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| **Core Knowledge Map** | | | |
| Subject:  Combined Science - Chemistry | Year: 10 | | Term: 2 |
| What are we learning? | | | |
| C3 – Structure and bonding.  C5 – Chemical changes.  C7 – Energy changes. | | | |
| 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  C13 - The Earths’ atmosphere – Yr 10  C12 – Chemical analysis – 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.  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. | | | |

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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 | **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 |
| 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>BBC Bitesize Endothermic and exothermic reactions - <https://www.bbc.co.uk/bitesize/guides/z2b2k2p/revision/1> | |