

Chemical Sciences

Description

Students understand that the structure of materials determines their properties and that the processing of raw materials results in new materials with different properties and uses.

By the end of this unit all of the students will be able to explain that:

- the kinetic theory describes the movement of particles in matter and is used to explain the properties of solids, liquids and gases
- Elements consist of one type of atom while compounds consist of two or more different types of atoms which are chemically combined
- Compounds can be separated by chemical reaction into purer substances but elements cannot
- All matter is composed of atoms with a nucleus containing protons and neutrons and surrounded by electrons
- The atomic and mass number of an atom enable the number of protons and neutrons to be determined
- The number of electrons in the outer shell of an atom determines many characteristics of the substance (e.g. formation of ions, metallic or ionic bonding)
- Recognize formulae of common substances
- Elements can be grouped into metals/non-metals based on common physical characteristics
- Acids and bases have distinct physical properties
- Gases can be identified using tests
- Chemical changes can be observed and described
- Physical and chemical change can be explained in terms of arrangement of particles and type of particle involved, understand that matter is not created or destroyed in these processes
- Chemical reactions occur at different rates
- Write word equations to describe chemical reactions and understand general equations for common reactions

Extension: Some students will also be able to explain:

- That ions can be described in terms of their number of protons, electrons and their electric charge
- that the formula of a substance contains information about its atoms, ions or molecules
- Conservation of atoms in a reaction can be illustrated using the reactants and products in a balanced equation
- The products of a reaction given the reactants and a general word equation
- Are able to write symbolic equations for reactions, given the word equations
- The properties and use of substances are related to their structure

Assessments

Mid-topic test: 30% | End of topic test: 30% | Investigation: 30% | Homework: 10%