Summer Tasks July 2024

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. The Seneca task and revision task must be completed. Note the other tasks are optional.

Seneca:

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

SENECA

To join Miss Owen's class: Seneca Summer Task 2024

1. Go to the website: app.senecalearning.com/join-class
2. Sign up as a student
3. Type in the class code: l5ikdahzit

Or scan the QR code with your phone

If you have any issues registering with Seneca please email a.owen@springwoodhighschool.co.uk

Revision tasks:

The outlined content will be assessed in an assessment during the first week back. This is to ensure you are secure in your GCSE content. 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 combined science 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	Website links
Mass = mol x Mr	- Use the equation to calculate mass or moles	- https://www.bbc.co.uk/bitesize/guides/z3kg2nb/revision/1 - https://www.youtube.com/watch?v=-_-fNVmDwJk - https://www.youtube.com/watch?v=wPGVQu3UXpw
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 x 10^{23}	- https://www.youtube.com/watch?v=3y8YDlNeuRk
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	- https://www.youtube.com/watch?v=tYE-1nywlFs - https://www.youtube.com/watch?v=Qn5CgfokdWk
State symbols	- Know the 4 state symbols (g), (l), (s) and (aq)	- https://www.youtube.com/watch?v=h7ErVAZbeu0
Conversions	- Convert between cm^3, dm^3 and m^3	- cm^3 into dm^3 = divide by 1000 - dm^3 into cm^3 = multiply by 1000 - dm^3 into m^3 = divide by 1000 - m^3 into dm^3 = multiply by 1000 - cm^3 into m^3 = divide by 1000000 - m^3 into cm^3 = multiply by 1000000
Balancing equations	- Be able to balance equations	- https://www.youtube.com/watch?v=qquOFYOpdl0 - https://www.youtube.com/watch?v=vxCyzR6uETs
Know the products when an acid reacts with a metal	- Acid + metal → salt and hydrogen	- https://www.youtube.com/watch?v=ofw6oHSYGFI
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. - Know that the names for salts formed from hydrochloric acid, sulfuric acid and nitric acid.	- https://www.youtube.com/watch?v=Q_UvmN_MULE - Example: sodium + hydrochloric acid would form sodium chloride salt. - Nitric acid forms a nitrate salt - Sulfuric acid forms a sulfate salt - Hydrochloric acid forms a chloride salt
Know the following acids and	- Hydrochloric acid (HCl), sulfuric acid	- https://www.youtube.com/watch?v=ZWZTDiwOWiI

their formulae	(H_2SO_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	- https://www.youtube.com/watch?v=V28_L3gteDo
Formulae	- Write formulae of ionic compounds, for example NaCl for sodium chloride or $MgCl_2$ for magnesium chloride	- https://www.youtube.com/watch?v=tV8Cv2x0SD0
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	- https://www.youtube.com/watch?v=6DtrrWA5nkE - https://www.youtube.com/watch?v=5I_1jRGSR9E - https://www.youtube.com/watch?v=b1y2Q6YX1bQ - https://www.youtube.com/watch?v=d2ogZgGmMDY
Isotope	- Define the term isotope - Calculate the relative atomic mass from data on isotopes	- https://www.youtube.com/watch?v=iyCLDHG1PCA - https://www.youtube.com/watch?v=yOsMN89wIQc
Sub-atomic particles	- Calculate the number of protons, neutrons and electrons of elements in the periodic table	- BBC bitesize link

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

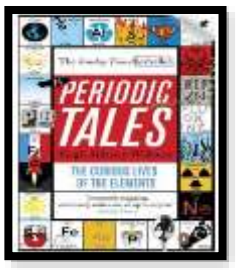
Option 4: Discovering Science: Chemical Products (est. 10 hours)

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

If you have any issues accessing the summer task, please email 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

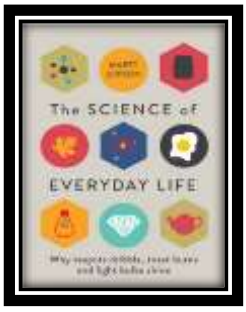


Periodic Tales: The Curious Lives of the Elements

(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.



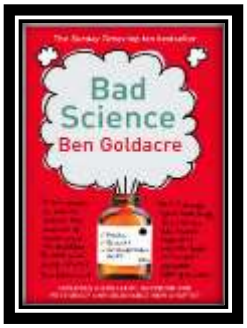
The Science of Everyday Life: Why Teapots Dribble, Toast Burns and Light Bulbs Shine

(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.

<u>Suggested DVD clips to watch online</u>

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=lUoDWAt259I

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 come 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