CHEMISTRY Learning journey

AQA Realising potential

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St John Henry Newman Catholic School

Understanding and Applying Scientific Skills

Year 7 → Year 11

- Understanding variables
- Writing methods
- Assessing impact of scientific concepts
- Drawing conclusions
- Applying maths to the scientific concepts
- Describe patterns
- Evaluation of scientific concepts
- Drawing graphs and analysing graphical data
- Analysis of secondary data
- Modelling scientific concepts
- Understanding relationships between science and society
- IDEAL Identify, describe, explain, apply, link
- Risk Assessment
- Evaluating data and investigations

Year 11

Using our resources

- Properties of polymers
- Glass, ceramics, & composites
- Useful alloys
- Rusting
- The Haber process
- Making fertilisers
- Life cycle assessment recycling
- Reduce, reuse, recycle
- Treating waste water
- Finite & renewable resources

Polymers

- Condensation polymerisation
- DNA
- Polymers
- Natural polymers

Organic Chemistry

- Instrumental analysis
- Testing for ions
- Testing for gases
- Carboxylic acids esters
- Reactions and uses of alcohol

GCSE exams

A Level Sciences – Biology Chemistry & Physics
(Need grade 6 and grade 6 in Maths)

Applied Science A Level

Other post 16 options
Apprenticeships, college, other A level subjects)

Using the Earth's resources

- Extracting metals from ores
- Obtaining potable water
- Water safe to drink

Chemical analysis

- Analysing chromatograms
- Pure substance & mixtures

Reactions of alkenes & alcohol

- Reactions of alkenes
- Structure alcohols, carboxylic acids & esters

Crude oil & fuels

- $C_{30}H_{62}$ Cracking hydrocarbons
- Burning fuels
- Fractional distillation
- C_nH_{2n+2} Hydrocarbons

Electrolysis

- $2H^+ + 2e^- \rightarrow H_2$
- Changes at the electrodes
- Electrolysis of solutions
- Electrolysis of molten compounds

Energy changes

- Exothermic & endothermic
- Reaction profiles
- Chemical cells & batteries
- Fuel cells

Quantitative chemistry

- Moles
- Limiting reagents
- Atom economy
- Titrations

Rate & extent of chemical change

- Rates of reactions
- The effect of temperature
- Dynamic equilibrium
- Reversible reactions
- Catalysts

Year 10

Reactions of acids

- Strong & weak acids
- Indicators & pH
- Neutralisation
- Making salts

Chemical changes

- Metal extraction
- Reactivity series
- Nanoparticles

Bonding properties

- Giant covalent structures
- Transition metals
- Group 7 Halogens
- Electronic structure
- Metallic bonding
- Ionic bonding

Periodic table

- Metal conductivity
- States of matter
- Group 1 Alkali Metals
- Group 0 Nobel Gases

Types of bonding

- Covalent bonding

The Earth's atmosphere

- Greenhouse gases
- Changing Atmosphere
- Climate change
- History Atmosphere

Atoms, bonding & moles

- Fractional distillation
- Atomic number and isotopes
- History of the atom
- Separating mixtures
- Chemical equations
- Atoms Electronic structure

Energy changes

- Extraction of Aluminium
- Uses of energy transfers
- Bond energy calculations

Quantitative chemistry

- Relative mass
- Reacting Mass
- Yield
- Concentration

Rate & extent of chemical change

- Collision theory
- Effect of concentration & pressure

Year 9

Elements

- Elements Atoms
- Compounds

Periodic table

- The Periodic table
- Group 7 Halogens

Types of reaction

- Atoms in chemical reactions
- Thermal decomposition
- Endothermic exothermic reactions

Chemical Energy

- Energy Level Diagrams

Climate

- Global warming
- The Carbon Cycle

Earth resources

Year 8

Elements

- Polymers

Periodic table

- Chemical formulae
- Group 1 Alkali Metals
- Group 0 Nobel Gases

Types of reaction

- Combustion
- Conservation of mass

Chemical Energy

- Bond energies

Climate

- Climate change

Earth resources

- Extracting metals
- Recycling

Earth's structure

- The Earth
- Ceramics
- Structure of the Earth
- The Rock Cycle
- Metamorphic rocks
- Igneous rocks
- Sedimentary rocks

Metals & non-metals

- Metal displacement reactions
- Metals & non-metals

Acids & Alkalis

- Neutralisation
- Chemical Reactions Making salts
- Metals & acids, oxygen, water
- Acid strength
- Indicators & pH
- Acids & Alkalis

Separating mixtures

- Evaporation & distillation
- Filtration
- Chromatography
- Solutions solubility

Particle model

- Inside particles
- Diffusion
- Melting freezing
- Boiling
- Pure substances & mixtures
- Gas pressure
- Changes of state
- States of matter
- The particle model

Year 7