

	Year 7	Year 8	Year 9 - GCSE
Beginning	<p>I can name a fuel. I can name one acid or alkali. I can only carry out chemical reaction practicals with assistance. I can compare familiar objects, materials and living things and predict what might happen.</p> <p>I can name an element. I can describe a way to tell if a chemical reaction has occurred. I can explain why a fuel is useful. I can carry out chemical reaction practicals with some assistance. I can suggest how ideas I can be investigated and make predictions about what might happen</p>	<p>I can sort materials into groups giving reasons for their choice of groupings using everyday terms. Can describe what happens when some everyday substances are heated or cooled. I can observe familiar objects, materials and living things, and say what they are going to do or have done. I can compare familiar objects, materials and living things and predict what might happen.</p> <p>I can describe a variety of ways of sorting materials into groups according to their properties. I can recall that there is a wide range of waste products and that materials, such as wood, decay naturally while others, such as plastics, do not. I can suggest how ideas can be investigated and make predictions about what might happen. I can use appropriate instruments to make measurements and know when a test is fair.</p>	<p>I can sort materials into groups. I can describe what happens when some everyday substances are heated or cooled. I can observe and compare familiar objects, materials and living things. I can make a simple record of my observations and conclusions.</p> <p>I can sort materials into groups according to their properties. I know that some everyday substances, such as sugar or salt, will dissolve in water. I know that materials, such as wood, decay naturally while others, such as plastics, do not. I can suggest how ideas can be investigated and make predictions about what might happen. I can use appropriate instruments to make measurements and know when a test is fair.</p>
Developing	<p>I can describe how materials are made up of particles. I can describe changes of state using keywords. I can describe what elements and compounds are. I can explain how we know a chemical reaction has occurred. I can compare properties of acids and alkalis. I can use the pH scale to identify acids, alkalis and neutral solutions. I can carry out a fair test and say which factors need to be kept constant. I can draw conclusions and relate it to my knowledge and understanding.</p>	<p>I can recognise the need for safety precautions. I can recognise key areas of the Periodic Table, namely metals and non-metals, the noble gases and groups 1, 2 and 7. I am able to state that temperature, catalysts surface area and concentration may affect the rate of a chemical reaction. I can describe the layers of the Earth. I am able to state that humans can have impact on the Earth and the importance of recycling. I can carry out a fair test and say which factors need to be kept constant. I can draw conclusions and relate it to my knowledge and understanding.</p>	<p>I can suggest why certain materials are suitable for specific purposes. I know that products made from paper, glass or aluminium can be recycled. I can describe the changes in state in heating and cooling water. I can carry out a fair test and say which factors need to be kept constant. I can draw conclusions and relate it to my knowledge and understanding.</p>
Secure	<p>I can use particle model diagrams to explain the properties of different states. I can use the particle model to explain diffusion. I can describe gas pressure is. I can match an element to its correct symbol. I can compare the properties of one atom of an element to the properties of many atoms. I can write the chemical names for simple</p>	<p>I can use the terms mixture and compound accurately. I can describe some methods for separating compounds. I can describe how repeating patterns in the elements led to the development of the Periodic Table. I can describe methods to monitor the rate of a</p>	<p>I can identify common gases. I can use the pH scale when classifying solutions as acidic, alkaline or neutral. I can explain rusting in terms of oxidation and know how rusting can be controlled. I can discuss the positive and negative effects of obtaining and using the raw materials from the Earth.</p>

	<p>compounds. I can identify reactants and products in word equations. I can explain combustion. I can design a fair test to answer questions that arise from their work in science. I can interpret my data and begin to explain these using my scientific knowledge and understanding</p>	<p>chemical reaction. I can describe changes in the rock cycle. I can summarise the carbon cycle and how humans may affect this. I am able to relate recycling to reducing a product's carbon footprint. I can use a range of apparatus with appropriate precision and safety. I can interpret my data and begin to explain these using my scientific knowledge and understanding.</p>	<p>I can design a fair test to answer questions that arise from their work in science. I can use my knowledge to make predictions about what they think will happen. I can interpret my data and begin to explain these using my scientific knowledge and understanding. I can draw conclusions based on the available evidence</p>
Confident	<p>I can use ideas about particles to explain the properties of a substance in its three states. I can use the particle model to explain boiling. I can explain sublimation. I can describe evidence for diffusion. I can use the particle model to explain gas pressure. I can compare chemical reactions to physical reactions. I can write word equations for common reactions. I can explain what an oxidation reaction is. I can explain what conservation of mass is. I can compare exothermic and endothermic reactions. I can describe some uses of neutralisation reactions. I can apply my scientific knowledge from other investigations to plan an investigation. I can explain my conclusions using the evidence collected and my knowledge and understanding of science.</p>	<p>I can calculate relative formula mass. I am able to describe the trend in the acidity of metal oxides and use this to make predictions. I can relate energy changes to the bond being broken and made. I can use particle diagrams to explain the effect of temperature, catalysts, surface area and concentration on the rate of a chemical reaction. I can describe the composition of the atmosphere and the importance of ozone. I am able to relate carbon dioxide levels to global warming and how humans can impact carbon dioxide levels. I can apply my scientific knowledge from other investigations to plan an investigation. I can explain my conclusions using the evidence collected and my knowledge and understanding of science.</p>	<p>I can describe chemical and physical changes and how new materials can be made. I can use explain the differences in the three states of matter using the particle model. I can explain the differences between elements, compounds and mixtures. I can describe some methods of separation to obtain pure substances from mixtures. I can recover a solvent from solution using simple distillation. I can describe the methods of monitoring water purity. I can use the reactivity series to make predictions about reactions of metals. I can apply my scientific knowledge from other investigations to plan an investigation. I can explain my conclusions using the evidence collected and my knowledge and understanding of science.</p>

<p>Exceptional</p>	<p>I can interpret data about melting points. I can interpret data from tables and graphs about changes of state. I can explain what factors affect diffusion. I can describe the factors that affect gas pressure. I can write and interpret chemical formulae. I can analyse why chemical reactions are useful. I can write symbol equations for common reactions. I can explain what a thermal decomposition reaction is. I can plan (with guidance) investigations. Identifying key factors that need to be considered. I can make predictions using my scientific knowledge.</p>	<p>I can explain the effect of carbon dioxide levels on global temperatures. I can evaluate evidence of human impact and give balanced views on factors affecting a product's carbon footprint. I can relate the properties and uses of everyday materials. I can apply my knowledge of particles to explain changes of state, diffusion and dissolving. I can explain the differences between mixtures and compounds in terms of their physical and chemical properties. I can plan (with guidance) investigations. Identifying key factors that need to be considered. I can present my data clearly and concisely using graphs with lines of best fit.</p>	<p>I can apply my knowledge of particles to explain changes of state, diffusion and dissolving. I recognise the Periodic Table as a means of arranging elements and can describe the physical and chemical properties of elements in terms of their position. I can explain the differences between mixtures and compounds in terms of their physical and chemical properties. I can describe the effects of corrosive gas pollutants. I can evaluate the positive and negative effects of the exploitation of raw materials. I can plan (with guidance) investigations. Identifying key factors that need to be considered. I can present my data clearly and concisely using graphs with lines of best fit.</p>
<p>Beyond</p>	<p>I can predict state of matter from data on boiling and melting points. I can compare diffusion speed in different states of matter. I can write balanced symbol equations for common reactions. I can use a pattern to predict products of decomposition reactions. I can predict the salt formed from a neutralisation reaction. I can apply my knowledge and understanding to a range of contexts including unfamiliar situations. I can produce (unaided) precise plans for my investigations. I can evaluate my investigations and produce structured reports.</p>	<p>I can explain the trend in reactivity of Group 1 and Group 7 elements. I can explain trends/patterns in the periodic table. I can explain why temperature has a greater effect on rate than surface area and concentration. I can describe the physical and chemical properties of metals and non-metals and their compounds. I can recognise and classify a range of chemical reactions, such as reduction or thermal decomposition. I can apply my knowledge of patterns in a chemical reaction to suggest how substances, such as salts, could be made. I understand the applications of chemical reactions in everyday lives, such as the extraction of iron in the blast furnace. I can apply my knowledge and understanding to a range of contexts including unfamiliar situations. I can produce (unaided) precise plans for my investigations. I can evaluate my investigations and produce structured reports.</p>	<p>I can describe the physical and chemical properties of metals and non-metals and their compounds. I can explain the atomic structure of the first twenty elements in the periodic table. I can apply my knowledge of patterns in chemical reactions to suggest how substances, such as salts, could be made. I understand the applications of chemical reactions in everyday contexts, such as the extraction of iron in the blast furnace I can explain the differences between chemical reactions which are exothermic and those which are endothermic. Unaided, I can prepare systematic and precise plans for their investigations, including a strategy for dealing with results. I can decide on the observations and measurements that need to be taken and the degree of accuracy that is required. I can set up and use a range of scientific apparatus with precision and skill.</p>