



Medium Term Planning - Topic: Separating Mixtures

Curriculum Intent	
Skills/National Curriculum Links	<p>In addition to working further on objectives from Year __, pupils will be taught, following National Curriculum guidelines, the following this topic:</p> <p>Pure and impure substances</p> <ul style="list-style-type: none"> the concept of a pure substance mixtures, including dissolving diffusion in terms of the particle model simple techniques for separating mixtures: filtration, evaporation, distillation and chromatography the identification of pure substances.
Spiritual, moral, social, and cultural development	<p>SMSC: This unit of work provides several opportunities for students to work together practically in groups, which encourages them to share views and opinions and take instructions from others. Group work opportunities encourage teamwork and respect for others. In practical lessons students follow laboratory rules for the safety of all.</p> <p>PSHE/British Values: Separating mixtures happens throughout all daily life. Students will complete teamwork, leadership and put science into everyday situations. They will show mutual respect during classwork.</p> <p>Skills Builder: Listening (Receiving, retaining and processing info), Speaking (The oral transmission of info and ideas), Problem solving (Find a solution to a situation or challenge), Creativity (imagination and generation of new ideas), Staying positive (The ability to use tactics and strategies to overcome setbacks), aiming high (Set clear and tangible goals), Leadership and teamwork</p>
Numeracy	RF value calculation might be done. Difference in boiling points.
Literacy	<p>Vocabulary Tier 2: properties, apparatus, pigment, poisonous, observation, plot, value, separated, residue, technique, surface, dye, evidence, attracted, grind, pestle and mortar, confident, certain.</p> <p>Vocabulary Tier 3: element, atom, molecule, compound, pure substance, mixture, dissolve, solvent, solute, solution, saturated solution, solubility, soluble, insoluble, filtration, filtrate, residue, distillation, chromatography, chromatogram,</p> <p>Reading: Following a written method and read risk assessments. Students may be directed to the textbook; this could be in lesson or at home on Kerboodle.</p> <p>Writing: Describing and explaining scientific phenomenon, free response writing for describing precautions taken. Use of word mat to promote sentence formation. Converting diagrams into text.</p> <p>Oracy: Inclusion of BEST resources which are research evidence on common misunderstandings in science, effective diagnostic questioning and formative assessment, constructivist approaches to building understanding, and effective sequencing of key concepts that promote metacognitive talk and dialogue.</p>
Becoming future ready	<p>Careers/Employability:</p> <p>Chemical engineer</p> <p>Artist</p> <p>Pharmacologist</p>
Adaptation	Throughout this topic, quality first teaching will provide differentiation:
QFT/SEND Provision	<p>By product: Linear assessments and differentiated practical work.</p> <p>By resource: Lessons are differentiated per class and students, worksheets are coloured blue if support and assessments are linear.</p> <p>By Intervention: by providing different levels of supervision and support</p> <p>By Progressive Questioning: exploring pupils' understanding through interactive dialogue.</p> <p>By Grouping: according to prior attainment, gender, social preference, preferred learning style.</p> <p>By Task: Pupils should be involved in the identification of targets which are meaningful to them and in the selection of an appropriate task from the given range.</p> <p>By Offering Optional Activities: In class or as homework, to extend learning.</p>

This QFT/SEND provision will be explicit within the lesson-by-lesson schemes of work.



Implementation Curriculum Delivery

Learning Outcomes (Core Knowledge)

To be able to:

Securing Mastery Goals

- 3.5.2 Air, fruit juice, sea water and milk are mixtures.
- 3.5.2 Choose the most suitable technique to separate out a mixture of substances.

Enquiry processes

- 2.9 Carry out the method carefully and consistently.

Enquiry processes activity

- 3.5.2 Devise ways to separate mixtures, based on their properties.

Securing Mastery Goals

- 3.5.2 Explain how substances dissolve using the particle model.
- 3.5.2 Use the solubility curve of a solute to explain observations about solutions.

Exceeding Mastery Goals

- 3.5.2 Analyse and interpret solubility curves.

Enquiry processes

- 2.9 Prepare a table with space to record all measurements.
- 2.9 Identify the independent variable.

Securing Mastery Goals

- 3.5.2 Use techniques to separate mixtures.
- 3.5.2 Choose the most suitable technique to separate out a mixture of substances.

Exceeding Mastery Goals

- 3.5.2 Suggest a combination of methods to separate a complex mixture and justify the choices.

Enquiry processes

- 2.9 Carry out the method carefully and consistently.

Securing Mastery Goals

- 3.5.2 Use evidence from chromatography to identify unknown substances in mixtures.

Enquiry processes

- 2.9 Gather data, minimising errors.
- 2.9 Decide whether the conclusion of the experiment agrees with your prediction.

Red denotes interleaving; aspects of knowledge covered previously.

Current learning to be developed in the future within:

Future Learning:
At GCSE you learn more about separating mixtures, and other more scientific techniques.

Assessment

Refer to assessment maps for formative and summative assessment opportunities.

Impact

Attainment and Progress – Refer to assessment results / data review documentation.