



‘An ambitious curriculum that meets the needs of all’
Medium Term Planning - Topic: Periodic table

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 Periodic Table</p> <ul style="list-style-type: none">the varying physical and chemical properties of different elementsthe principles underpinning the Mendeleev Periodic Tablethe Periodic Table: periods and groups; metals and non-metalshow patterns in reactions can be predicted with reference to the Periodic Table
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. There are opportunities to learn about scientific discoveries from scientists in other cultures. Students find out about the contribution of Russian scientist Dmitri Mendeleev in Lesson 4. Additional resources introduce the scientific discoveries of John Dalton, who was born into a Quaker family in England, and French physicist Marguerite Perrey.</p> <p>PSHE/British Values: The history of the periodic table is important when learning about british values and world values. 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	Using the atomic numbers and atomic mass
Literacy	<p>Vocabulary Tier 2: data, patterns, prediction, horizontal, vertical, summarise, observation, describe, vigorous, compare,</p> <p>Vocabulary Tier 3: physical properties, periodic table, group, period, trend, group 1, alkali metals, chemical properties, group 7, halogens, group 0, noble gases unreactive.</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, big writes.</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>Scientist</p> <p>Chemist</p> <p>Drug development</p> <p>Teacher</p> <p>Post-doctoral researcher</p>
Adaptation	Throughout this topic, quality first teaching will provide differentiation:

<p>QFT/SEND Provision</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> <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>
<p>Implementation Curriculum Delivery</p>	<p>To be able to:</p>
<p>Learning Outcomes (Core Knowledge)</p>	<p>Securing Mastery Goals</p> <ul style="list-style-type: none"> - 3.5.3 As you go down a group and across a period the elements show patterns in physical properties. - 3.5.3 Metals are generally found on the left side of the table, non-metals on the right. - 3.5.3 Use data to describe a trend in physical properties. - 3.5.3 Use data showing a pattern in physical properties to estimate a missing value for an element. <p>Exceeding Mastery Goals</p> <ul style="list-style-type: none"> - 3.5.3 Use data about the properties of elements to find similarities, patterns, and anomalies. <p>Enquiry processes</p> <ul style="list-style-type: none"> - 2.1 Identify a pattern in data from a results table or bar chart. - 2.1 Suggest relationships between variables. <p>Enquiry processes activity</p> <ul style="list-style-type: none"> - 3.5.3 Sort elements using chemical data and relate this to their position in the Periodic Table. <p>Securing Mastery Goals</p> <ul style="list-style-type: none"> - 3.5.3 The elements in a group all react in a similar way and sometimes show a pattern in reactivity. - 3.5.3 As you go down a group and across a period the elements show patterns in physical properties. - 3.5.3 Group 1 contains reactive metals called alkali metals. - 3.5.3 Use data to describe a trend in physical properties. - 3.5.3 Describe the reaction of an unfamiliar Group 1 or 7 element. - 3.5.3 Use data showing a pattern in physical properties to estimate a missing value for an element. - 3.5.3 Use observations of a pattern in chemical reactions to predict the behaviour of an element in a group. <p>Exceeding Mastery Goals</p> <ul style="list-style-type: none"> - 3.5.3 Choose elements for different uses from their position in the Periodic Table. - 3.5.3 Use data about the properties of elements to find similarities, patterns, and anomalies. <p>Enquiry processes</p> <ul style="list-style-type: none"> - 2.4 Design a table for the data being gathered. - 2.12 Make an experimental prediction. <p>Securing Mastery Goals</p> <ul style="list-style-type: none"> - 3.5.3 The elements in a group all react in a similar way and sometimes show a pattern in reactivity. - 3.5.3 As you go down a group and across a period the elements show patterns in physical properties. - 3.5.3 Group 7 contains non-metals called halogens. - 3.5.3 Use data to describe a trend in physical properties. - 3.5.3 Describe the reaction of an unfamiliar group 1 or 7 element. - 3.5.3 Use data showing a pattern in physical properties to estimate a missing value for an element. - 3.5.3 Use observations of a pattern in chemical reactions to predict the behaviour of an element in a group. <p>Exceeding Mastery Goals</p> <ul style="list-style-type: none"> - 3.5.3 Predict the position of an element in the Periodic Table based on information about its physical and chemical properties. - 3.5.3 Choose elements for different uses from their position in the Periodic Table. - 3.5.3 Use data about the properties of elements to find similarities, patterns and anomalies. <p>Enquiry processes</p> <ul style="list-style-type: none"> - 2.1 Identify patterns in data. - 2.13 Identify risks and hazards. - 2.13 Identify control measures. <p>Securing Mastery Goals</p> <ul style="list-style-type: none"> - 3.5.3 The elements in a group all react in a similar way and sometimes show a pattern in reactivity. - 3.5.3 As you go down a group and across a period the elements show patterns in physical properties. - 3.5.3 Group 0 contains unreactive gases called noble gases. - 3.5.3 Use data to describe a trend in physical properties. - 3.5.3 Use observations of a pattern in chemical reactions to predict the behaviour of an element in a group. <p>Exceeding Mastery Goals</p> <ul style="list-style-type: none"> - 3.5.3 Choose elements for different uses from their position in the periodic table. - 3.5.3 Use data about the properties of elements to find similarities, patterns, and anomalies.



- Enquiry processes
- 2.1 Identify patterns in data.
 - 2.3 Incorporate the pattern you found into an answer to the enquiry question.
 - 2.3 Make a conclusion and explain it.
 - 2.3 Quote any secondary data you have which led to the same conclusion.

Red denotes interleaving; aspects of knowledge covered previously.

**Current learning
to be developed in
the future within:**

At GCSE you will learn the periodic table provides chemists with a structured organisation of the known chemical elements from which they can make sense of their physical and chemical properties. The arrangement of elements in the modern periodic table can be explained in terms of atomic structure which provides evidence for the model of a nuclear atom with electrons in energy levels.

Assessment

Refer to assessment maps for formative and summative assessment opportunities.

Impact

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