Year 7 – Chemistry 2019/20	
Unit	Unit C1 Particles – 15 lessons Unit C2 Separation techniques- 12 lessons Unit C3 Chemical Reactions- 12 lessons
Assessment Objectives	AO1 - Demonstrate knowledge and understanding of: scientific ideas; scientific techniques and procedures (40%) AO2 - Apply knowledge and understanding of: scientific ideas; scientific enquiry, techniques and procedures. (40%) AO3 - Analyse information and ideas to: interpret and evaluate; make judgements and draw conclusions; develop and improve experimental procedures. (20%)
Description of the topic and key learning outcomes.	C1 Particles: This unit explores the fundamentals of chemistry. Students will learn about particles, atoms, elements and compounds. Their understanding will be further developed be learning about the history of the model of the atom and explore practical elements including states of matter and melting, freezing and boiling. The core questions students will explore in this unit are: 1. Lab safety- hazards, risks, chemical symbols and safely using Bunsen Burners. 2. What are the similarities and differences between solids, liquids and gases? a) Identifying solids, liquids and gases b) The particle model c) Particle arrangement in solids, liquids and gases (explaining this in terms of energy) d) Properties of solids, liquids and gases 3. What are the three changes of state? Describe them in terms of energy. How to they occur? a) Melting and freezing- Using the particle model to explain melting and freezing. b) Boiling- Using the particle model to explain boiling. Differences between boiling and evaporation. c) Evaporation and condensation d) Sublimation (higher band) 4. What is diffusion? a) Use the particle model to explain diffusion. b) Examples of diffusion 5. What are the factors that affect diffusion? a) Surface area, temperature, concentration b) Required practical C2 Separation techniques

This unit explores mixtures and the way in which mixtures can be separated. The core questions students will explore in this unit are:

1. What is a mixture?
   a) Define a mixture
2. What are the differences between pure and impure substances?
   a) Compare pure and impure substances
   b) Examples of pure and impure substances
3. What is dissolving?
   a) Describe the process dissolving using particle theory.
   b) Define solubility key words- solute, solvent, solution, soluble and insoluble.
4. What are the factors which affect solubility?
   a) Required practical- investigating solubility
5. What are the different separation techniques and how do they work?
   a) Filtration
   b) Crystallisation
   c) Distillation
6. Chromatography How does Brownian motion occur in gases?
7. Gas pressure

a) Use the particle model to explain gas pressure
   b) Factors which affect gas pressure

C3 Chemical Reactions

This unit explores the periodic table, chemical formula and chemical reactions. Students will learn about representing chemical reactions as word and symbol equations. The core questions students will explore in this unit are:

1.) What is the difference between chemical and physical changes?
   (a) Describe what a chemical reaction is.
   (b) Describe what a physical change is.
   (c) Describe the differences between a chemical reaction and a physical reaction.
2.) What is the difference between atoms, elements and compounds?
   (a) Describe what an atom, element and a compound are.
   (b) Compare how atoms, elements and compounds different.
   (c) Relate the difference between atoms, elements and compounds in terms of particles

	3.) What happens when a chemical reaction occurs? (a) Describe what happens when a chemical reaction occurs. (b) Pupils can describe that during chemical reactions, atoms swap places. 4) Chemical symbols and formulae for elements and compounds. (a) Identify chemical symbols. (b) Describe what chemical formula is. (c) Write word equations to represent chemical reactions. (d) Write symbol equations to represent chemical reactions (Higher) 5) Conservation of mass chemical reactions. a) Describe what conservation of mass is. b) Explain how is mass conserved in a chemical reaction. c) Explain why is mass conserved. All units: Be able to **use** basic scientific equipment to gain valid experimental results. To be able **to use knowledge** of variables to **plan investigations** and **draw conclusions** from them. To be able to **draw** and **interpret** graphs and tables.
Assessment objectives and skills being taught	A01 – Taught in all 3 units, assessed by progress/milestone assessments AO2 – Required practicals in each unit will require A02 assessed by progress/milestone assessments AO3 – The above investigations will include data analysis and conclusion writing. How language works will build in skills for A03
Milestone assessments	Accumulative end of unit assessments and end of half-term knowledge audits. Assessment 1 – Particles - Autumn term Assessment 2 – Particles and separation techniques – Spring term Assessment 3 – Particles, separation techniques and chemical reactions– Spring/ Summer term
CEIAG	Chemist, scientific researcher, engineering, plumbing, construction
RRSA	Article 6 Every child has the right to life. Governments must do all they can to make sure that children survive and develop to their full potential. Article 15 Every child has the right to meet with other children and to join groups and organisations, as long as this does not stop other people from enjoying their rights. Article 24 Every child has the right to the best possible health. Governments must work to provide good quality health care, clean water, nutritious food and a clean environment so that children can stay healthy. Richer countries must help poorer countries achieve this. Article 27 Every child has the right to a standard of living that is good enough to meet their physical, social and mental needs. Governments must help families who cannot afford to provide this. Article 29 Education must develop every child's personality, talents and abilities to the full. It must encourage the child's respect for human rights, as well as respect for their parents, their own and other cultures, and the environment. Article 30 Every child has the right to learn and use the language, customs and religion of their family, regardless of whether these are shared by the majority of the people in the country where they live

Wider curriculum links	Geography, Maths, English, Design and Technology
Wider reading	Sublimation and how it occurs. The discovery of the Atom and the differing theories.
Literacy programme	'How Language Works' – Breaking down key words/ Structuring comparison writing/ PEEL for conclusion writing/ / Structuring lab report writing. Assessed written problem solver in each unit. Wider reading- The Martian- KS3 reading project DART activities in each unit.
Independent Learning Tasks	Model activities – Making particle model/practical reports. Wider reading Knowledge organisers and self-assessment questions Revision activities

Year 8 – Chemistry 2019/20	
Unit	Unit C3The periodic table– 15 lessons Unit C4 Chemical reactions 2- 12 lessons Unit C5 The Earth- 6 lessons
Assessment Objectives	AO1 - Demonstrate knowledge and understanding of: scientific ideas; scientific techniques and procedures (40%) AO2 - Apply knowledge and understanding of: scientific ideas; scientific enquiry, techniques and procedures. (40%) AO3 - Analyse information and ideas to: interpret and evaluate; make judgements and draw conclusions; develop and improve experimental procedures. (20%)
Description of the topic and key learning outcomes.	C4 The periodic table and bonding This unit explores the fundamentals of chemistry, further developing students understanding of the periodic table, elements and bonding. The core questions students will explore in this unit are: 1) What is the structure of the atom? a) Describe the structure of the atom using labelled diagrams. b) Describe the charges and masses of subatomic particles. c) Describe the model of the atom developed over time. 2) What is the periodic table? a) Describe the periodic table and its importance in science. 3) What are the principles underpinning the Mendeleev Periodic table? a) Describe what groups and periods are in the periodic table. b) Describe how Mendeleev ordered elements in the periodic table c) Explain why Mendeleev left gaps in his periodic table. 4) How can patterns in reactions be predicted with reference to the periodic table? a) Describe the properties of the different groups in the periodic table. b) Describe the reactivity of group 1, group 7 and group 0 elements in the periodic table. 5) What are the varying physical and chemical properties of different elements? a) Describe the physical and chemical properties of group 1, group 7 and group 0 elements. b) Explain the reactivity of group 1, group7 and group 0 elements. 6) What are the properties of metals and non-metals? a) Describe where metals and non-metals are found on the periodic table. b) Describe the physical properties of metals and on metals. c) Link the properties and uses of different metals. 7) What are the chemical properties of metals and non-metal oxides with respect to acidity? a) Describe the properties of metal oxides.

b) Describe the properties of non-metal oxides.

C5 Chemical reactions 2

This unit explores chemical reactions in more detail looking at a variety of different chemical reactions and representing them using chemical equations. The core questions explored in this unit are:

1) How are atoms rearranged in chemical reactions?
   a) Describe what happens to atoms during chemical reactions.
   b) Describe what reactants and products are.
   c) Describe how mass is conserved in chemical reactions.
2) How are chemical reactions represented using formulae and equations?
   a) Represent chemical reactions using word equations.
   b) Represent chemical reactions using symbol equations.
   c) Write balanced symbol equations to represent chemical reactions.
3) What are combustion reactions?
   a) Describe what a combustion reaction is.
   b) Represent combustion reactions using word and balanced symbol equations.
4) What are thermal decomposition reactions?
   a) Describe what a thermal decomposition reaction is.
   b) Represent thermal decomposition reactions using word and balanced symbol equations.
5) What are oxidations reactions?
   a) Describe what an oxidation reaction is.
   b) Represent oxidation reactions using word and balanced symbol equations.
6) What are displacement reactions?
   a) Describe what a displacement reaction is.
   b) Explain how displacement reactions occur.
   c) Represent displacement reactions using word and balanced symbol equations.
7) What are neutralisation reactions?
   a) Describe what a neutralisation reaction is.
   b) Represent displacement reactions using word and balanced symbol equations.
8) How is the pH scale used to measure acidity/ alkalinity?
   a) Use the pH scale to measure the acidity and alkalinity of different substances.
9) What happens when acids react with metals?
   a) Describe reactions between metals and acids.

b) Represent reactions using word and balanced symbol equations.

10) What do catalysts do?
    a) Describe what a catalyst is.
    b) Explain how catalysts increase the rate of chemical reactions.

C6- The Earth

This unit explores the Earth and how humans are affecting the planet. Students will also develop their oracy skills and research skills through a presentation project. The core questions explored in this unit are:

1) What is the composition of the Earth?
    a) Describe the components that make up the Earth.
    b) Describe the properties of the composition of the Erath.
2) What are the stages of rock formation?
    a) Describe the stages of the rock cycle.
    b) Describe how sedimentary, igneous and metamorphic rocks are formed.
    c) Describe the properties of sedimentary, igneous and metamorphic rocks.
3) What resources on Earth have a limited source?
    a) Describe the resources that humans use that could eventually run out.
    b) Describe alternate resources to project finite resources on Earth.
4) What is the importance of recycling?
    a) Describe different methods of recycling.
    b) Explain the importance of recycling.
5) What is the carbon cycle?
    a) Describe the stages in the recycling of carbon.
6) What is the composition of the atmosphere?
    a) Describe what the Earth's atmosphere is formed of.
    b) Describe the percentages of each gas in the Earth's atmosphere.
7) How does human activity and the production of carbon dioxide impact the Earth's climate?
    a) Evaluate the impact of human activity on our planet.
    b) Suggests ways to reduce the impact of human activity on the planet.

	All units: Be able to **use** basic scientific equipment to gain valid experimental results. To be able **to use knowledge** of variables to **plan investigations** and **draw conclusions** from them. To be able to **draw** and **interpret** graphs and tables.
Assessment objectives and skills being taught	A01 – Taught in all 3 units, assessed by progress/milestone assessments AO2 – using a microscope, diffusion investigation, exercise investigation will require A02 assessed by progress/milestone assessments AO3 – The above investigations will include data analysis and conclusion writing. How language works will build in skills for A03
Milestone assessments	Accumulative end of unit assessments and end of half-term knowledge audits. Assessment 1 – The periodic table- Autumn term Assessment 2 – The periodic table and chemical reactions 2 – Spring term Assessment 3 – The periodic table and bonding, chemical reactions 2 and The Earth– Summer term
Wider reading	Sublimation and how it occurs. The discovery of the Atom and the differing theories.
CEIAG	
RRSA	
Wider curriculum links	
Literacy programme	'How Language Works' – Breaking down key words/ Structuring comparison writing/ PEEL for conclusion writing/ / Structuring lab report writing. DART reading activities in all units The Martian- KS3 reading project 'Decode it nows' to understand the meaning of tier 2 and tier 3 words.
Independent Learning Tasks	Model activities – Making particle model/practical reports. Knowledge organisers and self-assessment questions Revision activities