Year 12 Bridging Work: Chemistry

Welcome to Chemistry – The Central Science.

The Course

The course you will be following is OCR Chemistry (B) Salters - H433. This is supported by York University and is a well-recognised course. You can visit the OCR website and explore the ethos of the course as well as view documents related to it.

http://www.ocr.org.uk/qualifications/as-a-level-gce-chemistry-b-salters-h033-h433-from-2015/

Assessment

The course is assessed through three written exams; two of these cover the chemical content of the course whilst the third assesses knowledge of practical skills. Chemistry is a practical subject, and throughout the 2 year course there are a number of assessed practical activities through which you can prove your competency in the lab and achieve a Practical Endorsement in Chemistry. This is in addition to your A level and is assessed entirely during lessons.

Organising your work

Please purchase a large, strong lever arch file complete with file dividers and lined A4 paper. You will be expected to bring this file with you to all lessons, together with the text book that we loan you. You will also need a calculator. We may ask to look at your file at any time and if it is not up to date we will ask you to attend supported study to ensure it is an adequate record of your work.

We will be setting regular independent study work which must be completed on time if you are to reach your potential in this course. It is your responsibility to meet deadlines – if you are aware of a reason why a deadline cannot be met you need to discuss this with your teacher in advance.

You have chosen one of the toughest subjects, but also the most rewarding. A good grade in Chemistry is valued by everyone, but only through hard work right from day one can you achieve this.

The following two tasks make up the Bridging Unit between GCSE and A level Chemistry. You should work on these tasks over the summer break and bring your report to your first lesson.

Task 1: Written report

How do we know about atoms?

Background

No one yet has been able to look inside atoms to see what they are really like. The typical picture of an atom we have in our minds is neither 'the truth' nor 'the right answer' – it is a good working model which helps to explain many phenomena.

Much evidence has been gathered to support the current model of an atom. The model may change as more evidence comes to light, and it is very likely to become more detailed.

We can sometimes explain things using only a simplified model of the atom. Thinking of atoms as tiny spheres is sufficient to explain the states of matter (the properties of solids, liquids and gases) – but this model is not detailed enough to explain why metals tend to react with non-metals. Models can be simple or elaborate, depending on the job they need to do. Keep this in mind as your ideas and understanding of chemistry develop.

What you do

How has the current model of the atom developed? Many scientists contributed to the sequence of gathering knowledge about the atom, but some made particularly important discoveries – they include:

- Joseph J. Thomson (key discovery 1897–1899)
- Hans Geiger, Ernest Marsden and Ernest Rutherford (key discovery 1909)
- Henry Moseley (key discovery 1913)
- James Chadwick (key discovery 1932).

You need to produce a written report (maximum 400 words in total) covering the following

Part A:

Outline the importance of each of these discoveries. You should include:

- what the scientists did
- what they found out
- what conclusions they drew from their results
- what evidence their findings provided for the current model of the structure of atom

Part B:

In your opinion, which discovery was the most significant and why?

Your report should contain a word count and a list of references of your sources of information.

See the additional guidance section on the next page for advice on writing your report.

Additional guidance:

- When you are carrying out your research, remember to make a note of where you found the information so you can include it in the list references at the end of your report. This should include enough detail that the person reading your report can find the original source to check its validity. You should use the Vancouver system of referencing.
- Do not "copy and paste" anything! The report needs to be a summation of your findings written in your own words.
- Don't waffle – Chemistry is a precise subject. Make sure you are putting across the key points in a clear and concise manner.
- Use diagrams / images where appropriate to enhance your report.
- Consider the presentation of your report so that it is easy to read and split into suitable sections.

Task 2: Required knowledge

Everything in Chemistry is linked, and the topics covered in year 12 build upon your knowledge from GCSE. It is essential that you spend time looking back at your GCSE work as it is assumed that you have a certain level of knowledge and understanding from the outset. The topics listed below may play a part in assessments throughout the course so you should ensure that you have revised them thoroughly:-

- Structure of the atom (including isotopes)
- The arrangement of the elements in the Periodic Table
- Ionic, covalent and metallic bonding
- Interpreting the formula of a compound
- Working out the formula of ionic compounds
- Balancing equations
- Relative atomic mass (A_r) and relative formula mass (M_r)
- Exothermic and endothermic reactions
- Alkanes and alkenes

In the new A level course, 20% of the marks available in the written examinations will be for the assessment of mathematical skills within a chemical context. Whilst the application of these skills will be taught throughout the course, you need to make sure that you are able to do the following:

- Carry out calculations using numbers in both ordinary and standard form
- Round the answer to a calculation to a given number of significant figures
- Calculate a mean
- Use ratios, fractions and percentages
- Change the subject of an equation
- Plot a graph using suitable axes and drawing a line of best fit.