CHEMISTRY A-Level

Summer Work 2026

Welcome to A-Level Chemistry! We hope you will enjoy the challenges offered by this fascinating subject and come to find it a rewarding and worthwhile experience. We follow the OCR-B (Salters) course, which is both academically rigorous and linked to real-life contexts so that you can see how the theory is relevant.

The A-Level chemistry course is very demanding and some preparation work is important. We want you to attempt this summer-work before starting the A-Level chemistry course. Task A is designed to introduce a significant and recurring theme which will be significant throughout the whole A-Level course. Task B will help us to learn more about you and support you in studying chemistry.

You should complete **both** the tasks.

Please bring the completed summer work with you for checking on the Year 1 induction day in **September**. We estimate that the work should take about 5-7 hours to complete.

Feel free to contact us using the email address below if you need any guidance in completing this work, or any additional information about preparing for the A-Level chemistry course.

The chemistry team would like to wish you a great summer holiday and we very much look forward to meeting you in September!

Rob Baker — Chemistry Teacher
Simon Colebrooke — Course Team Leader Chemistry — **scolebrooke@longroad.ac.uk**
Zoë Thorn — Chemistry Teacher

Chemistry A Level
Course Team Leader: Simon Colebrooke
Email Address: scolebrooke@longroad.ac.uk

TASK A: The "scale of chemistry"

Appreciating the relative sizes of things in chemistry - both compared to one another and to other objects encountered in everyday life - is a big challenge for students. This task is intended to help you develop your understanding of those relative scales.

1. Find out what each of the following distance units are and how they relate to metres.

Unit symbol	Name	Distance in m
cm	centimetre	1×10^{-2}
mm		
μm		
nm		
Å		
pm		
fm		
am		

2. Do some research to find the size of each of the objects listed in the table on the next page.

You will no doubt find the information recorded in a range of difference distance units, but that does not matter, simply note the value you find and the source of the information (e.g. book reference or a weblink).

For some objects you may be able to estimate the size yourself and if so, simply write "estimate" in the source column.

Object list:

Object	Size	Unit	Size in metres	Source
Palisade leaf cell				
SARS-Cov-2 Virus (virus causing Covid-19)				
Human hair width				
Nits (egg of the head louse)				
Gold atom				
Grain of salt				
e-coli bacteria				
Nucleus of a gold atom				
Dust mite				
Drop of water				
Human skin cell nucleus				
Red blood cell				
Diameter of proton				
Diamond in a piece of jewellery				
Haemoglobin molecule				
Snowflake				

3. Produce a PowerPoint (or equivalent alternative) that summarises your findings. Your PowerPoint should include all the following (tick off the item when completed):

- ☐ Include all the information from Q1 and Q2
- ☐ List the objects in order of increasing size
- ☐ Include an image of each object
- ☐ Show the size of each object in metres
- ☐ You should also include a slide showing the objects grouped according to whether they are macroscopic / microscopic / sub-microscopic**
- ☐ Include a slide which shows some interesting comparisons between one object and another, or one object and something everyday (for example – how many gold atoms could be laid end to end along a 1p coin).

** Macroscopic means that the object can be seen unaided with the naked eye. Microscopic means the object is too small to see with the naked eye, but can be seen using a microscope. For our purposes, we will assume that by "microscope" we mean a standard light microscope that can resolve objects as small as approximately 1×10^{-6} m in length. Sub-microscopic means objects that could not be seen using a normal light microscope, smaller than 1×10^{-6} m. This distinction is a bit approximate as light microscopes vary somewhat!

You need to bring a printed copy of your PowerPoint to your first chemistry lesson to help with discussions (colour printing is not essential and you can put more than one slide on a page if necessary). We will give instructions for submitting the electronic version of your PowerPoint once college has started.

TASK B: Studying Chemistry

Answer these questions so that we know something about you and your experience of studying chemistry.

1. Describe what you enjoyed most about studying chemistry at GCSE.

2. Why have you chosen to study chemistry for A-Level?

3. Is chemistry your favourite science? Why or why not?

4. Is there a career or university course you want to pursue after A-levels at this stage?

5. What are you hoping to gain from the course and why? (Don't just state a grade you want, though that might be part of the answer).

6. What challenges do you think you might find studying chemistry at a higher level than GCSE?

7. A-Level grades range from A* (highest) to E (lowest possible pass). Imagine that the first chemistry assessment is returned and you obtain a C-grade. What would you do next?

8. What do you think a student can do to be successful in chemistry at A-Level?