




Medium Term Planning - Topic: Chemical energy

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>Energetics</p> <ul style="list-style-type: none"> energy changes on changes of state (qualitative) exothermic and endothermic chemical reactions (qualitative).
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: Chemical reactions are useful in everyday use such as hand warmers, ice packs for sports injury. 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	<p>Calculating energy level change via energy profile diagrams. Taking the temperature of different solutions. Calculating bond-energy calculations. Converting from J to kJ.</p>
Literacy	<p>Vocabulary Tier 2: describe, injured, greater, surroundings, opposite, transferred, relative, sketch, process, justify, rapidly, determines, profile.</p> <p>Vocabulary Tier 3: endothermic change, endothermic reaction, exothermic change, exothermic reaction, energy level diagram, chemical bond, catalytic converter.</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>Physiotherapist sports coach firefighter</p>
Adaptation	<p>Throughout this topic, quality first teaching will provide differentiation:</p> <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>
QFT/SEND Provision	

	<p>By Offering Optional Activities: In class or as homework, to extend learning. This QFT/SEND provision will be explicit within the lesson-by-lesson schemes of work.</p> 
Implementation Curriculum Delivery	<p>To be able to:</p> <p>Securing Mastery Goals</p> <ul style="list-style-type: none"> - 6.3.3 State that during a chemical reaction bonds are broken (requiring energy) and new bonds formed (releasing energy). If the energy released is greater than the energy required, the reaction is exothermic. If the reverse, it is endothermic. - 6.3.3 Use experimental observations to distinguish exothermic and endothermic reactions. <p>Exceeding Mastery Goals</p> <ul style="list-style-type: none"> - 6.3.3 Use energy data to select a reaction for a chemical hand warmer or cool pack. <p>Enquiry processes</p> <ul style="list-style-type: none"> - 2.3 Make a conclusion and explain it. <p>Enquiry processes activity</p> <ul style="list-style-type: none"> - 3.6.3 Investigate a phenomenon that relies on an exothermic reaction. <p>Securing Mastery Goals</p> <ul style="list-style-type: none"> - 6.3.3 State that during a chemical reaction bonds are broken (requiring energy) and new bonds formed (releasing energy). If the energy released is greater than the energy required, the reaction is exothermic. If the reverse, it is endothermic. - 6.3.3 Use a diagram of relative energy levels of particles to explain energy changes observed during a change of state. <p>Exceeding Mastery Goals</p> <ul style="list-style-type: none"> - 6.3.3 Use energy data to select a reaction for a chemical hand warmer or cool pack. <p>Enquiry processes</p> <ul style="list-style-type: none"> - 2.5 Make it clear, concrete, correct, and coherent. <p>Red denotes interleaving; aspects of knowledge covered previously.</p>
Current learning to be developed in the future within:	<p>At GCSE you learn in more detail about exothermic and endothermic reactions, including energy profiles and how to calculate changes in energy.</p>
Assessment	<p>Refer to assessment maps for formative and summative assessment opportunities.</p>
Impact	<p>Attainment and Progress – Refer to assessment results / data review documentation.</p>