



Chemistry	Working towards expected outcomes	Working at expected outcomes	Working beyond expected outcomes
	Your child is not yet making the expected progress within this course.	Your child is achieving the expected progress for this point within the course.	Your child is working beyond the expected progress for this point within the course.
Year 8 Autumn 1 – Autumn 2 The Periodic Table	<p>Students working towards expected outcomes in Year 8 can:</p> <ul style="list-style-type: none">• State the difference between pure substances and mixtures.• Recognise elements, compounds and mixtures from simple particle diagrams.• Identify basic properties and uses of metals and non-metals.• Locate groups, periods, metals and non-metals on the Periodic Table.• State that the table is arranged by atomic number and that group members share similar properties.• Recognise the key features of Groups 1, 7 and 0.• Describe simple trends such as reactivity in Groups 1 and 7 or boiling points in Group 0.• Recall the charges of subatomic particles and that atoms are neutral.• Identify atomic number as the number of protons.• Represent simple electronic structures.• Identify elements and atom numbers in basic chemical formulae and name simple compounds.	<p>Students working at expected in Year 8 can:</p> <ul style="list-style-type: none">• Explain how atomic structure determines the properties of elements.• Use particle diagrams to justify classifications of substances.• Compare metals and non-metals and relate their properties to uses.• Explain how the arrangement of the Periodic Table relates to similarity in properties.• Describe and explain trends in reactivity and physical properties in Groups 1, 7 and 0.• Predict properties of unfamiliar elements using trends.• Explain atomic neutrality using protons and electrons.• Construct accurate electronic structures up to element 20.• Interpret chemical formulae to determine atom ratios.	<p>Students working beyond expected in Year 8 can:</p> <ul style="list-style-type: none">• Explain why compounds have different properties from the elements they come from.• Evaluate material choices using detailed links between structure and properties.• Explain Mendeleev's development of the Periodic Table and how predictions were confirmed.• Analyse and compare trends across periods and down groups, including exceptions.• Use ideas about electron shells and shielding to justify reactivity trends in Groups 1 and 7.• Make well-reasoned predictions about unfamiliar elements using multiple trends.• Link atomic structure clearly to an element's position and behaviour.• Interpret more complex chemical formulae



Autumn 2 – Spring 1

Acids and Bases

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| <ul style="list-style-type: none">• State that acids and alkalis can be corrosive or irritant and must be handled safely.• Recognise that a base neutralises an acid and that soluble bases are alkalis.• Describe acids and alkalis as colourless solutions with specific chemical properties.• Use the pH scale to classify solutions as acidic, neutral or alkaline.• State that strong acids have lower pH values than weak acids.• State that acids react with alkalis to form salt and water (neutralisation).• State that some metals react with acids to produce salts and hydrogen.• Identify the parts of a salt name from the names of the acid and the reacting substance.• Recall that air pollutants can be produced by human activity and natural events.• Describe acid rain as acids formed from atmospheric reactions of sulfur dioxide or nitrogen oxides. | <ul style="list-style-type: none">• Use pH values and indicators to compare acidity and alkalinity.• Compare strong and weak acids in terms of their pH.• Describe reactions of magnesium, zinc and iron with hydrochloric and sulfuric acids to form salts and hydrogen.• Describe how acids are neutralised by alkalis, bases and carbonates, producing predictable products.• Predict salts formed when different acids react with metal hydroxides, oxides, carbonates or metals.• Describe how to make pure, dry samples of soluble salts using insoluble bases and crystallisation.• Balance symbolic chemical equations and use state symbols appropriately.• Use chemical formulae to identify atom ratios and apply naming rules including -ide endings and common ions.• Describe how chemical reactions in the atmosphere produce air pollutants, including the formation of acid rain.• Describe how acid reactions contribute to chemical weathering of rocks. | <ul style="list-style-type: none">• Explain in detail the particle-level behaviour of acids, bases and alkalis in solution.• Justify predictions of reaction products using patterns across different acid–base and acid–metal reactions.• Evaluate methods for preparing pure salts.• Balance less familiar chemical equations, correctly applying state symbols and formulae.• Interpret more complex formulae and link naming rules to bonding or structure.• Analyse the chemical processes leading to air pollution and acid rain, linking them to environmental impacts.• Explain chemical weathering in terms of specific acid–mineral reactions and their effects on rock structure. |
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Spring 1 – Spring 2

Reactivity series and metals

- Describe thermal decomposition as a reaction where one substance breaks down into simpler products when heated.
- Describe combustion as a reaction with oxygen that releases heat and light.
- State that some metals react with acids to form salts and hydrogen.
- State that metals can be placed in a reactivity series.
- Recognise that a more reactive metal displaces a less reactive one from a compound.
- State that more reactive metals are more difficult to extract from ores.
- Identify that carbon can displace some metals, while electrolysis is used for more reactive ones.
- Recall simple reactions of common metals with water and dilute acids.
- Recognise that ores are naturally occurring rocks containing minerals from which metals can be extracted.

- Explain oxidation and reduction in terms of gain or loss of oxygen.
- Use reactions with water and dilute acids to place metals in order of reactivity.
- Deduce a reactivity series from experimental data.
- Predict displacement reactions using the reactivity series.
- Explain why more reactive metals require more energy-intensive extraction methods.
- Describe how metals less reactive than carbon are extracted by reduction with carbon.
- Explain that unreactive metals such as gold occur naturally as pure elements.
- Explain why electrolysis is used to extract highly reactive metals or those that react with carbon.
- Describe the steps in the extraction of aluminium using electrolysis.
- Describe the role of natural resources as raw materials and explain why they must be conserved.

- Analyse thermal decomposition, oxidation and combustion reactions using particle-level explanations.
- Use the reactivity series to justify predictions about the behaviour of unfamiliar metals in water, acids and displacement reactions.
- Evaluate the reactivity series using experimental evidence and identify anomalies or limitations.
- Explain extraction choices using ideas about reactivity, bonding and energy requirements.
- Analyse the environmental and economic impacts of metal extraction and the importance of recycling.
- Evaluate the electrolysis process for reactive metals, including energy use, electrode reactions and industrial considerations.
- Link metal reactivity, ore formation, extraction methods and practical applications.



Summer 1 – Summer 2

Earth and Environment

- Describe natural resources as finite and explain that recycling reduces the need for extraction.
- Recognise ores as rocks containing extractable minerals.
- Describe basic chemical weathering and its effect on rocks.
- Identify common air pollutants.
- State the main components of clean air and the origin of fossil fuels.
- Recognise carbon dioxide and methane as greenhouse gases linked to global warming.
- Identify key water cycle processes.
- Name the three layers of the Earth and the three main rock types with simple formation descriptions.
- Recognise polymers as large molecules; plastics are synthetic and starch is natural.

- Explain why resources are finite and how recycling helps conservation.
- Explain chemical weathering and pollutant formation, including acid rain.
- Describe fossil fuel formation and the cycling of carbon through natural and human processes.
- Explain the greenhouse effect and its link to climate change.
- Describe the water cycle.
- Explain how sedimentary, igneous and metamorphic rocks form and why they have different properties.
- Describe how rocks change through the rock cycle.
- Distinguish weathering from erosion.
- Use ideas about particles to explain polymer properties.

- Analyse chemical weathering, pollutant formation and acid rain using ideas about particles.
- Assess human impact on the carbon cycle and climate change using scientific evidence.
- Explain water cycle processes in terms of energy changes.
- Compare rock types and rock-cycle processes in depth.
- Analyse polymer properties and environmental implications using ideas about molecules and intermolecular forces.

