



#### **Structures and Bonding**

Bonds are the fundamental forces of attraction that hold our universe together. In this topic we will learn how bonds are formed and broken through bond physical and chemical changes.

#### The Periodic Table

In this topic we learn how in 1869 Russian chemist Dimitri Mendeleev started the development of the periodic table, arranging chemical elements by atomic mass. He predicted the discovery of other elements, and left spaces open for their discovery.





#### LINKS TO PRIOR LEARNING

Previously students will have learnt:

- About the particle model of matter.
- How Dalton's ideas about atoms helped explain the properties of matter.
- How elements are arranged in the periodic table.



#### LINKS TO PRIOR LEARNING

Previously students will have learnt:

- About elements, compounds and the periodic table as well as what happens during chemical reactions.
- About how to write balanced chemical equations including state symbols.
- About the nature of atoms, ions and isotopes.





# - TERM 3 -

#### **Energy Changes in Reactions**

In this topic we learn that all chemical reactions involve energy. Processes such as respiration and photosynthesis rely on these principles for life to be maintained. Energy is used to break bonds in reactants, and energy is released when new bonds form in products. Endothermic reactions absorb energy, and exothermic reactions release energy.

#### LINKS TO PRIOR LEARNING

#### Previously students will have learnt:

- About elements, compounds and the periodic table as well as what happens during chemical reactions.
- About how to write balanced chemical equations including state symbols.



#### - TERM 3 -

## Quantitative Chemistry & Chemical Changes

In this topic we will learn that Quantitative chemistry enables chemists to calculate known quantities of materials which supports evidence analysis in forensic investigations and drug manufacture. We will also learn how acid and alkali reactions can produce useful salts.



#### LINKS TO PRIOR LEARNING

#### Previously students will have learnt:

- How to represent elements and compound using symbols.
- How mass is conserved during changes of state and chemical reactions.
- Solubility, solutes and solutions.
- How hazard symbols are used.
- Indicators and the pH of acids, alkalis and neutral solutions.
- How neutralisations reactions occur.



### - TERM 3 -

#### **Electrolysis**

We will also learn how high reactivity metals can be extracted from ores to produce pure metals. We will also learn how electrolysis can be used to purify metals and split compounds to produce useful substances such as bleach and hydrogen.

#### **Rates of Reaction**

In this topic we learn about the different types of reactions which exist, from exploding fireworks to rusting of metal. We look at the factors which can speed up and slow down reactions and how these can be manipulated to create large quantities of products.

#### LINKS TO PRIOR LEARNING

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Previously students will have learnt:

- About products and reactants in chemical reactions.
- About elements, compounds and the periodic table as well as what happens during chemical reactions.
- About how to write balanced chemical equations including state symbols.
- How oxidation and displacement reactions occur in relation to the reactivity series.