



Medium Term Planning - Topic: Metals and non-metals

Curriculum Intent	In addition to working further on objectives from Year __, pupils will be taught, following National Curriculum guidelines, the following this topic:
Skills/National Curriculum Links	<p>The properties of metals and non-metals</p> <ul style="list-style-type: none"> the chemical properties of metal and non-metal oxides with respect to acidity <p>chemical reactions as the rearrangement of atoms</p> <ul style="list-style-type: none"> representing chemical reactions using formulae and using equations the varying physical and chemical properties of different elements
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. Evaluation of methods used to extract metals including environmental and socio-economic impact.</p> <p>PSHE/British Values: It is important to learn how metals are extracted leading to sustainability of materials to support the human lifestyle. 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	Difference in melting and boiling points. Graph skills.
Literacy	<p>Vocabulary Tier 2: room temperature, exception, poor (poor conductor of heat), classify, predict, compare, diagram, ribbon (magnesium ribbon), vigorously, describe, purpose, apparatus, position, unfamiliar.</p> <p>Vocabulary Tier 3: element, periodic table, chemical symbol, metal, non-metal, physical property, chemical property, oxide, word equation, reactant, product, oxidation, salt, oxidation, reactive, reactivity, reactivity series, displacement, thermite reaction, shiny, ductile, malleable, brittle, dull, tongs.</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>Product engineer</p> <p>Product tester</p> <p>Jewelry designer</p> <p>Health and Safety inspector</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> <p>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"> ● 3.6.1 Iron, nickel and cobalt are magnetic elements. ● 3.6.1 Mercury is a metal that is liquid at room temperature. ● 3.6.1 Bromine is a non-metal that is liquid at room temperature. ● 3.6.1 Identify an unknown element from its physical and chemical properties. <p>Exceeding Mastery Goals</p> <ul style="list-style-type: none"> ● 3.6.1 Justify the use of specific metals and non-metals for different applications, using data provided. <p>Enquiry processes</p> <ul style="list-style-type: none"> ● 2.4 Select a good way to display data.
Learning Outcomes (Core Knowledge)	<p>Securing Mastery Goals</p> <ul style="list-style-type: none"> ● 3.6.1 Describe an oxidation, displacement, or metal–acid reaction with a word equation. ● 3.6.1 Use particle diagrams to represent oxidation, displacement and metal–acid reactions. ● 3.6.1 Identify an unknown element from its physical and chemical properties. <p>Exceeding Mastery Goals</p> <ul style="list-style-type: none"> ● 3.6.1 Deduce the physical or chemical changes a metal has undergone from its appearance. <p>Enquiry processes</p> <ul style="list-style-type: none"> ● 2.4 Design a table for the data being gathered. ● 2.9 Gather sufficient data for the investigation. <p>Securing Mastery Goals</p> <ul style="list-style-type: none"> ● 3.6.1 Describe an oxidation, displacement, or metal–acid reaction with a word equation. ● 3.6.1 Use particle diagrams to represent oxidation, displacement and metal–acid reactions. <p>Enquiry processes</p> <ul style="list-style-type: none"> ● 2.3 Make a conclusion and explain it. <p>Securing Mastery Goals</p> <ul style="list-style-type: none"> ● 3.6.1 Describe an oxidation, displacement, or metal–acid reaction with a word equation. <p>Exceeding Mastery Goals</p> <ul style="list-style-type: none"> ● 3.6.1 Deduce the physical or chemical changes a metal has undergone from its appearance. ● 3.6.1 Justify the use of specific metals and non-metals for different applications, using data provided. <p>Enquiry processes</p> <ul style="list-style-type: none"> ● 2.3 Make a conclusion and explain it. <p>Securing Mastery Goals</p> <ul style="list-style-type: none"> ● 3.6.1 Place an unfamiliar metal into the reactivity series based on information about its reactions. <p>Exceeding Mastery Goals</p> <ul style="list-style-type: none"> ● 3.6.1 Deduce a rule from data about which reactions will occur or not, based on the reactivity series. <p>Enquiry processes</p> <ul style="list-style-type: none"> ● 2.10 Write a fair test enquiry question. ● 2.11 Identify control variables. <p>Enquiry processes activity</p> <ul style="list-style-type: none"> ● 3.6.1 Use experimental results to suggest an order of reactivity of various metals. <p>Securing Mastery Goals</p> <ul style="list-style-type: none"> ● 3.6.1 Describe an oxidation, displacement, or metal–acid reaction with a word equation. ● 3.6.1 Use particle diagrams to represent oxidation, displacement and metal–acid reactions. <p>Enquiry processes</p> <ul style="list-style-type: none"> ● 2.12 Make an experimental prediction. <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 the reactivity series and various extraction methods of metals from their ores with greater emphasis on electrolysis.</p>
Assessment	<p>Refer to assessment maps for formative and summative assessment opportunities.</p>

