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Year 9 Overview 2023-24 – *Chemistry*				
Date	**Wk**	**Week**	**Units Studied & Learning Outcomes**	**Key Concepts & Assessment**
8 weeks (8 Lessons) (38 Days)				
Tues 5-Sep	A	1	<u>Overview of Unit/No. lessons</u> Separation techniques & Atomic structure (8 lessons) <u>Lesson **Sequence** of Content</u>: **1 & 2**. Atoms, elements, compounds & mixtures (2 lessons) **3 & 4**. Separating mixtures (2 lessons) **5 & 6.** Required Practical – Chromatography (2 lessons) **7.** Structure of the atom (1 lesson) **8**. Electron configuration (1 lesson)	
11-Sep	B	2		
18-Sep*	A	3		
25-Sep	B	4		
2-Oct	A	5		
9-Oct	B	6		
16-Oct	A	7		
23-Oct	B	8		

Prior	Current	Next
Year 7 – Separation techniques Year 8 – atoms, elements, compounds & mixtures Year 8 – structure of the atom	Understand separation techniques Understand chromatography Understand the structure of the atom	Year 10 – Purity Year 10 – atomic structure, configuration, isotopes & ions

- **GW:** recall what an atom, element, compound & mixture are and recall different separation techniques
- **BI:** describe what an atom, element, compound & mixture are and describe different separation techniques
- **EW:** explain the difference between atoms, elements, compounds and mixtures and evaluate different separation techniques

- Recall of knowledge, application of knowledge, identify patterns from observations, interpret data about Rf values

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Half-Term			**7** weeks (7 lessons) (34 Days)	
6-Nov	A	9	**<u>Overview of Unit/No. lessons</u>** Organic Chemistry (7 lessons) **<u>Lesson Sequence of Content</u>:** **1**. Electron configuration (1 lesson) **2**. Organic Chemistry – crude oil (1 lesson) **3**. Fractional distillation of crude oil (1 lesson) **4**. Fractional distillation – properties of fractions (1 lesson) **5 & 6**. Atmospheric pollutants – how they are produced and their environmental impact (2 lessons) **7**. Cracking (1 lesson) **8**. Revision (1 lesson)	
13-Nov	B	10		
20-Nov	A	11		
27-Nov	B	12		
4-Dec	A	13		
11-Dec	B	14		

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18-Dec	A	15	

Prior	Current	Next
Year 8 – combustion	Understand what crude oil is & how it is separated Recall atmospheric pollutants, how they form and the environmental impact Recall the process of cracking	Year 11 – organic Chemistry (S) Year 11 – reactions of alkenes (S)

- **GW**: recall what crude oil is and how it is separated, recall main atmospheric pollutants and state the main gases present in the early atmosphere and todays atmosphere
- **BI:** describe describe the process of fractional distillation, describe the environmental impact of each pollutant and describe how the proportion of gases changed over time
- **EW**: explain the process of fractional distillation, explain how different pollutants are formed and explain how the proportion of gases changed over time

- Recall of knowledge, application of knowledge, identify patterns from observations, interpret data, present word & chemical equations, name compounds, use models to represent compounds, practical skills, evaluate information

Christmas Holiday		6 weeks (6 lessons) (30 Days)	
8-Jan	B	16	**<u>Overview of Unit/No. lessons</u>** Reactions of metals (3 lessons) **<u>Lesson Sequence of Content</u>:** **1**. Revision (1 lesson) **2 & 3**. Exam & feedback (2 lessons) **4.** Conservation of mass during a chemical reaction (1 lesson) **5**. Group 1 – Alkali metals (1 lesson) **6**. Metals & acids (1 lesson)
15-Jan	A	ST1	
22-Jan	B	ST1	
29-Jan	A	19	
5-Feb	B	20	
12-Feb	A	21	

Prior	Current	Next
Year 8 – displacement & conservation of mass Year 8 – structure of the atom Year 8 – reactions of metals	Recall properties of elements Understand reactions of metals	Year 10 – groups of the Periodic table Year 10 – atomic structure, configuration, isotopes & ions Year 11 – reactions of metals & making soluble salts

- **GW**: recall what happens to mass in a chemical reaction, recall properties of group 1 metals and recall reactions of metals
- **BI**: describe why mass is conserved in a chemical reaction, describe chemical properties of group 1 metals and identify products of reactions of metals
- **EW**: explain conservation of mass in terms of atoms, explain properties of group 1 metals, explain reactions of metals

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Half-Term			5 weeks (5 lessons) (24 Days)
26-Feb	B	22	**<u>Overview of Unit/No. lessons</u>** Extracting Metals (5 lessons) **<u>Lesson Sequence of Content</u>:** **1.** Displacement (1 lesson) **2.** Mining (1 lesson) **3 & 4.**. Extraction of metals – copper from malachite (smelting) (2 lessons) **5.**. Extraction of metals – scrap iron and electrolysis of solutions (H) (1 lesson)
4-Mar	A	23	
11-Mar	B	24	
18-Mar	A	25	
25-Mar*			
	B	26	

Prior	Current	Next
Year 7 & 9 – separation techniques Year 8 & 9 – reactions of metals	Understand the process of extracting copper from its ore	Year 10 – metallic bonding Year 11 – reactions of metals & electrolysis

- **GW**: recall steps in extraction of copper from its ore
- **BI:** describe the steps in extraction of copper from its ore

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- **EW**: explain different methods of extracting copper and represent these using chemical equations
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Easter Holiday — 6 weeks (6 lessons) (29 Days)

15-Apr	A	27
22-Apr	B	28
29-Apr	A	29
6-May*	B	30
13-May	A	31
20-May	B	32

Overview of Unit/No. lessons
Earth's Atmosphere (3 lessons)

Lesson Sequence of Content:
1. Extraction of metals from low-grade ores (phytomining & bioleaching) (H) (1 lesson)
2. Earth's early atmosphere (1 lesson)
3. Todays Atmosphere (1 lesson)
4. Carbon Footprint (1 lesson)
5 & 6. Revision (2 lessons)

Prior	Current	Next
Year 8 – combustion	Understand how the Earth's atmosphere has evolved over time	N/A

- **GW:** state the main gases present in the early atmosphere and todays atmosphere
- **BI**: describe how the proportion of gases changed over time
- **EW:** explain how the proportion of gases changed over time
-

Half-Term — 7 weeks (7 lessons) (35 Days)

3-Jun	A	ST2
10-Jun	B	ST2
17-Jun	A	35
24-Jun	B	36
1-Jul	A	37
8-Jul	B	38
15-Jul	A	39

Overview of Unit/No. lessons
Environmental Science (5 lessons)

Lesson Sequence of Content:
1 & 2 – Exam & Feedback (2 lessons)
3. Sustainability (1 lesson)
4. LCA (1 lesson)
5 & 6. Environmental impacts of global climate change (2 lessons)
7. Testing for gases (1 lesson)

Prior	Current	Next
Year 8 – combustion & reactions of metals Year 8 – combustion	Understand the Greenhouse effect and its impact on global climate change Understand what a life cycle assessment is Understand what a carbon footprint is Understand what sustainability is Understand how to test for gases	Year 11 – reactions of metals Year 11 – testing ions

- **GW:** state which gases contribute to the greenhouse effect, state what sustainability is, state what a carbon footprint, state the 4 main gases

• **BI:** describe how the main greenhouse gases are produced, describe factors that contribute to our carbon footprint, describe ways of being sustainable, describe the tests for the 4 main gases • **EW:** explain the greenhouse effect in terms of short wavelength and long wavelength radiation, explain limitations of reducing the carbon footprint, explain the importance of sustainability, explain the test and positive result for each of the 4 gases	
(Total: 190 Days)	

* Bank Holidays

Prompt Questions

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Please revisit the prompts from last year:

- What are the Key concepts for this unit?
- How will it link to wider disciplinary knowledge/cultural capital: history, culture, authentic artefacts, music, art, literature?
- How does it build on prior knowledge and link to other units, concepts, years, GCSE?
- What is it intended students will have learned?
  - For each Unit? By the end of the Year?
    - GW: ; BI: ; EW
- Is it worth summarising in a knowledge organiser?
- **Assessment: how do you know they have learned the foundational concepts, curriculum and wider disciplinary knowledge? Does assessment look like GCSE light? Should it?**
- Skills used/learned
- Tier 2/3 vocabulary ((Etymology e.g. of Greek/Latin)