

## Chemistry

### Transition Tasks

Welcome to Turing House Sixth Form! The chemistry-bridging tasks here are designed to help you to review the core principles that you learnt during your GCSE's and to prepare yourself for the first topics that will be taught at the beginning of year 12.

**Subject content for the course can be found here:**

<https://www.ocr.org.uk/qualifications/as-and-a-level/chemistry-a-h032-h432-from-2015/specification-at-a-glance/>

**Task 1 – Gridlocks**

Use the following link from Royal Society of Chemistry (RSC) to solve these are Sudoku-style gridlock puzzles that consolidate learning and add an extra challenge of filling in the grid correctly!

<http://www.rsc.org/learn-chemistry/resources/gridlocks/level-2.html>

**Task 2 – Atomic orbitals**

You are familiar with the rules of electron shell filling but at A-level, it becomes more complex than this. The 'shells' can be broken down into 'orbitals', which are given letters: 's' orbitals, 'p' orbitals and 'd' orbitals. Read this article and have a go at the questions below: <http://www.chemguide.co.uk/atoms/properties/atomorbs.html#top>

Now that you are familiar with s, p and d orbitals try these problems, write your answer in the format: 1s<sup>2</sup>, 2s<sup>2</sup>, 2p<sup>6</sup> etc.

Q1.1 Write out the electron configuration of:

a) Ca b) Al c) S d) Cl e) Ar f) Fe g) V h) Ni i) Cu j) Zn k) As

Q1.2 Extension question, can you write out the electron arrangement of the following ions:

a) K<sup>+</sup> b) O<sup>2-</sup> c) Zn<sup>2+</sup> d) V<sup>5+</sup> e) Co<sup>2+</sup>

**Task 3 – Stoichiometry & Avogadro's mole**

Use the following link to learn about stoichiometry <http://www.viewpure.com/UL1jmJaUkaQ?start=0&end=0>

Watch the clip and then produce a mind map to include:

- What is a mole
- Avogadro's number
- Moles in equations
- Using moles (1-3)

**Task 5 – Complete the QI Challenge!** Make a short presentation/leaflet about a chemistry Idea, or chemist, of your choice – as long as it's Quite Interesting, it counts! RULES:

1. Should last no more than 5 mins, but no less than 3 mins!
2. Can be presented in PowerPoint format or handwritten leaflet
3. Must include reference to a published book or magazine article (even if you read about it on the internet!)
4. Must include your reasons for finding it Quite Interesting.

**Task 6 – Wider reading**

Read at least one copy of New Scientist over the summer holidays. Select one chemistry-related article and summarise the content for your peers. This should be at least 500-750 words long and you may do additional research on the topic in order to improve your understanding and the written content you produce.

Finally, an excellent book to read over the summer: Periodic Tales: The Curious Lives of the Elements (Paperback) Hugh Aldersey-Williams (ISBN-10: 0141041455).