

# Science at Norbury High

## Overview

The Science Faculty is committed to ensuring that all students reach their full potential through a rigorous, broad, challenging, enjoyable, adaptable and culturally diverse curriculum. We aspire to nurture students who are skilled critical thinkers, open-minded, problem solvers, and innovators, team players, kind, caring, resilient and tenacious. We develop the minds of students by providing access to a variety of courses that will support their curiosity, creativity, communication and critical thinking. We empower our students to become confident informed citizens who are capable of comprehending, analysing and making well-reasoned judgement on global issues. We work with parents, carers and other stakeholders to achieve the best outcomes for our students. At the conclusion of their secondary education, our students will be capable of applying their scientific knowledge to current issues, making connections between scientific disciplines and pursuing post-secondary education or careers in the fields of science and engineering.

## KS3 Chemistry

Our KS3 Chemistry curriculum is adapted from the Kerboodle package of resources matching the AQA KS3 Chemistry Syllabus and Big Ideas principle. All resources have been designed to support our 3-year KS3 programme and help prepare students for AQA GCSE 9-1. Complemented by online learning, this furberishes students everything they need to introduce and explore the Big Ideas further. This includes access to Kerboodle Online Books, mathematics and literacy activities, and regular auto-marked assessments to help all students to make progress.

## Year 7 Chemistry

Science in year 7 prepares all students for understanding scientific techniques, safe practice and development of experimental skills which underpins the understanding of theoretical constructs.

### TOPICS

Particles and their behaviour

Elements, atoms, and their behaviour

Reactions

Acids and Alkalis

## Year 8 Chemistry

In year we build on students' knowledge from year 7 and focus on deeper understanding of key scientific ideas and analysis.

### TOPICS

The Periodic Table

Separation Techniques

Metals and other materials

The Earth

## Year 9 Chemistry

In year 9 we further build on students' knowledge from years 7 and 8 to focus on deeper understanding of key scientific ideas and analysis.

### TOPICS

Particle model and state change

Atoms and the Periodic Table

Chemical changes

Useful chemical reactions

### USEFUL WEBSITES RESOURCES

There are excellent resources available to help your revision. Please visit and use the websites below.

Website Name	Description	Website address
<b>BBC Bitesize – KS3 Chemistry</b>	Excellent topic summaries, videos, and quizzes for all KS3 chemistry topics. Aligned well with national curriculum.	<a href="https://www.bbc.co.uk/bitesize/subjects/z4882hv">https://www.bbc.co.uk/bitesize/subjects/z4882hv</a>
<b>KS3 Chemistry Revision Monkey</b>	Free videos	<a href="https://www.youtube.com/results?search_query=ks3+revision+monkey+chemistry">https://www.youtube.com/results?search_query=ks3+revision+monkey+chemistry</a>
<b>Seneca Learning</b>	Free interactive revision platform with	<a href="https://www.senecalearning.com">https://www.senecalearning.com</a>

	courses tailored to KS3 science and AQA GCSE.	
<b>Twig Science</b>	Short, high-quality science videos with questions. Some free content suitable for KS3.	<a href="https://www.twigeducation.com">https://www.twigeducation.com</a>
<b>KS3 Science by CGP</b>	Free resources and paid revision guides; the site includes quizzes and revision tips.	<a href="https://www.cgpbooks.co.uk">https://www.cgpbooks.co.uk</a>
<b>Education Quizzes – KS3 Science</b>	Fun and quick quizzes to reinforce knowledge and test understanding.	<a href="https://www.educationquizzes.com/ks3/science/">https://www.educationquizzes.com/ks3/science/</a>
<b>STEM Learning</b>	Free resources and worksheets for teachers and students based on curriculum science topics.	<a href="https://www.stem.org.uk">https://www.stem.org.uk</a>

## KS4 Chemistry

This AQA GCSE Chemistry course, delivered through Oxford Kerboodle, provides a comprehensive and engaging approach to learning key chemical concepts. Covering topics from atomic structure to using our resources, the course supports students with interactive resources, animations, quizzes, and assessments. It is designed to build strong scientific knowledge and practical skills, aligned with the AQA specification. The GCSE Chemistry course also provides students with the opportunity to explore the world around them through inquiry-based teaching and learning. Students are mandated to complete compulsory required practicals which constitute a huge component of the course. They are assessed on the knowledge of 'How Science Works' through required practicals during the GCSE.

### AQA GCSE SEPARATE (TRIPLE) CHEMISTRY CONTENTS

## Year 10 Chemistry Triple

### CHEMISTRY PAPER 1

C1: Atomic structure

C2: The Periodic Table  
C3: Structure and bonding  
C4: Chemical calculations  
C5: Chemical changes  
C6: Electrolysis  
C7: Energy changes

## Year 11 Chemistry Triple

### CHEMISTRY PAPER 2 UNITS

C8: Rates and equilibrium  
C9: Crude oil and fuels  
C10: Organic reactions  
C11: Polymers  
C12: Chemical analysis  
C13: The Earth's atmosphere  
C14: The Earth's resources  
C15: Using our resources

### AQA GCSE SEPARATE (TRIPLE) CHEMISTRY REQUIRED PRACTICAL

Students will complete 10 required practicals over the course of the two years. Any aspect from the practicals may be assessed in the final exams. Below is a table highlighting information about the 10 required practicals.

Number	Required Practical	Description	Specification reference
1	Making salts	Preparation of a pure, dry sample of a soluble salt from an insoluble oxide or carbonate using a Bunsen burner to heat dilute acid and a water bath or electric heater to evaporate the solution	5.4.2.3
2	Temperature changes	Temperature changes. Investigate the variables that affect temperature change in chemical reactions eg acid plus alkali	5.5.1.1
3	Rates of reaction	Investigate how changes in concentration affect the rates of reactions by both measuring the volume of a gas produced and monitoring a change in colour or turbidity.	5.6.1.2
4	Chromatography	Investigate how paper chromatography can be used to	5.8.1.3

		separate and tell the difference between coloured substances. Students should calculate Rf values.	
5	Water purification	Analysis and purification of water samples from different sources To include pH measurement, removal of dissolved solids and distillation.	5.10.1.2
6	Electrolysis	Investigate what happens when aqueous solutions are electrolysed using inert electrodes	5.4.3.4
7	Neutralisation	Determination of the reacting volumes of solutions of a strong acid and a strong alkali by titration	4.4.2.5
8	Identifying ions	Use of chemical tests to identify the ions in unknown single ionic compounds covering the ions from Flame tests and sulphates	4.8.3

## AQA GCSE TRILOGY (COMBINED) CHEMISTRY CONTENTS

### Year 10 Chemistry Combined

#### CHEMISTRY PAPER 1

C1: Atomic structure

C2: The Periodic Table

C3: Structure and bonding

C4: Chemical calculations

C5: Chemical changes

C6: Electrolysis

C7: Energy changes

### Year 11 Chemistry Combined

#### CHEMISTRY PAPER 2 UNITS

C8: Rates and equilibrium

C9: Crude oil and fuels

C10: Organic reactions

C11: Polymers

C12: Chemical analysis

C13: The Earth's atmosphere

C14: The Earth's resources

C15: Using our resources

### AQA GCSE TRILOGY (COMBINED) CHEMISTRY REQUIRED PRACTICAL

Students will complete 7 required practicals over the course of the two years. Any aspect from the practicals may be assessed in the final exams. Below is a table highlighting information about the 7 required practicals.

Number	Required Practical	Description	Specification reference
1	Making salts	Preparation of a pure, dry sample of a soluble salt from an insoluble oxide or carbonate using a Bunsen burner to heat dilute acid and a water bath or electric heater to evaporate the solution	5.4.2.3
2	Temperature changes	Temperature changes. Investigate the variables that affect temperature change in chemical reactions eg acid plus alkali	5.5.1.1
3	Rates of reaction	Investigate how changes in concentration affect the rates of reactions by both measuring the volume of a gas produced and monitoring a change in colour or turbidity.	5.6.1.2
4	Chromatography	Investigate how paper chromatography can be used to separate and tell the difference between coloured substances. Students should calculate R <sub>f</sub> values.	5.8.1.3
5	Water purification	Analysis and purification of water samples from different sources To include pH measurement, removal of dissolved solids and distillation.	5.10.1.2
6	Electrolysis	Investigate what happens when aqueous solutions are electrolysed using inert electrodes	5.4.3.4

## **USEFUL RESOURCES**

There are excellent resources available to help your revision. Please visit and use the websites below and also download the apps.

### **WEBSITES**

**AQA:** For copies of the syllabuses, past paper questions and more information from AQA, go to: <http://www.aqa.org.uk/subjects/science/gcse> and follow the links to specific subjects.

**BBC Bitesize:** <https://www.bbc.co.uk/education/levels/z98jmp3>

**Free Science Lessons:** <https://www.freesciencelessons.co.uk/>

**Cognito:** <https://cognitoedu.org/home>

**Physics and Maths Tutor:** <https://www.physicsandmathstutor.com/>

**Seneca:** <https://senecalearning.com/en-GB/>

### **APPS**

There are several good apps available for you to download including:

**Revision Buddies** – Large selection of multiple-choice questions to choose from

**Gojimo** – Excellent question-based activities

**GCSE 9-1 Scholastic Revision** – Excellent revision planning and questions, just choose your subject and you are good to go

**Brainscape Smart Flashcards** – Excellent revision flashcards