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| **Core Knowledge Map** |
| Subject: Science**Atoms and the Periodic Table** | Year: 7  | Term: 2/6  |
| What are we learning? |
| Atomic structure, particle model, states of matter and changes in states of matter.Rate of diffusion and gas pressure.What elements and compounds are and how they can be represented in chemical formulae.How elements are organised in the periodic table. |
| How will I be assessed  |
| Retrieval practise questions.Mid topic long answer question.End of topic test. |
| Big questions: |
| What is an element and recall some chemical symbols?What is an atom and represent them using a particle diagram?How are the different states of matter described including their energy changes?How can diffusion be explained using the particle model?Can you name compounds using their chemical formulae and use it to determine their relevant formulae?How is the periodic table organised? |
| How does this build on previous learning? | How will this link to my future learning? |
| Particles and states of matter (solid, liquid, gas)Energy passes through these particles and changes the states of matter.Atoms now introduced to build upon the ‘particle’ model. | The particle theory is key concept that needs to be understood before moving onto learning about atoms and atomic structure. The periodic table will be revisited and used every year up to GCSE. The energy flow through particles and how this changes the state of a material is key knowledge in physics and chemistry. An introduction of formulae is also key in building a foundation for subsequent learning of chemical equations and calculations in future years. |
| Core knowledge: | Key vocabulary: |
| Secure knowledge of the particle arrangements in solids, liquids and gases.Reading of the periodic table and knowledge of ‘trends’ in groups 1, 7 and 0Movement of particles and properties of solids liquids and gasesUsing the particle diagram to explain diffusionUnderstanding energy changes involved in gas pressureKnowledge of some chemical symbols an dhow to use them in simple formulaeUnderstanding that atoms are made up of protons, neutrons and electrons | **Temperature** - A measure of how hot or cold something is, measured in degrees Celsius using a thermometer.**Melting** – The changing of state when a solid becomes a liquids**Freezing –** The changing of state when a liquid becomes a solid**Condensation** – The changing of state when a gas becomes a liquid**Evaporation** – The changing of state when a liquid becomes a gas**Chage of state** – The process used to describe the change from one state (solid, liquid or gas) to another**Boiling point –** The temperature a substance boils at**Diffusion -**The movement of particles from an area of high concentration to an area of low concentration, down a concentration gradient**Element –** A substance that cannot be broken down into any other substance. Elements are made up of one type of atom**Atom –** Unit of matter made up of protons, neutrons and electrons**Proton –** A subatomic particle that makes up part of the nuclei of atoms. They carry a positive charge**Neutron –** A subatomic particle that makes up part of the nuclei of atoms. They carry a neutral charge**Electron –** A subatomic particle that has a negative charge. Sits on the shells surrounding the nuclei of atoms. |
| Need more help? |
| BBC Bitesize – The particle model - [The particle model of matter - KS3 Chemistry - BBC Bitesize](https://www.bbc.co.uk/bitesize/topics/z9r4jxs)BBC bitesize – The periodic table - [Periodic table - KS3 Chemistry - BBC Bitesize](https://www.bbc.co.uk/bitesize/topics/zv9nhcw)KS3 ‘The period table ‘ revision video - [The Periodic Table - Key Stage Three (KS3) Chemistry Revision (Years 7, 8 & 9) - YouTube](https://www.youtube.com/watch?v=idpMOXhQFRs)Revision monkey on YouTube - <https://www.youtube.com/watch?v=2i0gv8btYBM&pp=ygUWdGhlIHBhcnRpY2xlIG1vZGVsIGtzMw%3D%3D> |