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| **Core Knowledge Map** | | | |
| Subject:  Triple - Chemistry | Year: 10 | | Term: 2 |
| What are we learning? | | | |
| C2.6 – Transition metals (rest of C2 taught in Yr 9)  C3 – Structure and bonding.  C5 – Chemical changes.  C7 – Energy changes.  C13 - The Earths’ atmosphere. | | | |
| How will I be assessed? | | | |
| Regular homework.  Mid topic assessment.  End of topic test. | | | |
| Big questions: | | | |
| How are atoms bonded together?  How do elements react with each other?  What are the names of the salts produced?  How can you represent a reaction graphically? | | | |
| How does this build on previous learning? | | How will this link to my future learning? | |
| Atoms and structure of atoms – Yr 7  Reactions – Yr 7  Acids and alkalis – Yr 8  Bonding – Yr 8 | | C6 – Electrolysis – Yr 10  C12 – Chemical analysis – Yr 11  C14 – Earth’s resources – Yr 11 | |
| Core knowledge: | | | |
| Atomic structure and bonding: Review from knowledge covered in year 9 which is fundamental to the understanding of the topics in year 10.  The properties of the transition elements and how they compare to other metals.  Reactivity of metals and the reactivity series. How to predict the result of reactions and write equations to illustrate what takes place and why. Naming the salts and the products of key reactions.  Neutralisation reactions and understanding strong and weak acids.  Endothermic and exothermic reactions.  Writing energy profiles to illustrate the transfer of energy in chemical reactions – endothermic and exothermic reactions and how to calculate bond energy.  Understanding how the reactions inside a battery and how a fuel cell works.  Main theories about how our atmosphere has developed, and main changes in our atmosphere over time and the likely causes of these changes. How the greenhouse effect operates and how this differs from climate change. The problems caused by increased amounts of pollutants in the air. | | | |

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| Key vocabulary: |  |
| **covalent bonding**  the attraction between two atoms that share one or more pairs of electrons  **delocalised electron**  bonding electron that is no longer associated with any one particular atom  **dot and cross diagram**  a drawing to show only the arrangement of outer shell electrons of the atoms or ions in a substance  **intermolecular forces**  the attraction between the individual molecules in a covalently bonded substance  **ionic bond**  the electrostatic force of attraction between positively and negatively charged ions  **activation energy**  the minimum energy needed for a reaction to take place  **bond energy**  the energy required to break a specific chemical bond  **endothermic**  a reaction that takes in energy from the surroundings  **exothermic**  a reaction that transfers energy to the surroundings  **reaction profile**  the relative difference in the energy of reactants and products  **incomplete combustion**  when a fuel burns in insufficient oxygen, producing carbon monoxide as a toxic product  **atmosphere**  the relatively thin layer of gases that surround planet Earth | **acid**  when dissolved in water, its solution has a pH value less than 7. Acids are proton (H+ ion) donors  **alkali**  its solution has a pH value more than 7  **base**  the oxide, hydroxide, or carbonate of a metal that will react with an acid, forming a salt as one of the products. (If a base dissolves in water it is called an alkali). Bases are proton (H+ ion) acceptors  **displacement reaction**  a reaction in which a more reactive element takes the place of a less reactive element in one of its compounds or in solution  **neutralisation**  the chemical reaction of an acid with a base in which a salt and water are formed. If the base is a carbonate or hydrogen carbonate, carbon dioxide is also produced in the reaction  **pH / pH scale**  a number which shows how strongly acidic or alkaline a solution is  **reactivity series**  a list of elements in order of their reactivity  **salt**  a compound formed when some or all of the hydrogen in an acid is replaced by a metal  **transition element**  element from the central block of the periodic table  **carbon footprint**  the total amount of carbon dioxide and other greenhouse gases emitted over  the full life cycle of a product, service or event |
| Need more help? | |
| BBC Bitesize Reactivity– <https://www.bbc.co.uk/bitesize/guides/zy7dgdm/revision/1>  BBC Bitesize Structure and bonding - <https://www.bbc.co.uk/bitesize/topics/zq6h2nb>  BBC Bitesize Endothermic and exothermic reactions - <https://www.bbc.co.uk/bitesize/guides/z2b2k2p/revision/1> | |