Curriculum Plans: Year ___9___ (Chemistry)

	Topic	Knowledge: By the end of the unit students will know:	Skills: What skills will students have developed by the end of this unit?	Key terms: What new key terms and vocabulary will be learnt in this unit?	Summative Assessment: How will pupils be assessed in this unit?
Michaelmas 1	4.9 – Chemistry of the Atmosphere	**- the gases in the Earth's early atmosphere compared to today** **- How and why the levels of gases have changed** **- What the greenhouse effect is and which gases are involved** **- The effects of climate change** **- The names and effects of other pollutant gases**	Analysing data Environmental awareness	**Greenhouse gas:** *A gas that absorbs long wavelength infrared radiation given off by the Earth but does not absorb the suns radiation.* **Global warming:** *An increase in the temperature of the Earths surface.* **Water stress:** *A shortage of fresh water.* **Carbon footprint:** *The amount of carbon dioxide and other greenhouse gases given out over the full life cycle of a product, service or event.* **Carbon neutral:** *Fuels and processes whose use results in zero net release of greenhouse gases to the atmosphere.* **Acid Rain:** *Rainfall with a pH lower than 5.5 caused by man made pollutants – Sulfur dioxide and Nitrogen oxides* **Global Dimming:** *Particulates in the atmosphere causing less of the suns energy to reach the earths surface* **Particulates:** *Tiny solid particles in the atmosphere, most commonly soot*	Homework – both online (Seneca) and paper based. IS: Use of online resources including BBC Bitesize, physicandmathstutor.com, Seneca Learning and Kerboodle textbooks (KS3 and 4). Especially check the "Appendices" of the KS4 books for useful Maths and How Science Works sections. YouTube channels – Free Science Lessons, Primrose Kitten. S + C: Focus on using GCSE-level Kerboodle textbooks; BBC Science and Tech news sections https://www.bbc.co.uk/news, for independent research). Attempting past-paper GCSE questions on Chemistry. Revision: For topic test 1 (~40 mins).
Michaelmas 2					End of topic test

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Lent 1	4.10 – Potable and Waste water	**- How the Earth's natural resources are used** **- How Potable water can be produced** **- How waste water is treated**	Practical skills Applying Scientific understanding	**Finite resource:** *A resource that cannot be replaced once it has been used.* **Renewable resource:** *A resource that we can replace once we have used it.* **Sustainable development:** *Using resources to meet the needs of people today without preventing people in the future from meeting theirs.* **Desalination:** *Process to remove dissolved substances from sea water to make it potable* **Aerobic digestion:** *Process used to treat the effluent from sewage – requires oxygen* **Potable water:** *Water that is safe to drink* **Reverse osmosis:** *Process used to remove salt from sea water – uses lots of energy because a high pressure is needed* **Distillation:** *Process used to create potable water from sea water by heating it to evaporate and then condensing it. Uses lots of heat energy.* **Anaerobic digestion:** *Process used to treat the sludge from sewage in the absence of oxygen* **Disinfection:** *Process used to kill microbes to make water safe to drink (UV light or chlorine are often used)* **Screening:** *Removal of large solids* **Sedimentation:** *Removal of small solids by letting them settle*	Homework – both online (Seneca) and paper based. IS: Use of online resources including BBC Bitesize, physicandmathstutor.com, Seneca Learning and Kerboodle textbooks (KS3 and 4). Especially check the "Appendices" of the KS4 books for useful Maths and How Science Works sections. YouTube channels – Free Science Lessons, Primrose Kitten. S + C: Focus on using GCSE-level Kerboodle textbooks; BBC Science and Tech news sections https://www.bbc.co.uk/news, for independent research). Attempting past-paper GCSE questions on Chemistry. Revision: For topic test 2 (~40 mins).
Lent 2	4.1 – Atomic Structure	**- the differences between elements, compounds and mixtures** **- separation techniques for mixtures**	- Practical skills	**Atom:** *All substances are made of atoms! They are the smallest part of an element that can exist (about 0.1 nm in size)* **Element:** *A substance made of only one type of atom. Atoms of each element have a chemical symbol, eg O is oxygen.*	

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				Element: *A substance containing only one type of atom. Cannot be broken down into anything simpler by chemical methods* **Compound:** *contain two or more elements chemically combined in fixed proportions and can be represented by formulae using the symbols of the atoms from which they were formed.* **Mixture:** *consists of two or more elements or compounds not chemically combined together.*	
Trinity 1	4.1 – Atomic Structure	**-Understand how the structure of the atom was discovered** **-know the modern model of atomic structure** **-know the history of the discovery of the periodic table**	- recognise that scientific theories are amended to match new data	**Electron:** *negatively charged subatomic particle found in shells around the nucleus of an atom.* **Element:** *A substance containing only one type of atom. Cannot be broken down into anything simpler by chemical methods* **Energy level (shell):** *the region an electron occupies surrounding the nucleus inside an atom* **Atomic number:** *Number of protons in an atom. Atoms of the same element have the same number of protons.* **Mass number:** *The sum of protons and neutrons in an atom* **Isotopes:** *Atoms of the same element with a different number of neutrons.* **Relative atomic mass:** *The average mass of an atom of an element, taking into account the % of each isotope.* **Alkali metals:** *elements of group 1 of the Periodic table* **Metals:** *Found on the LHS of the periodic table. Form positive ions.* **Non-metals:** *Found on the RHS of the periodic table. Form negative ions.*	Homework – both online (Seneca) and paper based. IS: Use of online resources including BBC Bitesize, physicandmathstutor.com, Seneca Learning and Kerboodle textbooks (KS3 and 4). Especially check the "Appendices" of the KS4 books for useful Maths and How Science Works sections. YouTube channels – Free Science Lessons, Primrose Kitten. S + C: Focus on using GCSE-level Kerboodle textbooks; BBC Science and Tech news sections https://www.bbc.co.uk/news, for independent research). Attempting past-paper GCSE questions on Chemistry. Revision: For end of year test (~60 mins).
Trinity 2		**-Describe and explain trends in the periodic table**	- Be able to use the periodic table to explain observations		

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				Group: *vertical column of elements in the Periodic table with similar properties and the same number of outer shell electrons* **Noble Gases:** *the elements in Group 0 of the Periodic Table (including helium, neon, argon)* **Period:** *row of elements in the Periodic Table with the same number of electron shells* **Periodic Table:** *an arrangement of elements in order of increasing atomic number, forming groups and periods* **Diatomic Molecule:** *a molecule containing two atoms* **Displacement reaction:** *a reaction where a more reactive element takes the place of a less reactive element in a compound* **Halogens:** *elements in Group 7 of the Periodic table (including fluorine, chlorine, bromine and iodine)*	