

Year 9

- Atoms, elements, compounds and mixtures
- The history of the periodic table
- Group trends and patterns
- The reactions of acids
- Metal oxides, hydroxides, carbonates and sulphates
- Flame tests
- Chromatography

YEAR
10

- What are metal oxides and how do they form?
- What oxidation and reduction mean in terms of oxygen?
- What oxidation and reduction mean in terms of electrons?

- Oxidation and reduction reactions in terms of oxygen and in terms of electrons.
- Writing half equations
- Constructing formula equations.

The reactivity series

Redox reactions

- Can you connect reactivity to types of metal extraction?
- What are the methods used for metal extraction?

- What is the reactivity series?
- Can you describe what happens in a displacement reaction?
- Links to Year 7 reactivity

- What is the nomenclature for the first 4 hydrocarbons?
- What are alkenes?
- What is cracking?
- What are condensation polymers? Like DNA and amino acids.

- What are hydrocarbons?
- What is fractional distillation?
- What are the uses of some hydrocarbons?
- Links with Year 7 and 9 separating mixtures

CHEMISTRY

Energy changes

- What do energy profiles look like to each type of reaction?
- How can you work out bond energies for reactions?
- Fuel cells**

- What is an endothermic reaction?
- What is an exothermic reaction?
- Required practical: Temperature Change in Reacting Solutions

- What is the greenhouse effect?
- What is the greenhouse effect important?
- What is global warming?
- What are the impacts?
- How does it connect to the carbon cycle?
- Links to the atmosphere Year 8

The atmosphere

- What was the atmosphere like?
- How did it change over the years?
- What is the composition?
- What types of pollution can influence the atmosphere?
- Links with Year 9 atmosphere topic

Organic chemistry

- Combustion of fuels
- Common pollutants
- Environmental effects
- Acid rain
- Global warming

Structure and bonding

- The particle model of matter
- Limitations of the particle model
- Formation of ions
- Ionic bonding
- The properties of ionic compounds

- Covalent bonding
- Simple covalent structures and their properties
- Giant covalent structures and their properties
- Nano materials

- Metallic bonding, their structure and properties
- Alloys
- Corrosion, composites ceramics and polymers

YEAR
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Year 11

- Quantitative chemistry
- Rate of reaction
- Reversible reactions and equilibrium
- Electrolysis
- Using the earth's resources

UNDERLINED = Separate only

Year 10

- Reactivity series
- Redox reactions
- Organic chemistry
- The earth's atmosphere
- Energy changes in reactions
- Structure and bonding

YEAR
11

Quantitative chemistry

- Why does the mass stay the same in a reaction?
- How do you balance equations?
- Links with bonding Year 9 and chemical formulae in Year 7

- What is a mole?
- How can you work out moles?
- How can you then use this to work out the amount of substances in reactions
- Links with Year 9 bonding and chemical reactions

- How do you work out the concentration of a solution?
- Required practical: Neutralisation by titration
- What is atom economy?
- What is % yield?
- How do you relate amount of substance to volumes of gases?

Mr

Amount of substances

Moles

Concentration of solutions

- How do you calculate Mr?
- What is the relative atomic mass?

- What affects the rate of reaction?
- Collision theory
- How do you calculate the rate of reaction?
- What are catalysts?

CHEMISTRY

Reversible reactions

- Le Châtelier's principle
- The Haber process
- Fertilisers

- What are reversible reactions?
- Examples of reversible reactions
- Energy changes
- What is equilibrium?
- What can affect which way a reaction goes?

- What is potable water?
- How is water treated to remove impurities?
- Required practical: Analysis of Water Samples and Water Purification

- What does sustainable mean?
- What kind of materials are sustainable?

- Can you describe when a reaction has a fast rate?
- Required practical: Rates of Reaction

Rates of reaction

Electrolysis

- What is electrolysis?
- Why does it need to be used?
- What does each electrode do?
- Required practical Electrolysis

- Extraction of aluminium
- How do batteries and fuel cells work?

Reducing human impacts

- What are LCAs?
- Why are they important?
- What are alternative ways to extract metals?
- How can we reduce the impact on the environment?

Post
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Future Study / World of Work

- A levels
- College courses
- Apprenticeships