



Science Department – Year 9 Chemistry Curriculum and Assessment Map

	Half Term 1	Half-Term 2	Half Term 3	Half Term 4	Half Term 5	Half Term 6
Year 9		KS3 – Earth & Atmosphere		Atomic Structure	Structures and Bonding	
Fundamental Knowledge		1. Recall the composition and structure of the Earth. 2. Describe the three rock layers inside Earth as the crust, the mantle and the core. 3. Describe the sequence of processes where rocks change from one type to another. 4. Recall that sedimentary, igneous and metamorphic rocks can be inter converted over millions of years through weathering and erosion, heat and pressure, and melting and cooling. 5. Describe how carbon is recycled through natural processes in the atmosphere, ecosystems, oceans and the Earth's crust (such as photosynthesis and	9. State that the composition of the atmosphere has not changed much in the last 200 million years. 10. Describe the composition of the atmosphere and explain how the early atmosphere was formed. 11. Explain how the level of carbon dioxide in the atmosphere decreased and the level of nitrogen increased. 12. Describe how crude oil and natural gas formed and that limestone and coal are both sedimentary rocks. 13. Describe how the level of oxygen in the atmosphere increased and be able to write the equation for photosynthesis.	1. Describe the differences between atoms, elements and compounds. 2. Convert reactions into word and balanced chemical equations. 3. Define the term mixture and suggest suitable separation techniques for a mixture. 4. Label diagrams of an atom including the subatomic particles and identify their relative masses and charges. 5. State the approximate radius of an atom and a nucleus and express these values in standard form. 6. Relate the size and scale of atoms to objects in the physical world. 7. Use the names and symbols of the first 20	1. Describe what an ion is and how it is formed. 2. Explain how ionic bonding occurs between oppositely charged ions. 3. Explain ionic bonding in terms of electrostatic forces and loss and gain of electrons using dot and cross diagrams. 4. Describe the properties of ionic compounds and explain why they conduct electricity when molten or dissolved. 5. Describe what a covalent bond is and use diagrams to show how covalent bonds form between non-metal elements. 6. Draw diagrams to represent the bonding in the simple molecules of hydrogen, chlorine, hydrogen chloride,	11. Explain how the properties of nanotubes makes them suitable for their uses. 12. Be able to draw diagrams of the bonding in a metal and explain how the structure gives it useful properties. 13. State what an alloy is and use understanding of their structure to explain why they are harder than pure metals. 14. Be able to interpret and draw diagrams to represent various polymer molecules. 15. Use diagrams and state symbols to represent the 3 states of matter and explain the limitations of each model. 16. Recall that the bulk properties of a material aren't possessed by the

		<p>respiration) as well as human activities (burning fuels).</p> <p>6. Describe the evidence (impacts and consequences) that global warming caused by human activity is causing changes in climate.</p> <p>7. Describe what is meant by recycling or reusing a product and suggest advantages of doing so.</p> <p>8. Describe how materials such as glass or metals can be reused or recycled.</p>	<p>14. Interpret evidence and evaluate different theories on how Earth's atmosphere evolved.</p> <p>15. Recall what a greenhouse gas is and give examples such as methane, carbon dioxide and water vapour.</p> <p>16. Describe human activities that increase the levels of greenhouse gases in the atmosphere.</p> <p>17. Describe and explain how greenhouse gases help to keep the earth warm enough for life.</p> <p>18. Explain why many scientists believe that increases in the temperature of the earth are linked to human activities and that this will cause climate change.</p>	<p>elements in the periodic table and all of the elements in groups 1 and 7.</p> <p>8. Calculate the numbers of protons, neutrons and electrons in an atom using the mass and atomic numbers.</p> <p>9. Represent the electronic structures of the first 20 elements of the periodic table using numbers or diagrams.</p> <p>10. Describe the terms ion and isotope and explain the differences between them.</p> <p>11. Calculate the relative atomic mass of an element given the percentage abundance of its isotopes.</p> <p>12. Describe the contribution made by scientists to develop the model of the atom and evaluate the plum pudding and nuclear models.</p>	<p>methane, water, oxygen & nitrogen.</p> <p>7. Explain in terms of intermolecular forces why simple molecular substance have poor electrical conductivity, low melting and boiling points and are usually gases or liquids at room temperature.</p> <p>8. Recall that silicon dioxide, graphite and diamond are all giant covalent substances and explain why they have high melting and boiling points.</p> <p>9. Describe and explain the structure and properties of diamond, graphite and graphene.</p> <p>10. State what is meant by the term fullerene and give examples of these structures.</p>	<p>particles of that material.</p> <p>17. Use the particle model to explain changes of state and describe the relationship between both melting and freezing (melting point) and boiling and condensing (boiling point).</p> <p>18. Explain the relationship between the strength of forces between particles and how much energy it takes for a substance to melt or boil and predict using data the state of a substance at a particular temperature.</p>
Learning Checkpoint Tasks	<p>LC1 - Earth structure and the rock cycle</p> <p>LC2 – Reusing and Recycling materials</p>		<p>LC1 - Earth's Atmosphere</p> <p>LC2 - Global climate change</p>	<p>LC1 – Subatomic Particles</p> <p>LC2 - Ions and Isotopes</p>	<p>LC1 Ionic Bonding and Ionic Compounds</p> <p>LC2 - Covalent Bonding</p>	<p>LC1 - Simple Covalent Molecules</p> <p>LC2 – Giant Covalent Structures</p>
Common Assessment Task	KS3 YEAR 9 TRUST ASSESSMENT TERM 1 – End of KS3			CA2 – C1 Atomic Structure		

Interleaved Knowledge	Year 3 Rocks and Fossils Year 4 States of Matter and Water Cycle - Compare and group materials together, according to whether they are solids, liquids or gases. Observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C). Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.	Year 7 The Particle Model	Year 8 Periodic Table – State where metals and non-metals are found on the periodic table as well as important groups such as the alkali metals, noble gases and halogens.	Year 1,2 & 5 Materials - Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic.
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