Year 10
Subject: Chemistry
Topic/Unit: C4 Chemical Changes
When: Half Term 2 and 3

Huntington School
Learn and succeed

Overview: Why this? Why now?
This unit explores how substances react chemically to form new products. It covers the reactivity of metals, the properties of acids, and the process of electrolysis. Understanding these changes is essential for explaining how we extract raw materials from the Earth and produce vital chemicals like salts.

Building on...building to:
This unit builds on prior knowledge of **atomic structure and ionic bonding**. It provides the necessary foundation for studying **energy changes**.

Sequence summary:
- **Acids and Alkalis:** Students define acids by the production of H^+ ions and alkalis by OH^- ions. They explore the **pH scale** and distinguish between **strong and weak acids** based on their degree of ionisation.
- **Reactions of Acids:** The curriculum covers **neutralisation**, where acids react with bases or carbonates to produce salts. Students perform a **Required Practical** to prepare a pure, dry sample of a soluble salt.
- **The Reactivity Series:** Metals are arranged by their ability to form positive ions. This explains **displacement reactions**, where a more reactive metal takes the place of a less reactive one in a compound.
- **Extraction and Redox:** Students study how metals are extracted using **reduction with carbon** or **electrolysis**. They define **redox reactions** using the **OILRIG** acronym: Oxidation Is Loss and Reduction Is Gain of electrons.
- **Electrolysis:** The unit concludes by using electricity to split ionic compounds. Students investigate the electrolysis of molten salts and **aqueous solutions**, applying rules to predict which elements form at the **anode and cathode**.

Key Vocabulary:
Electrolysis, Electrolyte, Anode, Cathode, Oxidation, Reduction, Neutralisation, Titration, Reactivity Series, Displacement, Ionisation, Concordant.

Assessments:
- **Formative:** Regular "Do Now" retrieval tasks, exam-style 6-mark questions on practical methods, and half-equation balancing.
- **Summative:** End-of-unit assessment covering the reactivity series, salt-making, and electrolysis predictions.

Able and interested:
Learners will deduce complex **ionic equations** for redox and neutralisation processes.

Inclusion, Personal Development and Wider Skills:
Students develop **practical lab skills** and an awareness of the **environmental impact** of large-scale metal mining. **Dual coding** and flashcard systems are used to support memory and inclusion.

Homework and Independent Learning:
Students will complete a task set on the SPARX online platform. The task is based on the current topic but also includes consolidation on previous topics. It will automatically adjust the level of challenge as the student complete the activities.