# A Level Chemistry

Before you start the A Level Chemistry course in September you should have completed this transition pack to lay the foundations to your studies here at Windsor High School and Sixth Form. This pack covers the fundamentals from GCSE which you are expected to be competent at, plus some more to make you think like an A Level Chemisty. Over the summer holidays you should find time to go through this booklet and become confident with the concepts covered. In your first Chemistry lesson in September you will be tested on this work to see that you are committed to doing as well as you can in this subject, as well as assessing the effectiveness of your long term memory of such key, fundamental concepts, upon which your A Level course will build.

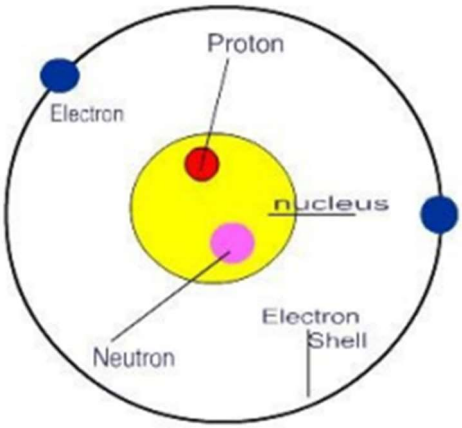
You may find the following textbooks useful in preparing and supporting your studies in A Level Chemistry: Head Start to A Level Chemistry (CGP) Maths Skills for A Level Chemistry 2nd Edition (Nelson Thornes), by Emma Poole and Dan McGowan

## Atomic Structure

https://www.youtube.com/watch?v=jNmNyy2BX4g

As you all know the atom is the fundamental unit of all elements. It is not the smallest thing that can exist. Scientists keep on coming up with smaller and smaller things. But we shall consider the atom as the building block of all elements. Bromine contains bromine atoms. Iron contains iron atoms. Sodium contains sodium atoms etc.

However, not all bromine atoms are the same and not all carbon atoms are the same but more of that later (isotopes). Atoms contain protons, electrons and neutrons.



The electrons stay in shells surrounding the nucleus and the protons and neutrons stay in the nucleus. Chemistry is basically to do with what happens to the electrons in an atom. Here is a table that you need to remember:

| Particles | Symbol | Charge | Location |
|---|---|---|---|
| Protons | p | Positive charge | Found in the nucleus |
| Neutrons | n | Neutral (no) charge | Found in the nucleus |
| Electrons | $e^-$ | Negative charge | Found orbiting the nucleus |

The periodic table gives us all the information that we need to work out the structure of an atom i.e. the number of electrons, protons and neutrons in any atom and where the electrons are.

Look up carbon and put the symbol and the little numbers next to it:

Carbon -

The smallest number is the number of protons in the atom (atomic or proton number). Since all atoms have an overall neutral charge the number of electrons must be the same. The big number is the atomic mass and is the number of all the bits in the nucleus. That is the number of protons and neutrons added together.

Now this is known, you should be able to work out the numbers of protons, electrons and neutrons in the carbon atom.

_____p

_____e

_____n

Repeat this for the following atoms and work out the number of protons neutrons and electrons:

1. Helium
2. Calcium
3. Lithium
4. Oxygen
5. Sulfur

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