

REACTIONS

ACIDS, ALKALIS & REACTIONS OF METALS

Why are we learning this?

Building on from Key Stage 2, you will start to understand how everything around us is a chemical of some kind. You will link the products in your home to acids and alkalis and learn how to test for these substances and to use them safely. You will be able to explain what happens to chemicals when they react and predict the products made.

ENERGY CHANGES

Why are we learning this?

Endothermic and exothermic reactions have everyday useful links such as hand warmers, self heating cans and medical cool packs. Learning about how these reactions work will allow you to understand the energy transfer in all reactions. As a higher tier student you will also be able to quantitatively find how much energy is transferred in a reaction.

RATE OF REACTION

Why are we learning this?

Chemical reactions are everywhere, from cells to industry. In our bodies chemical reactions must happen at the correct speed or 'rate' to supply our cells with everything they need to live. In industry the products of chemical reactions make a lot of money and so it is important to be able to speed up the rate at which they happen and make them happen as cheaply as possible.

CHEMICAL ANALYSIS

Why are we learning this?

Modern instrumental methods provide fast, sensitive and accurate means of analysing chemicals, and are particularly useful when the amount of chemical being analysed is small.

Acids and Alkalis and Reactions of Metals

Chemical and Physical Changes
Investigating Indicators (Evaluate)
Making Salts (Plan)
Metals and Acids
Displacement Reactions
Acids, Alkalis and Indicators
Neutralisation
Metals and Oxygen
Metals and Water
Unit Review

Unit Review
Exothermic Investigation 1 (plan)
Exothermic and Endothermic Reactions
Thermal Decomposition
Combustion (compare)
Recap and Drill

TYPES OF REACTIONS

Exothermic Investigation 2 (graph and conclude)
Energy Level Diagrams
Conservation of Mass
Which fuel? (evaluate)
Atoms in a Reaction

Recap and Drill
Endothermic and Exothermic Applications
Reacting Solutions 1 (planning)
Cells and Batteries
Unit Review

ENERGY CHANGES

Endothermic and Exothermic Reactions
Reaction Profiles
Temperature Changes (Results and Analysis)
Fuel Cells

Percentage Yield and Atom Economy
HT Amounts of Substances
HT What is a Mole
Concentration of solutions
Relative Formula Mass
Conservation of mass
Recap and Drill
Unit Review
RP: Electrolysis
Electrolysis to extract metals
HT Strong and Weak Acids
RP: Making Salts 1
HT Oxidation & Reduction
Recap and Drill

QUANTITATIVE CHEMISTRY

CHEMICAL CHANGES

HT Using Moles to balance equations
Changes in Mass
Percentage Element in a Compound
Balancing Equations
Chemical Formulae
RP: Neutralisation
Electrolysis of solutions
Electrolysis
RP: Making Salts 2
Reactions of Acids
Extracting Metals from Ores

Recap and Drill
Temperature & RoR
RP: Collecting a Gas
Catalysts
HT: Equilibria and Temperature
Unit Review
Recap and Drill
Formulations
Gas Tests
Identification of Ions

RATE OF REACTION

CHEMICAL ANALYSIS

Measuring the Rate of Reaction
RP: Concentration and RoR
Surface Area & RoR
Reversible Reactions
HT: Equilibria & Pressure
Pure and Impure
RP: Chromatography
Instrumental Methods
RP: Identifying Unknown Compounds

WHERE HAVE YOU BEEN?

At KS2 you will have learned how to group substances linked to their properties. You will also be able to name changes of state.

TYPES OF REACTIONS

Why are we learning this?

Learning about how different types of reactions happen are made are the fundamentals of Chemistry. You will learn different skills to carry out reactions and be able to explain what you can see during them. The reactions you will understand will help you to explain the world around you such as why do some fires produce more soot than others? How do medical cool packs work? Be curious!

CHEMICAL CHANGES

Why are we learning this?

The reactivity of metals links to everyday processes such as plumbing (which material to use), extraction of metals for use and jewellery making. Acids and alkalis are used everyday in household products. The reactions journey completes with electrolysis. This is an important industrial process. You will learn about how electrolysis is used to extract metals and to make important chemicals.

QUANTITATIVE CHEMISTRY

Why are we learning this?

You will be able to show how the reacting ratio of atoms can be used to determine the mass needed to react. This means that you will have learnt how to determine the formulae of compounds and write equations for reactions accurately. The unit completes by developing skills to precisely analyse liquids by titration.

NEXT STOP!

KS5 Chemistry:

At KS5 you will learn in further detail about the energy changes that happen in reactions and learn about entropy and enthalpy