



Chemistry - Year 8



AUTUMN 1

Matter
Elements and Atoms
Subatomic particles

The Periodic Table
Compounds and Molecules
Metals versus Non-metals

PRIOR LEARNING

Particle Theory

Summative Assessment 1

Key Knowledge and skills from a broad range of content from HT1,2, and 3.

Mixture of multiple choice, short answer and extended answer questions.

AUTUMN 2

Chemical Reactions
Reactivity trend in group 1 metals
Reactivity trend in group 7 non metals

Representing chemical Equations
Law of Conservation of Mass

Common compounds, elements, metals, non metals

SPRING 1

Balancing chemical equations
Types of Reaction: Endothermic, Exothermic
Types of Reaction: Combustion

Types of Reaction: Thermal Decomposition
Types of Reaction: Displacement

PRIOR LEARNING

Chemical reactions, representing chemical reactions, conservation of mass law

SPRING 2

Earth
Weather and climate
Climate change

The Earth's atmosphere
Global Warming

Structure of the Earth, Greenhouse gases

Summative Assessment 2

Key Knowledge and skills from a broad range of content from HT1,2,3,4 and 5

Mixture of multiple choice, short answer and extended answer questions.

SUMMER 1

Consolidation and Mastery
Matter

Chemical Reactions
Earth

PRIOR LEARNING

Topics from half-term 1 to 4 - in preparation for end of year assessment

SUMMER 2

Renewable and Non-renewable resources
Metals on Earth
Extracting metals

The carbon cycle
Carbon footprint
Recycling Earth's resources

Metals, Periodic table



Chemistry - Year 9



AUTUMN 1

Particles
Elements, compounds and mixtures
Mixture separation techniques

History of development of the atom
History of development of the Periodic table

PRIOR LEARNING

Building on key concepts from
Year 7 particle theory and
Year 8 matter topic.

Summative Assessment 1

Key Knowledge and skills from
a broad range of content from
HT1, 2, and 3 plus key Physics
principles from Year 7 and 8

Mixture of multiple choice,
short answer and extended
answer questions.

AUTUMN 2

Relative atomic mass and electronic configuration of an atom
Reactivity trends in the periodic table and explanation

Different types of metals
Predicting formula for compounds of metals and non-metals

Atomic number, mass num-
ber, reactivity trends in the
periodic table

SPRING 1

Chemical bonding
Effect of bonding on structure of a substance

Effect of structure on properties of a substance
Metallic bonding and alloys

PRIOR LEARNING

Electron configuration, atomic
number, mass number, prop-
erties of metals

SPRING 2

Consolidation and Mastery
Electron configuration and reactivity trend

Electron configuration, ionic and covalent compounds
Drawing and describing ionic and covalent bond formation

Summative Assessment 2

Key Knowledge and skills from
a broad range of content from
HT1, 2, 3, 4 and 5 GCSE Style
Questions

SUMMER 1

Consolidation and Mastery
Particles, predicting names and formulae of compounds
Trends in the periodic table

Mixtures and separation techniques
History of development of periodic table and atomic model

PRIOR LEARNING

Topics from half-term 1 to 4 - in
preparation for end of year
assessment

SUMMER 2

Consolidation and mastery - in preparation for end of year summative
assessment
Giant molecules
Polymers

Allotropes of carbon - graphite and diamond
Graphene and fullerene
Nanoparticles

Electron configuration,
bonding



Chemistry - Year 10



AUTUMN 1

Balancing equations
Conservation of mass
Relative formula mass
Taking measurements

Moles
Limiting reactants
Concentration of solutions
Percentage yield (triple content only)

Atom economy (triple content only)
Titrations (triple content only)
Molar volumes (triple content only)

PRIOR LEARNING

Year 7 and 8 - balancing equations. Year 7 and 8 - practical skills

Summative Assessment 1

Key Knowledge and skills from a broad range of content from HT1, 2, and 3 plus key Chemistry principles from 9 (Atomic structure and Bonding). GCSE Style Questions

AUTUMN 2

Reacting metals with acids
Making soluble salts
The reactivity series

Reduction and oxidation
Extracting metals from their ores

Electrolysis of molten metal compounds
Electrolysis of aqueous solutions

Year 8 - the reactivity series, year 7 - reacting metals with acids, year 8 - electrolysis

SPRING 1

Exothermic and endothermic reactions
Reaction profiles
Measuring temperature changes

Bond energies
Cells and batteries (triple content only)
Fuel cells (triple content only)

PRIOR LEARNING

Year 8 - exothermic and endothermic reactions

SPRING 2

Factors affecting the rate of a chemical reaction
Rate of reaction graphs

Measuring the rate of reaction between Mg and HCl
The 'disappearing cross' reaction

Year 10 spring term one: reacting metals with acids.

Summative Assessment 2

Y10 PPE (GCSE exam style paper based on AQA Chemistry paper 1 content)

SUMMER 1

Revision for PPEs
Chemistry PPEs
Feedback to PPEs

Alkanes
Properties of hydrocarbons

Fractional distillation
Titrations (triple content only)
Cracking

PRIOR LEARNING

Year 9 - covalent bonding

SUMMER 2

Alkenes
Carboxylic acids (triple content only)
Alcohols (triple content only)

Addition polymerisation (triple content only)
Condensation polymerisation (triple content only)

the structure of DNA and other natural polymers (triple content only)
Re-cap unit 9 content (GCSE units 1 and 2)

Year 9 - covalent bonding



Chemistry - Year 11



AUTUMN 1

Pure substances and formulations
Chromatography and chemical tests
Instrumental methods of chemical analysis

Composition and evolution of the Earth's early atmosphere
Greenhouse effect and global warming

Carbon footprint
Atmospheric pollution

PRIOR LEARNING

Building on key concepts from Year 9 and 10

Summative Assessment 1

Key Knowledge and skills from a broad range of content from Year 9 and 10 and HT 1-2 Year 11. GCSE Style Questions

AUTUMN 2

The Earth's resources and sustainable development
Potable water
Waste water treatment

Alternative methods of extracting metals
Life cycle assessments
Corrosion prevention

Alloys
Ceramics, polymers and composites
The Haber process and NPK fertilisers

Building on key concepts from Year 9 and 10

Y11 PPE 1 (GCSE exam style paper based on AQA Physics paper 1 content)

SPRING 1

Revision and exam preparation; bespoke package of revision activities based on topics identified in the PPEs as areas of development for the class. Revisiting paper 1 topics from previous learning with a focus on retrieval of key information and developing mastery of key topics

PRIOR LEARNING

Building on key concepts from Year 9, 10 and 11.

SPRING 2

Revision and exam preparation. Focus on full papers and exam technique, as well as knowledge recall.

Building on key concepts from Year 9, 10 and 11.

Summative Assessment 2

Y11 PPE 2 (GCSE exam style paper based on AQA Physics paper 2 content)

SUMMER 1

GCSE examination

PRIOR LEARNING

SUMMER 2



Chemistry - Year 12



AUTUMN 1

Organic Chemistry
Introduction to Organic Chemistry
Nomenclature
Reaction mechanisms and isomerism

Alkanes
Physical Chemistry
Atomic structure
Fundamental particles

Mass number and isotopes
Amount of substance
Mole and Avogadro's number
Ideal gas equation

PRIOR LEARNING

GCSE Organic Chemistry - Naming alkanes and alkenes, Fractional distillation GCSE Physical Chemistry - Mole calculations, titration calculations

Summative Assessment 1

A mix of MCQ and Longer Written GCE questions taken from topic studied

AUTUMN 2

Organic Chemistry
Introduction to Organic Chemistry
Halogenoalkanes
Alkenes

Alcohols
Physical Chemistry
Bonding and Physical properties
Bonding and Physical properties

Ionic
Covalent and Dative covalent
Metallic bonding

GCSE Organic Chemistry - Group 7, Alkanes, Alkenes and Alcohols GCSE Physical Chemistry - Ionic, Covalent and metallic bonding

SPRING 1

Organic Chemistry
Organic analysis
Identifying functional groups using test tube reactions
Mass spectrometry

Infrared spectroscopy
Physical Chemistry
Bonding and Physical Properties
Shapes of simple molecules and ions

Bond polarity and forces between molecules
Energetics
Enthalpy change
Calorimetry

PRIOR LEARNING

GCSE Organic Chemistry - Functional groups GCSE Physical Chemistry - Bonding, Properties of small molecules and giant structures, enthalpy change

SPRING 2

Inorganic Chemistry
Periodicity
Physical properties of Period 3 elements
Group 2 - the alkaline earth metals

Group 7 - the halogens
Physical Chemistry
Energetics
Applications of Hess's Law

Bond enthalpies
Bond enthalpies
Collision theory
Collision theory

GCSE Inorganic Chemistry - Periodic table, Group 2 and Group 7 Physical Chemistry - Collision theory, effect of temperature on rates of reaction

Summative Assessment 2

PPE AS Paper 1 and AS Paper 2

SUMMER 1

Physical Chemistry
Kinetics
Effect of concentration and pressure on rates

Catalysts
Catalysts
Redox reactions

Thermodynamics
Born Haber Cycles
Rate equations

PRIOR LEARNING

GCSE Physical Chemistry - Rates of reaction, Le Chatelier

SUMMER 2

Organic Chemistry
Review of topics covered
Physical Chemistry

Review of topics covered
Inorganic Chemistry
Review of topics covered



Chemistry - Year 13



AUTUMN 1

Organic Chemistry
Optical isomerism
Aldehydes and ketones
Carboxylic acids and derivatives

Aromatic Chemistry
Amines
Physical Chemistry
Thermodynamics

Enthalpy of solution
Gibbs free energy change, entropy
Electrode potentials
Commercial application of electrochemical cells

PRIOR LEARNING

AS Organic Chemistry - Isomerism, carboxylic acids AS
Physical Chemistry - Born Haber cycles

Summative Assessment 1

A mix of MCQ and Longer
Written GCE questions taken
from topic studied

AUTUMN 2

Organic Chemistry
Amines
Polymers
Amino acids, proteins, DNA

Organic Synthesis
Nuclear Magnetic Resonance Spectroscopy
Thin Layer Chromatography
Physical Chemistry

Acids and Bases
Bronsted-Lowry acid-base equilibria
Definition and determination of pH
The ionic product of water K_w

GCSE Organic Chemistry - Polymerisation, natural polymers
GCSE Physical Chemistry - Acids, bases and alkalis

SPRING 1

Inorganic Chemistry
Thin layer chromatography
Liquid and Gas chromatography
Transition metals

Substitution reactions
Shapes of complexes
Physical Chemistry
Weak acids and bases K_a for weak acids

pH curves, titrations and indicators
Buffer action

PRIOR LEARNING

GCSE Inorganic Chemistry - Chromatography
GCSE Physical Chemistry - acids and bases

SPRING 2

Inorganic Chemistry
Transition metals
Formation of Coloured ions

Variable Oxidation States
Catalysts
Reaction of ions

Completion of required practicals
Preparation for Advanced Level examinations

GCSE Inorganic chemistry - Transition metals, Catalysts, Chemical reactions

Summative Assessment 2

P P E s Full A level
Chemistry Paper 1,2 and 3

SUMMER 1

Preparation for Advanced Level examinations
Review of topics covered throughout the Advanced Level course

PRIOR LEARNING

SUMMER 2

Advanced level Examinations completed