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| **Unit Overview: C4: Quantitative Chemistry** | | | | | | | | | |
| **Half- Term:** | AUT 1 | AUT 2 | SPR 1 | SPR 2 | SUM 1 | SUM 2 | | **No of Lessons:** | **11** |
| **Key Focus for Unit:**  *What is the key knowledge being delivered?*  *What is the intent of this unit?* | | | | | | | | | |
| Students will learn about representation of elements and compounds based on their relative masses. Students will tap into knowledge from year 9 Autumn 1 when they learnt about the periodic table and mass numbers.  A key mathematical skill is the ability of students to do basic computation of addition and multiplication to deduce the relative and percentage mass of substances.  A key aspect of quantitative chemistry is for students to do computation in a number of steps especially where balanced equations are concerned. Students will be engaged with concepts related to using balanced chemical equations to deduce the mass and volume of substances produced in a chemical reaction.  The intent of this unit is to make cross-curricular links to mathematical based equations to solve chemical problems related to elements and compounds in a chemical reaction. | | | | | | | | | |
| **Key Knowledge and Big Ideas:**  *What* ***Powerful Knowledge*** *and* ***Big Ideas*** *are explored in this Unit?*  *How have these progressed from previous learning? What* ***gaps in knowledge*** *have you identified from* ***baselining*** *and how are the being closed?* | | | | | | | | | |
| Conservation of mass: mass is neither created or destroyed in chemical reactions.  Students will build on their knowledge on the concepts of Autumn 1 year 9 when we looked on the periodic table.  Using the mass numbers of the elements on the periodic table, students will do calculations for relative formula mass (total mass of elements in a compound), moles and concentration.  Student baselines are assessed through retrieval practice in the starter. Gaps that are identified such as students’ inability to infer the correct relative mass from the periodic table.  To close gaps in this knowledge emphasis is placed on students first identifying where on the periodic table the relative mass is located. | | | | | | | | | |
| **Unit Assessment:**  *How will this unit be assessed?*  *What is the frequency of assessments – baselines etc?* | | | | | | | | | |
| Formative assessment:   * 6 mark extended writing task * Assesses powerful knowledge and literacy * Feedback and response time built into lesson   Summative assessment:   * 45minutes assessment * Assesses powerful knowledge through past exam questions * Feedback and response time built into lesson   Homework KS3/4:   * Weekly Educake assignments (Yr 7 -11) * Assesses powerful knowledge and literacy | | | | | | | | | |
| **Key Skills Explored** | | | **Vocabulary Selected for DVI** | | | | **Links to Previous Unit** | | |
| 1. Deducing relative mass of substances. 2. Calculating relative formula mass and molecular mass of substances. 3. Finding concentration of solutions and percentage yield. 4. Deducing mass and volume from equation (HT) 5. Calculating atom economy and percentage yield (HT) | | | Moles  Relative formula mass  Atom economy  Percentage yield  Concentration | | | | In Autumn 1 year 9 students explored the periodic table. | | |
| **Links to Careers/Employability** | | | **How does this unit prepare students for the next unit?** | | | | | | |
| Chemical Industry: Producing pharmaceutical products and also hair and body care products | | | Students’ successful completion of these learning objectives will prepare them for the unit of chemical changes where students will look at how the these chemical reactions can be classified such as neutralisation reactions. | | | | | | |

KO

Black (all)

Higher (Dark green)

Triple (Maroon / burgundy)