

KS3 & KS4 Science Assessment

Assessment Objectives and Progress Map for Key Stage 3 and Key Stage 4			
<i>Grade</i>	<i>Assessment Objective 1</i>	<i>Assessment Objective 2</i>	<i>Assessment Objective 3</i>
	<i>Knowing and understanding science</i>	<i>Investigating and applying science</i>	<i>Analysing; interpreting & evaluating science</i>
9	<p>Demonstrate both breadth and depth of knowledge and understanding of organisms, the environment materials, energy, forces and space.</p> <p>Demonstrate an understanding of how scientific knowledge and understanding changes, through processes such as questioning, investigating and evidence gathering.</p> <p>Recognise that different approaches are required to investigate different kinds of scientific questions.</p> <p>Identify hazards and suggest effective mitigation methods.</p> <p>Make records of relevant observations and comparisons, clearly identifying points of particular significance.</p>	<p>Apply knowledge effectively in descriptions and explanations, identifying links and patterns within and between topics.</p> <p>Describe & explain the importance of a wide range of applications and implications of science in familiar and unfamiliar contexts.</p> <p>Use scientific knowledge and understanding to select appropriate investigative strategies.</p> <p>Seek appropriate risk assessment information and advice</p> <p>Decide the level of precision and resolution needed for measurements and collect appropriate data to satisfy these.</p> <p>Analyse findings to interpret trends and patterns and draw conclusions from evidence.</p>	<p>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.</p> <p>Select relevant risk assessment information and in consultation, adjust practice as required.</p> <p>Make effective use of a range of quantitative relationships between variables in calculations.</p> <p>Communicate findings and arguments, showing awareness of the degree of uncertainty and a range of alternative views.</p> <p>Evaluate evidence critically & justify collection of further data.</p>

8	<p>Demonstrate extensive knowledge and understanding related to organisms, the environment, materials, energy, forces and space.</p> <p>Recognise that different strategies are required to investigate different kinds of scientific questions.</p> <p>Use knowledge & understanding to select strategies.</p> <p>Analyse data and begin to explain, and allow for, anomalies.</p>	<p>Apply knowledge effectively in descriptions and explanations, identifying links between topics.</p> <p>Represent some compounds by chemical formulae using these formulae to form balanced symbol equations for some reactions.</p> <p>Describe and explain the importance of a wide range of applications and implications of science, e.g. efficiency.</p> <p>Record relevant & sufficiently detailed data; choose valid methods.</p> <p>Carry out multi-step calculations, using compound measures- speed.</p>	<p>Interpret, evaluate and synthesise data from a range of sources and in a range of contexts.</p> <p>Show understanding of the relationship between evidence and scientific ideas, & why scientific ideas may need to change.</p> <p>In consultation adapt practical approaches to control risks.</p> <p>Communicate showing awareness of a range of views.</p> <p>Evaluate evidence critically and suggest improvements.</p>
7	<p>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.</p> <p>Explain how evidence support accepted scientific ideas.</p> <p>Select and use methods to obtain reliable data, including making systematic observations and measurements with precision, using a range of apparatus.</p>	<p>Make links between different areas of science in explanations.</p> <p>Apply & use more abstract knowledge and understanding in a range of contexts.</p> <p>Record data in graphs, effectively using lines of best fit.</p> <p>Communicate qualitative and quantitative data effectively, using a wide range of scientific and technical conventions and</p>	<p>Explain how evidence supports some accepted scientific ideas.</p> <p>Explain, using abstract ideas where appropriate, the importance of some applications and implications of science.</p> <p>Plan appropriate approaches and procedures where variables cannot readily controlled, synthesising researched information.</p>

	<p>Recognise and research the need for a risk assessment.</p> <p>Use quantitative relationships between variables.</p>	<p>terminology, including symbols & flow diagrams.</p> <p>Consider whether data collected are sufficient for the conclusions.</p>	<p>Analyse & explain findings to draw conclusions from evidence.</p> <p>Identify possible limitations in primary and secondary data.</p>
6	<p>Describe processes and phenomena related to organisms, the environment, materials, energy, forces and space; using abstract ideas and appropriate terminology.</p> <p>Identify an appropriate approach in investigatory work, selecting and using sources of information.</p> <p>Select methods of data collection, measuring with precision, & explain why measurements / observations are repeated.</p>	<p>Account for a number of factors or use abstract ideas in explanations of processes and phenomena.</p> <p>Use abstract ideas or models, e.g. sustainable energy & refraction.</p> <p>Apply and use knowledge and understanding in unfamiliar contexts.</p> <p>Explain some applications & implications of science.</p> <p>Recognise a range of familiar risks and take action to control them.</p> <p>Record data & observations effectively, choosing appropriate scales</p>	<p>Describe some evidence for some accepted scientific ideas.</p> <p>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.</p> <p>Manipulate numerical data to make valid comparisons and draw valid conclusions</p> <p>Evaluate evidence, making reasoned suggestions about how working methods could be improved</p>
5	<p>Describe using abstract ideas processes & phenomena related to organisms, environment, materials, energy, forces, space.</p>	<p>Explain process stages and phenomena using models.</p> <p>Apply and use knowledge and understanding in familiar contexts.</p>	<p>Recognise that evidence and creative thinking contribute to the development of scientific ideas.</p> <p>Use line graphs to present data, interpret numerical data and draw conclusions from them.</p>

	<p>Decide appropriate approaches to a range of tasks, including selecting sources of information and apparatus.</p> <p>Recognise hazard symbols and make, and act on, simple suggestions to control obvious risks to self and others.</p>	<p>Describe applications and implications of science.</p> <p>Communicate using scientific and mathematical conventions and terminology.</p> <p>Select and use methods to obtain data systematically</p>	<p>Analyse data drawing conclusions consistent with the evidence.</p> <p>Evaluate working methods, making improvement suggestions.</p>
4	<p>Describe some processes and phenomena related to organisms, environment, materials, energy, forces, space, draw on knowledge and understanding in communication.</p> <p>Recognise and explain everyday technological developments.</p> <p>Decide on an appropriate approach, including using a fair test to answer a question, and select suitable equipment and information from that provided.</p> <p>Follow instructions, and act to control obvious risks to self.</p>	<p>Explain processes using a model.</p> <p>Apply and use knowledge and understanding in familiar contexts.</p> <p>Describe basic applications and implications of science.</p> <p>Select and use methods that are adequate/appropriate for the task</p> <p>Make observations & measurements varying one factor only.</p> <p>Record observations, comparisons and measurements using tables and bar charts and begin to plot points to form simple graphs.</p> <p>Communicate conclusions using appropriate scientific language.</p>	<p>Recognise that evidence can support or refute scientific ideas.</p> <p>Recognise some applications and implications of science.</p> <p>Interpret data containing positive and negative numbers.</p> <p>Begin to relate conclusions to patterns in data, including graphs, and to scientific knowledge and understanding.</p> <p>Suggest improvements in work, giving reasons.</p>

3	<p>Recognise and explain the purpose of a variety of scientific & technological developments in everyday life.</p> <p>Respond to suggestions and put forward ideas about how to investigate an idea or find answers to questions.</p> <p>Recognise why it is important to collect data to investigate ideas and answer questions, and use texts to find information.</p> <p>Carry out fair tests with some help, explain why they are fair.</p>	<p>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.</p> <p>Make generalisations e.g. sounds get fainter the further they go.</p> <p>Begin to recognise risks with help.</p> <p>Make and record relevant observations & measure quantities, select & use a range of simple equipment, tables and graphs.</p>	<p>Use simple scientific ideas with evidence collected to give explanations of observations, linking cause and effect.</p> <p>Begin to recognise risks with help.</p> <p>Give explanations for observations and for patterns in measurements made and recorded.</p> <p>Communicate results in a scientific way and suggest possible reasons for them as well as improvements.</p>
2	<p>Identify science in everyday contexts, comment on relevance.</p> <p>Respond to and make suggestions, with help, about questions.</p> <p>Find information by using texts, with help.</p> <p>Follow direct instructions in order to stay safe.</p>	<p>Use knowledge of organisms, environment, materials, energy, forces, space to recognise & compare properties, factors & relationships; suggesting answers to questions.</p> <p>Make observations and measurements to compare things.</p> <p>Use equipment provided & record findings using correct vocabulary</p>	<p>Suggest answers to questions based on my ideas & evidence.</p> <p>Recognise & describe similarities & differences, creating groups</p> <p>Say whether what happened was expected and, when prompted, suggest different ways to do things.</p>
1	<p>Recognise, name and describe observations and features or parts of fundamental scientific objects and ideas.</p>	<p>Use knowledge related to organisms, environment, materials, energy, forces, space; to identify and describe scientific phenomena, observations, properties or ideas.</p>	<p>Recognise & use evidence generated from answering a question & make links between the science & everyday experiences.</p>

	<p>Be prompted to suggest practical ways to answer questions.</p> <p>Communicate findings in ways such as talking about work in everyday terms, or through drawings or pictograms.</p>	<p>Make observations about features of objects, living things & events.</p>	<p>Say whether what happened was expected.</p> <p>With support & prompting, suggest different ways to do things.</p>
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