Coombe Wood Year 12 Bridging Work 2026/27

SUBJECT: Chemistry

HEAD OF DEPARTMENT NAME: Mrs Reid

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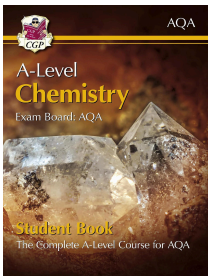
We recommend you purchase the following textbook for this subject area:

A-Level Chemistry for AQA: Year 1 & 2 Student Book with Online Edition. ISBN: 9781789080476



Additional Books

1. Head Start to A-Level Chemistry (with Online Edition) (CGP A-Level Chemistry) - ISBN-978-1782942801
2. Calculations in A-Level Chemistry by Jim Clark. ISBN 13: 9780582411272.

Websites

https://www.physicsandmathstutor.com/chemistry-revision/a-level-aqa/
https://www.chemguide.co.uk/:
https://chemrevise.org/

Bridging Tasks

All bridging work must be completed by 25/9 and forms part of your Pupil Passport at Coombe Wood Sixth Form.

Task 1: The Chemistry Foundation

a) **Subatomic Particles:** State the relative mass and relative charge of a proton, neutron, and electron.

b) **Isotopes:** Define what an isotope is in terms of subatomic particles.

c) **Electronic Configuration:** Write the GCSE-style electron configuration for a Calcium atom (atomic number = 20).

d) Challenge: Find out what s, p, d orbitals.

e) Write down (and memorize) the formulas and charges for the following **polyatomic ions:**

i. Nitrate
ii. Carbonate
iii. Sulphate
iv. Phosphate
v. Ammonium
vi. Hydroxide

f) Write **balanced chemical equations** (including state symbols) for:

   i. The reaction of solid magnesium with hydrochloric acid.
   ii. The thermal decomposition of solid calcium carbonate into solid calcium oxide and carbon dioxide gas.

g) **Masses and Moles**: Solve the following problems (Show your working):

   i. Calculate the number of moles in 10.0 g of Calcium Carbonate ($CaCO_3$). *(Relative atomic masses: Ca = 40.1, C = 12.0, O = 16.0)*
   ii. What mass of Sodium Hydroxide (NaOH) is needed to make 250 cm^3 of a 0.100 mol dm^{-3} solution? *(Hint: Convert cm^3 to dm^3 first!)*

h) Write a paragraph (½ page) to compare the similarities and differences between ionic, covalent and metallic bonding.

Task 2: Research and preparation for A-Level concepts

1. Spend around 20 minutes researching "Mass Spectrometry" and write a short paragraph summary explaining what it is and why it is useful to chemists.

2. Research **two** of the following **everyday compound** (aspirin, caffeine, benzene, ethanoic acid, glycine or nylon-6,6) and prepare a one-page summary including:
   - Its chemical formula
   - Where it is found or how it can be synthesized
   - What reactions it can be involved in
   - How it is used
   - Any risks associated with its use

Task 3: Key Maths Foundation

1. Write the following numbers in standard form:
   a. 4000
   b. 1 000 000

2. Express the following numbers to 3 significant figures:
   a. 57 658
   b. 0.045346

3. What is the empirical formula of a compound containing:

   0.479 g of titanium
   0.180 g of carbon
   0.730 g of oxygen