

Year 7: Curriculum Intent

The intent of the Year 7 curriculum is to build on knowledge acquired in Key Stage 2 and introduce pupils to the different areas of science at the Kingsway school:

- in Biology - Cells and Systems, Plants and the Environment, and Variation and Inheritance.
- in Chemistry - Particles and Matter, Chemical reactions, and Earth and Atmosphere.
- in Physics - Forces and Motion, Energy, and Waves.
- and across all three sciences - how to Work Scientifically.

Pupils will be taught key knowledge and skills in both theory and practical science. They will learn about the scientific method, how to keep safe and how to draw valid conclusions from data.

Year 7 Chemistry Essential Knowledge Summary

Schemata 1: Particles and Matter 1	Schemata 2: Particles and Matter 2	Schemata 3: Chemical Reactions
<p>Composite Knowledge: Pupils will gain fundamental knowledge about particles and matter. They will be able to apply the particle model to explain or describe properties of different states of matter</p> <p>Component Knowledge:</p> <p>Foundational Knowledge:</p> <p>Declarative Knowledge:</p> <ul style="list-style-type: none"> ● Name the states of matter. ● Give examples of solids, liquids and gases. ● Know the concept of pure substance. ● Name the different changes of state. ● Draw particle arrangements of solids, liquids and gases <p>Procedural Knowledge:</p> <ul style="list-style-type: none"> ● Recognise changes of state from particle diagrams and be able to name changes of state from diagrams ● Label a Bunsen burner ● Describe how to turn a Bunsen burner on safely ● Collect data from practical ● Plot a graph ● Draw before and after diagrams of particles to explain observations about changes of state, gas pressure and diffusion. <p>Upper Hierarchical Knowledge</p> <ul style="list-style-type: none"> ● Explain properties of different states of matter using the particle model. e.g why can gases be compressed ● Define Brownian motion and diffusion and explain examples of diffusion using the particle model. ● Explain unfamiliar observations about gas pressure in terms of particles. ● Explain the properties of solids, liquids and gases based on the arrangement and movement of their particles. ● Explain changes in states in terms of changes to the energy of particles. <p>Working Scientifically</p> <p>Boiling experiment:</p> <ul style="list-style-type: none"> ● WSAT 2 identify hazards and risks and suggest appropriate ways to reduce the risks <p>Modelling the Particle model</p> <ul style="list-style-type: none"> ● WSSK 1 develop a line of enquiry based on observations of the real world, and make predictions based on their prior knowledge and scientific understanding 	<p>Composite Knowledge: Pupils will gain fundamental knowledge about particles and matter. They will be able to apply the particle model to explain or describe properties of different states of matter</p> <p>Component Knowledge:</p> <p>Foundational Knowledge:</p> <p>Declarative Knowledge:</p> <ul style="list-style-type: none"> ● Know the concept of pure substance. ● Define filtration ● Define Evaporation ● Know what a mixture is ● Define separation ● Identify chromatography from a diagram <p>Procedural Knowledge:</p> <ul style="list-style-type: none"> ● Carry out simple separation techniques such as chromatography ● Carry out filtration ● Carry out evaporation <p>Upper Hierarchical Knowledge</p> <ul style="list-style-type: none"> ● Explain the process of distillation ● Plan investigations into separation of: Sand and water Sand, water and salt ● Explain how and why iron is separated from sulfur ● Use evidence from chromatography to identify unknown substances in mixtures. ● Choose the most suitable technique to separate out a mixture of substances. <p>Working Scientifically</p> <p>Separating Mixtures (iron filings and sulfur)</p> <ul style="list-style-type: none"> ● WSSK 1 develop a line of enquiry based on observations of the real world, and make predictions based on their prior knowledge and scientific understanding <p>Separating mixtures (chromatography, filtration and evaporation):</p> <ul style="list-style-type: none"> ● WSSK 3 select appropriate apparatus and techniques based on accuracy and precision for an investigation within the laboratory 	<p>Composite Knowledge: Pupils will gain a fundamental understanding of the range of chemical reactions, chemical analysis and apply this to predict the products of a reaction.</p> <p>Component Knowledge:</p> <p>Foundational Knowledge:</p> <p>Declarative Knowledge:</p> <ul style="list-style-type: none"> ● Hazard symbols and their importance ● defining acids and alkalis in terms of neutralisation reactions ● Identifying household acids and alkalis ● the pH scale for measuring acidity/alkalinity; and indicators ● reactions of acids with alkalis to produce a salt plus water ● displacement reactions ● reactions of acids with metals to produce a salt plus hydrogen ● the properties of metals and non-metals ● the order of metals and carbon in the reactivity series <p>Procedural Knowledge:</p> <ul style="list-style-type: none"> ● Identify the hazards from a range of substances ● Test and identify a range of household acids and alkalis ● Use indicators and pH meter to identify substances ● Make an indicator (red cabbage) ● Make a salt ● Use patterns of reactivity to make predictions for chemical reactions ● Predict the formulae for products of reactions between acids and metals, or acids and bases ● Describe in detail what happens to particles in a chemical reaction, compare and contrast physical and chemical reactions <p>Upper Hierarchical Knowledge</p> <ul style="list-style-type: none"> ● Offer suitable safety precautions when given a hazard ● Use a variety of indicators to measure acidity and alkalinity ● Categorise substances as strong or weak acids and alkalis using pH values ● Explain what salt formation displaces from the acid ● Predict the formulae for products of reactions between acids and metals, or acids and bases ● Describe combustion, thermal decomposition and oxidation, representing them as symbol equations ● Explain the link between the properties and uses of a metal to its position in the reactivity series ● Describe in detail what happens to particles in a chemical reaction, compare and contrast physical and chemical reactions ● Explain the differences in physical and chemical changes and categorise observations in terms of chemical reactions or physical changes <p>Working Scientifically</p> <p>Red cabbage indicator: House acids and alkalis:</p>

		<ul style="list-style-type: none"> ● WSAN 1 make and record observations and measurements and present data using appropriate methods including tables with repeat measurements <p>Properties of metals</p> <ul style="list-style-type: none"> ● WSSK 3 select appropriate apparatus and techniques based on accuracy and precision for an investigation within the laboratory <p>Reactivity of metals with acid:</p> <ul style="list-style-type: none"> ● WSSK 2 identify independent, dependent and control variables and use these to plan and carry out a range of investigations to test a prediction, considering repeatability and reproducibility within their plan <p>Making salts</p> <p>WSSK 3 select appropriate apparatus and techniques based on accuracy and precision for an investigation within the laboratory</p>
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Year 7 (Chemistry) Final Composite Knowledge End Point

- Name the states of matter and changes of state.
- Apply the particle model to explain or describe properties of different states of matter
- Be able to describe examples of the range of chemical reactions. Carry out various types of chemical analysis.
- Apply this to predict the products of a reaction.
- Collect data from practical
- Categorise substances as strong or weak acids and alkalis using pH values
- Predict the formulae for products of reactions between acids and metals, or acids and bases