SCIENCE – CURRICULUM OVERVIEW 2020/21

TOPIC TITLE	TOPIC OVERVIEW	KNOWLEDGE & SKILLS	ASSESSMENT	WIDER LINKS
Year 8 Module 1: Human Organ Systems and Space and Magnetism	**Human Organ Systems** In this first biology topic students will explore: • What is the structure and function of the respiratory system? • What is the structure and function of the digestive system? • How can lifestyle choices affect our body? **Space and Magnetism** In this first physics topic students will explore: • How does the Earth's position in Space affect us? • How does gravity affect the Earth? • How does magnetism affect the Earth?	**Human Organ Systems** • Structure and function of the respiratory system • Outline of circulatory system in relation to respiratory system. • Effects of drugs, smoking and exercise on the respiratory system. • Diseases of the respiratory system • Structure and function of the digestive system • Dietary needs including malnutrition. **Space and Magnetism** • The Solar System and beyond. • The cause of day and night and seasons. • Eclipses and satellites • Gravity in the Solar System • Magnetic fields. **Key skills** • Data interpretation • Evaluation • Drawing scatter graphs	Baseline Skills Assessment: 30 minutes multiple choice test in first few weeks. Weekly knowledge retention tests will take place fortnightly testing retention of the knowledge organiser. Students will complete two 30 minute assessments per topic in the middle and the end of each topic. These tests contain a mixture of recall and application questions based on the current topic.	<u>Literacy:</u> Writing evaluations. Writing about data. <u>Numeracy:</u> Interpreting data in tables. Drawing scatter graphs. <u>Thinking Skills:</u> Consideration of the development of ideas about the Solar System and how ideas change. <u>Key links to other units:</u> Year 7 - Cells **Human Organ Systems** Year 10 – Organisation Year 7 – Forces **Space and Magnetism** Year 9 – Forces in Balance Year 10 - Magnets Year 11 – Forces in Motion
YEAR 8 Module 2: Light and the Periodic Table	**Light** In this second physics topic students will explore: • How do light waves transfer energy? • What happens during reflection and refraction? • How can we see in colour? **The Periodic Table** In this first chemistry topic students will explore: • What are atoms and elements? • How can we represent chemicals using symbols?	**Light** • Use the terms transparent, translucent and opaque correctly. • Describe the properties of different longitudinal and transverse waves. • State the law of reflection. • Describe refraction. • Explain observations where coloured lights are mixed or objects are viewed in different lights. **The Periodic Table** • The definitions of atom and element • The difference between physical and chemical properties.	Weekly knowledge retention tests will take place fortnightly testing retention of the knowledge organiser. Students will complete two 30 minute assessments per topic in the middle and the end of each topic. These tests contain a mixture of recall and application questions based on the current topic. At the end of this module, students will sit two assessments based on all topics covered so far in Years 7 and 8. This is to begin to prepare students for the linear	Literacy: Chemical symbols and capital letters Numeracy: Measuring angles Averages and range <u>Key links to other units:</u> Year 7 – Sound, Energy **Light** Year 7 – Particles Year 9 – Energy Transfers Year 11 - Waves

	• What are the main groups in the Periodic Table?	• Writing equations for reactions. • The structure of the Periodic Table • The key properties of the alkali metals, halogens and noble gases. Key skills • Interpreting results – the mean, the range and anomalies • Using a ray box • Drawing ray diagrams	exam based terminal assessment they will encounter at GCSE.	**The Periodic Table** Year 9 – Atomic structure Year 9 – Periodic Table
YEAR 8 Module 3: Chemical Reactions and Motion	**Chemical Reactions** In this second chemistry topic students will explore: • What are molecule, compounds and mixtures? • How can we classify chemical reactions? • How is energy related to chemical reactions? **Motion** In this third physics topic students will explore: • How do you calculate speed? • How do you show motion on a graph? • How do forces affect motion?	**Chemical Reactions** • Know the definitions of molecule, compound and mixture. • Represent compounds using formulae. • Recognise neutralisation, combustion, thermal decomposition, oxidation and displacement reactions • Explain energy changes in terms of exothermic and exothermic reaction • Understand the idea of the reactivity series. **Motion** • Apply the equation to calculate speed. • Draw and interpret distance-time graphs • Describe acceleration. • Draw and interpret speed-time graphs. • Explain what is meant by unbalanced forces. • Explain how balanced and unbalanced forces affect motion. • Apply ideas of forces to parachutes. **Key skills** • Putting numbers into equations. • Choosing values for control variables to allow for accurate measurement. • Graphing – line graphs	Weekly knowledge retention tests will take place fortnightly testing retention of the knowledge organiser. Students will complete two 30 minute assessments per topic in the middle and the end of each topic. These tests contain a mixture of recall and application questions based on the current topic.	Literacy: Writing chemical equations Describing graphs. Numeracy: Substitution into equations. Drawing line graphs Thinking Skills: Ethical issues touched on related to reproduction (contraception). <u>Key links to other units:</u> Year 7 – Acids and Alkalis Year 8 – Periodic Table **Chemical Reactions** Year 7 – Forces Year 9 – Salts Year 10 – Structure and Bonding **Motion** Year 9 – Forces in Balance Year 10 – Energy Extras Year 11 – Forces in Motion
YEAR 8 Module 4: Energy Transfers and Healthy Living	**Energy Transfers** In this fourth physics topic students will explore: • How is energy transferred as heat? • What is efficiency?	**Energy Transfers** • What is the difference between heat and temperature? • Explain conduction, convection and radiation.	Weekly knowledge retention tests will take place fortnightly testing retention of the knowledge organiser. Students will complete two 30 minute assessments per topic in the middle and the end of each topic. These tests	Literacy: Writing to explain. Numeracy: Calculating surface area Ratio Mathematical prefixes

	• How do we know how much energy different appliances use? **Healthy Living** In this second biology topic students will explore: • What are the different types of microorganism? • Why is diffusion important? • How does our body fight diseases?	• Explain how heat transfers can be prevented using insulation. • Calculate the power in kWh of an appliance. • Understand efficiency and how it can be improved. **Healthy Living** • Describe the characteristics of yeast, bacteria and protoctists. • Explain the effect of surface area on the rate of diffusion. • Explain how diseases can be spread. • Describe an immune response **Key skills** • Calculate SA:V ratios • Revision of variables • Use of agar plates • Using prefixes with units.	contain a mixture of recall and application questions based on the current topic. At the end of this module, students will sit two assessments based on all topics covered so far in Years 7 and 8. This is to begin to prepare students for the linear exam based terminal assessment they will encounter at GCSE.	<u>Key links to other units:</u> Year 7 - Energy **Energy Transfers** Year 9 – Energy Transfers Year 9 – Electricity at Home Year 10 - Electricity Year 7 – Cells **Healthy Living** Year 9 – Health and Disease Year 10 – Ecology and Classification Year 11 – Responding to Change.
YEAR 8 Module 5: Variation and Genetics and Planet Earth	**Variation and Genetics** In this third biology topic students will explore: • What is DNA and what does it do? • What is variation and how is it useful? • What is natural selection? **Planet Earth** In this third chemistry topic students will explore: • What are the different types of rock found on Earth? • What is the carbon cycle and how do humans affect it? • How can we live sustainably?	**Variation and Genetics** • The structure and discovery of DNA • Different types of variation • The causes of extinction • Darwin's finches **Planet Earth** • The properties of rocks • Sedimentary, igneous and metamorphic rocks and the rock cycle • The carbon cycle • Human activities that affect the carbon cycle. • Sustainable development including LCA and plastics. **Key skills** • Appreciation of the social and economic factors that affect science • Graphing and data handling.	Weekly knowledge retention tests will take place fortnightly testing retention of the knowledge organiser. Students will complete two 30 minute assessments per topic in the middle and the end of each topic. These tests contain a mixture of recall and application questions based on the current topic. Students will also sit an end of Year 8 assessment covering all of the topics taught in Years 7 and 8. This is to begin to prepare students for the linear exam based terminal assessment they will encounter at GCSE.	<u>Key links to other units:</u> Year 7 – Variety of Life **Variation and Genetics** Year 10 – Ecology and Classification Year 11 – Genetics and Evolution. **Planet Earth** Year 9 – Chemistry of the Atmosphere Year 11 – Organic Chemistry Year 11 – Using Resources