



Summer Tasks July 2023

Summer Task Title / Instructions:

This pack contains a programme of activities and resources to prepare you to start an A level in Chemistry in September. This is aimed to be used after you complete your GCSE, throughout the remainder of the Summer term and over the Summer Holidays to ensure you are ready to start your course in September.

Seneca:

Register with Seneca, <https://senecalearning.com/en-GB/>

Your class connection code is **ak8la6fqpr** - note there is no need to print any tasks out as all tasks can be completed on line.

Revision tasks:

The outlined content below will be assessed in a mini assessment during the first week back. The content assessed will all be relevant to your week 4 initial assessment. Being secure in this GCSE content is essential in succeeding in this assessment. Please note, some of this content is triple only so if you did double this may be new to you. These areas have been highlighted using '**(T)**'. At the end of the table there are some useful websites and YouTube channels to help guide your revision.

Content	What you should know
Mass = mol x Mr	- Use the equation to calculate mass or moles
Avogadro's constant	- Know that Avogadro's constant tells you the number of particles (atoms, molecules, ions, electrons) found in one mole. - Know the value for this as 6.02×10^{23}
Gas volumes (T)	- Know that 1 mole of any gas at room temperature and pressure occupies 24dm^3 - Use the equation moles x 24 = volume
State symbols	- Know the 4 state symbols (g), (l), (s) and (aq)
Conversions	- Convert between cm^3 , dm^3 and m^3
Balancing equations	- Be able to balance equations
Know the products when an acid reacts with a metal	- Acid + metal \rightarrow salt and hydrogen
Name salts	- Know that the first half of the name of the salt comes from the metal and the second half comes from the acid. For example, sodium + hydrochloric acid would form sodium chloride salt. - Know that the following acids produce salts with the following endings. Hydrochloric acid

	forms chloride salts, nitric acid forms nitrate salts and sulfuric acid forms sulfate salts.
Know the following acids and their formulae	- Hydrochloric acid (HCl), sulfuric acid (H ₂ SO ₄) and nitric acid (HNO ₃)
Charges on ions	- Know that group 1, 2 and 3 in the periodic table form ions with the charges +, +2 and +3 respectively. - Identify that a transition metal followed by (II) shows is 2+ charge and followed by (III) is 3+ charge
Formulae	- Write formulae of ionic compounds, for example NaCl for sodium chloride or MgCl ₂ for magnesium chloride
Bonding	- Identify the types of bonding in compounds (metallic, covalent or ionic) - Know examples of giant covalent structures - Draw dot and cross diagrams for ionic and covalent bonding
Isotope	- Define the term isotope - Calculate the relative atomic mass from data on isotopes
Sub-atomic particles	- Calculate the number of protons, neutrons and electrons of elements in the periodic table

Websites:

- <https://www.youtube.com/@Freesciencelessons>
- <https://filestore.aqa.org.uk/resources/chemistry/specifications/AQA-8462-SP-2016.PDF>
- <https://www.bbc.co.uk/bitesize/examspecs/z8xtmnb>

Optional Tasks -

Feel free to attempt some of the following Future Learn MOOC Courses which are excellent.

Option 1: The Science of Medicines (est. 18 hours)

<https://www.futurelearn.com/courses/the-science-of-medicines>

Option 2: Discovering Science – Medicinal Chemistry (est. 10 hours)

<https://www.futurelearn.com/courses/discovering-science-medicinal-chemistry>

Option 3: Exploring Everyday Chemicals (est. 16 hours)

<https://www.futurelearn.com/courses/everyday-chemistry>

Option 4: Discovering Science: Chemical Products (est. 10 hours)

<https://www.futurelearn.com/courses/discovering-science-chemical-products>

If you have any issues accessing the summer task, please mail a.owen@springwoodhighschool.co.uk

Please ensure this task is completed on-line prior to your first lesson in September. Feel free to do multiple summer tasks if you are unsure on what subjects to study.

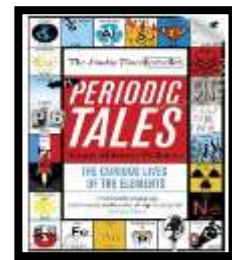
Suggested Book Recommendations

Periodic Tales: The Curious Lives of the Elements

(Paperback) Hugh Aldersey-Williams

ISBN-10: 0141041455

This book covers the chemical elements, where they come from and how they are used. There are loads of fascinating insights into uses for chemicals you would have never even thought about.

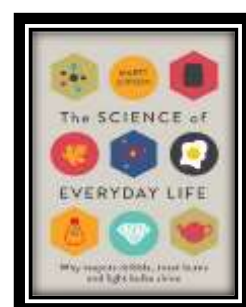


The Science of Everyday Life: Why Teapots Dribble, Toast Burns and Light Bulbs Shine

(Hardback) Marty Jopson

ISBN-10: 1782434186

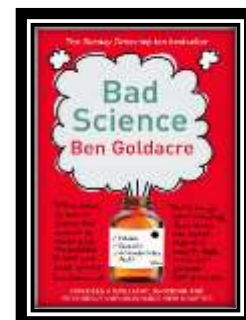
The title says it all really, lots of interesting stuff about the things around you home!



Bad Science (Paperback) Ben Goldacre

ISBN-10: 000728487X

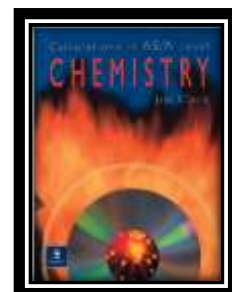
Here Ben Goldacre takes apart anyone who published bad / misleading or dodgy science – this book will make you think about everything the advertising industry tries to sell you by making it sound ‘sciency’.



Calculations in AS/A Level Chemistry (Paperback) Jim Clark

ISBN-10: 0582411270

If you struggle with the calculations side of chemistry, this is the book for you. Covers all the possible calculations you are ever likely to come across. Brought to you by the same guy who wrote the excellent chemguide.co.uk website.



Do not feel you need to buy the latest edition - You can pick up an old edition for a few pounds on ebay, gives you a real insight into how chemistry is used to solve everyday problems from global pollution through feeding to world to making new medicines to treat disease.

Suggested DVD clips to watch online



Rough science – the Open University – 34 episodes available. Real scientists are ‘stranded’ on an island and are given scientific problems to solve using only what they can find on the island. Great fun if you like to see how science is used in solving problems.

There are six series in total

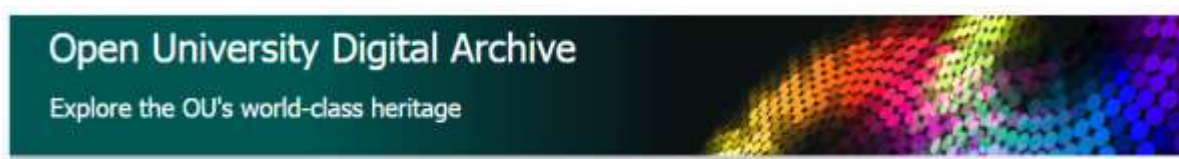
<http://bit.ly/pixlchemvid1a>

http://www.dailymotion.com/playlist/x2igjq_Rough-Science_rough-science-full-series/1#video=xxw6pr

or

<http://bit.ly/pixlchemvid1b>

<https://www.youtube.com/watch?v=IUoDWAt259I>



A thread of quicksilver – The Open University

A brilliant history of the most mysterious of elements – mercury. This program shows you how a single substance led to empires and war, as well as showing you some of the cooler properties of mercury.

<http://bit.ly/pixlchemvid2>

<https://www.youtube.com/watch?v=t46lvTxHHTA>



10 weird and wonderful chemical reactions

10 good demonstration reactions, can you work out the chemistry of any... of them?

<http://bit.ly/pixlchemvid3>

<https://www.youtube.com/watch?v=0Bt6RPP2ANI>