Chemistry

YEAR 7 – MASTERY CURRICULUM

C1.1 Particles
- This unit will introduce pupils to particles as the building blocks of matter, emphasising the relationship between structure and properties.
- Pupils will learn about particle arrangement in solids, liquids, and gases using the particle model.
- Pupils will apply their knowledge through practical observations and learn about variables and experiment language.

C1.2 Atom, Elements and Compounds
- This unit will focus on developing a conceptual understanding of matter, specifically its structure and properties.
- Pupils will learn about the language used to describe substances, including atoms, elements, compounds, and molecules.
- The unit will also cover hazard symbols, their significance in understanding substances, and methods for minimising health risks.

C1.3 Mixtures
- This unit focuses on the connection between substance properties and their structure, specifically in the context of mixtures.
- Pupils will learn about mixtures, solutions, and their definitions, various separation techniques,
- Through this unit, pupils will develop practical skills in understanding and separating solutions and mixtures, including the ability to select appropriate

YEAR 8 – MASTERY CURRICULUM

C2.2 Changing substances
- This unit will focus on teaching pupils about chemical reactions, including the interpretation of chemical equations with symbols, numbers, and chemical formulas.
- Pupils will learn about the Law of Conservation of Mass and gain the ability to balance chemical equations.
- The unit will also provide opportunities for pupils to apply their knowledge of balancing equations to chemical reactions covered in the previous unit on Acids and Alkalis, reinforcing the concept of reactant atoms rearranging to form new products.

C2.1 Acids and Alkalis
- This unit will introduce pupils to acids and alkalis, exploring common examples found in the home and using indicators to determine pH.
- Pupils will learn about important acid reactions, including neutralization, reactions with metals, and metal carbonates.
- The unit emphasises understanding chemical reactions and representing them through word equations, building on previous knowledge of particles, atoms, elements, compounds, and chemical equations.

C2.3 Earth systems
- This unit will introduce pupils to the Earth's structure and two major systems: the rock cycle and the water cycle.
- Pupils will learn about the formation of sedimentary, metamorphic, and igneous rocks, studying the physical processes involved in the rock cycle and the impact of cooling rate on crystal size in igneous rocks. They will also explore rock density.
- Additionally, pupils will gain an understanding of the water cycle and its significance, connecting it to life processes like respiration and photosynthesis to explain the importance of water as a molecule.

YEAR 10 – INTERLEAVED CURRICULUM

C4.1 Structure and Bonding
- This unit will build upon students' understanding of the states of matter and the particle model.
- Pupils will learn about different types of bonding, including covalent, ionic, and metallic bonding.
- The pupils will also explore nanoparticles, their properties, and their uses.

C4.2 Extraction of Metals
- This unit will focus on the understanding of the reactivity series, including reactions of metals with water and acids, displacement reactions, and metal extraction.
- Pupils will learn about the preparation of salts from various reactions.
- The unit will also cover the concepts of finite and renewable resources, and the importance of reusing and recycling.

C3.3 Using Resources
- This unit will explore human utilisation of Earth's resources, such as metals, materials, and water, emphasizing the significance of water as a resource.
- Pupils will learn to utilise life cycle assessments to evaluate the environmental impact of materials or products and consider the pros and cons of different waste disposal methods.

C3.2 Introduction to Quantitative Chemistry
- This unit will introduce pupils to quantitative chemistry, including the use of state symbols in equations.
- Pupils will learn to calculate relative atomic mass, formula mass, and mole quantities. They will also understand concentration and be able to calculate it based on mass and volume.
- The unit emphasises the importance of connecting quantitative chemistry with the nature of chemical reactions, allowing students to gain meaningful insights into reactants and products.

YEAR 9 – MASTERY CURRICULUM

C3.1 The Periodic table
- This unit will focus on developing pupils' understanding of atomic structure, including the nuclear model.
- Pupils will learn about isotopes, relative atomic mass, and the structure of the periodic table, specifically exploring properties of different groups and their connection to electronic configurations.
- The unit will also cover the history of the periodic table and the contributions of Mendeleev. Overall, pupils will gain the ability to relate atomic structure to chemical properties of elements.

C4.3 Quantitative Chemistry
- This unit will focus on building upon pupils' understanding of atomic structure and introduce concepts of relative atomic mass and relative formula mass.
- Pupils will also apply their understanding of relative atomic mass to calculate the mole and concentration of solutions

C4.4 Energy Changes
- This unit will focus on energy transfers in chemical reactions, including exothermic and endothermic reactions.
- Pupils will learn to interpret experimental data and identify if a reaction is exothermic or endothermic.
- Pupils will develop a quantitative understanding by sketching and interpreting reaction profile diagrams, and calculate overall energy changes using bond energies.

YEAR 11 –INTERLEAVED CURRICULUM

C5.1 Carbon Chemistry
- This unit focuses on hydrocarbons, particularly alkanes, covering their identification, naming, formula drawing and reactions of hydrocarbons.
- Pupils will also learn about crude oil, fractional distillation, properties based on molecular size, and other functional groups like alkenes, alcohols, carboxylic acids, and esters, including identification, naming, drawing, and their reactions.

C5.2 Controlling Reactions
- This unit will cover the factors that affect the rate of a reaction, using collision theory.
- Pupils will learn to explain how each factor increases the frequency of effective collisions and understand the role of catalysts.
- The unit will also cover reversible reactions and dynamic equilibrium and use Le Châtelier's principle to explain the impact of temperature and pressure on the position of equilibrium.

C5.4 Chemical Analysis
- This unit will cover various techniques for analysing substances, including chromatography, tests for gases, tests for positive and negative ions, and flame emission spectroscopy.
- Pupils will understand the distinctions between pure substances, mixtures, and formulations, and grasp the concept of purity.
- Pupils will learn to analyse chromatograms qualitatively and quantitatively using Rf values.

C5.3 Our Atmosphere
- This unit will cover the Earth's atmosphere, focusing on its origin, evolution, and human impact.
- Pupils will learn about different theories of the atmosphere's origin and how to interpret and evaluate supporting evidence.
- They will understand the changes in the atmosphere's composition over time, the impact of human activities on climate change, and the effects of pollutants.

Revision of Chemistry – PPE's used to identify priority areas.

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