of organisms, the environment materials, energy, forces and space. • demonstrate an understanding of how scientific knowledge and understanding changes, through processes such as questioning, investigating and evidence gathering. • *recognise that different approaches are required to investigate different kinds of scientific questions.* • *identify hazards and suggest effective mitigation methods.* • *make records of relevant observations and comparisons, clearly identifying points of particular significance.*	• apply knowledge effectively in descriptions and explanations, identifying links and patterns within and between topics. • describe & explain the importance of a wide range of applications and implications of science in familiar and unfamiliar contexts. • *use scientific knowledge and understanding to select appropriate investigative strategies.* • *seek appropriate risk assessment information and advice* • *decide the level of precision and resolution needed for measurements and collect appropriate data to satisfy these.* • *analyse findings to interpret trends and patterns and draw conclusions from evidence.*	• interpret, evaluate and synthesise data from a range of sources in a range of contexts and apply understanding to a wide range of data on energy efficient physical systems. • *select relevant risk assessment information and in consultation, adjust practice as required.* • *make effective use of a range of quantitative relationships between variables in calculations.* • *communicate findings and arguments, showing awareness of the degree of uncertainty and a range of alternative views.* • *evaluate evidence critically & justify collection of further data.*
	9	**8**	• demonstrate extensive knowledge and understanding related to organisms, the environment, materials, energy, forces and space. • *recognise that different strategies are required to investigate different kinds of scientific questions.* • *use knowledge & understanding to select strategies.* • *analyse data and begin to explain, and allow for, anomalies.*	• apply knowledge effectively in descriptions and explanations, identifying links between topics. • represent some compounds by chemical formulae using these formulae to form balanced symbol equations for some reactions. • describe and explain the importance of a wide range of applications and implications of science, e.g. efficiency. • *record relevant & sufficiently detailed data; choose valid methods.* • *carry out multi-step calculations, using compound measures- speed.*	• interpret, evaluate and synthesise data from a range of sources and in a range of contexts. • show understanding of the relationship between evidence and scientific ideas, & why scientific ideas may need to change. • *in consultation adapt practical approaches to control risks.* • *communicate showing awareness of a range of views.* • *evaluate evidence critically and suggest improvements.*
9	**8**	**7**	• describe a wide range of processes and phenomena related to organisms, the environment, materials, energy, forces and space; including being able to sequence complex processes. • explain how evidence support accepted scientific ideas. • *select and use methods to obtain reliable data, including making systematic observations and measurements with precision, using a range of apparatus.* • *recognise and research the need for a risk assessment.* • *use quantitative relationships between variables.*	• make links between different areas of science in explanations. • apply & use more abstract knowledge and understanding in a range of contexts. • *record data in graphs, effectively using lines of best fit.* • *communicate qualitative and quantitative data effectively, using a wide range of scientific and technical conventions and terminology, including symbols & flow diagrams.* • *consider whether data collected are sufficient for the conclusions.*	• explain how evidence supports some accepted scientific ideas. • explain, using abstract ideas where appropriate, the importance of some applications and implications of science. • *plan appropriate approaches and procedures where variables cannot readily controlled, synthesising researched information.* • *analyse & explain findings to draw conclusions from evidence.* • *identify possible limitations in primary and secondary data.*
8	**7**	**6**	• describe processes and phenomena related to organisms, the environment, materials, energy, forces and space; using abstract ideas and appropriate terminology. • *identify an appropriate approach in investigatory work, selecting and using sources of information.* • *select methods of data collection, measuring with precision, & explain why measurements / observations are repeated.*	• account for a number of factors or use abstract ideas in explanations of processes and phenomena. • use abstract ideas or models, e.g. sustainable energy & refraction. • apply and use knowledge and understanding in unfamiliar contexts. • explain some applications & implications of science. • *recognise a range of familiar risks and take action to control them.* • *record data & observations effectively, choosing appropriate scales.*	• describe some evidence for some accepted scientific ideas. • *analyse findings to draw conclusions that are consistent with the evidence and use scientific knowledge and understanding to explain them; accounting for any inconsistencies in evidence.* • *manipulate numerical data to make valid comparisons and draw valid conclusions* • *evaluate evidence, making reasoned suggestions about how working methods could be improved.*

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7	**6**	**5**	• describe using abstract ideas processes & phenomena related to organisms, environment, materials, energy, forces, space. • *decide appropriate approaches to a range of tasks, including selecting sources of information and apparatus.* • *recognise hazard symbols and make, and act on, simple suggestions to control obvious risks to self and others.*	• explain process stages and phenomena using models. • apply and use knowledge and understanding in familiar contexts. • describe applications and implications of science. • *communicate using scientific and mathematical conventions and terminology.* • *select and use methods to obtain data systematically*	• recognise that evidence and creative thinking contribute to the development of scientific ideas. • *use line graphs to present data, interpret numerical data and draw conclusions from them.* • *analyse data drawing conclusions consistent with the evidence.* • *evaluate working methods, making improvement suggestions.*
6	**5**	**4**	• describe some processes and phenomena related to organisms, environment, materials, energy, forces, space, draw on knowledge and understanding in communication. • recognise and explain everyday technological developments. • *decide on an appropriate approach, including using a fair test to answer a question, and select suitable equipment and information from that provided.* • *follow instructions, and act to control obvious risks to self.*	• explain processes using a model. • apply and use knowledge and understanding in familiar contexts. • describe basic applications and implications of science. • select and use methods that are adequate/appropriate for the task • *make observations & measurements varying one factor only..* • *record observations, comparisons and measurements using tables and bar charts and begin to plot points to form simple graphs.* • *communicate conclusions using appropriate scientific language.*	• recognise that evidence can support or refute scientific ideas. • recognise some applications and implications of science. • *interpret data containing positive and negative numbers.* • *begin to relate conclusions to patterns in data, including graphs, and to scientific knowledge and understanding.* • *suggest improvements in work, giving reasons.*
5	**4**	**3**	• recognise and explain the purpose of a variety of scientific & technological developments in everyday life. • *respond to suggestions and put forward ideas about how to investigate an idea or find answers to questions.* • *recognise why it is important to collect data to investigate ideas and answer questions, and use texts to find information.* • *carry out fair tests with some help, explain why they are fair.*	• use knowledge and understanding of organisms, environment, materials, energy, forces, space to link cause and effect in observations of the properties and differentiate within systems. • make generalisations e.g. sounds get fainter the further they go. • *begin to recognise risks with help.* • *make and record relevant observations & measure quantities, select & use a range of simple equipment, tables and graphs..*	• use simple scientific ideas with evidence collected to give explanations of observations, linking cause and effect. • *begin to recognise risks with help.* • *give explanations for observations and for patterns in measurements made and recorded.* • *communicate results in a scientific way and suggest possible reasons for them as well as improvements.*
4	**3**	**2**	• identify science in everyday contexts, comment on relevance. • *respond to and make suggestions, with help, about questions.* • *find information by using texts, with help.* • *follow direct instructions in order to stay safe.*	• use knowledge of organisms, environment, materials, energy, forces, space to recognise & compare properties, factors & relationships; suggesting answers to questions. • *make observations and measurements to compare things.* • *use equipment provided & record findings using correct vocabulary*	• suggest answers to questions based on my ideas & evidence. • recognise & describe similarities & differences, creating groups • *say whether what happened was expected and, when prompted, suggest different ways to do things.*
3	**2**	**1**	• recognise, name and describe observations and features or parts of fundamental scientific objects and ideas. • *be prompted to suggest practical ways to answer questions.* • *communicate findings in ways such as talking about work in everyday terms, or through drawings or pictograms.*	• use knowledge related to organisms, environment, materials, energy, forces, space; to identify and describe scientific phenomena, observations, properties or ideas. • *make observations about features of objects, living things & events.*	• recognise & use evidence generated from answering a question & make links between the science & everyday experiences. • *say whether what happened was expected.* • *with support & prompting, suggest different ways to do things.*
2	**1**		• recognise and name observations, features or parts of fundamental scientific objects and ideas. • *be prompted to suggest practical ways to answer questions.* • *communicate findings in ways such as talking about work in everyday terms.*	• use knowledge related to organisms, environment, materials forces, space to identify/describe some changes and properties. • *make some observations about features of objects, living things and events.*	• recognise evidence that has been used to answer a question, make links between science and everyday objects. • *say whether what happened was expected.* • *with support & prompting, suggest a different way to do things.*
1			• recognise observations, features or parts of fundamental scientific objects and ideas. • *with guidance, suggest practical ways to answer questions.* • *communicate findings in ways such as talking about work in everyday terms.*	• use knowledge related to the science to identify objects. • *with support, make some observations about features of objects, living things and events.*	• use evidence provided to answer a question and make links between science and everyday objects and experiences. • *with guidance, identify a different way to do things.*

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