Year 7 Science Curriculum End Points and Key Vocabulary

	Autumn Term 1	Autumn Term 2	Spring Term 1	Spring Term 2	Summer Term 1	Summer Term 2
Units of Work	Project 'Is Milton Keynes a Green Place to Live?'	1. Matter – Particles 2. Forces – Contact Forces Ecosystems - Interdependence	1. Forces – Gravity and the Universe 2. Organisms – Cells	1. Matter – Separating Mixtures 2. Earth – Rocks	1. Electromagnets – Electricity and Charge 2. Reactions – Metals and Non-Metals	1. Genes – Human Reproduction 2. Waves – Light Ecosystems – Plant Reproduction
Ethos Links	**Sust.** – links to local and global environment, uses of resources **STEM** – recording data, measuring, data processing **MK** – local woodlands, local environment **Char.** – group work	1. **STEM** – explanations using models 2. **STEM** – explaining observable phenomena **STEM** – explaining relationships. **Sust.** – effects of humans on the ecosystem, endangered and extinct species	1. **STEM** – explaining observable phenomena 2. **STEM** – comparing organisms	1. **STEM** – explaining using models, designing methods to purify water **2. STEM**	1. **STEM** – Designing useful circuits, explaining how circuits work **STEM** – justifying uses of materials, **MK** – choices of materials in a local context	1. **STEM. Char.** – when discussing sensitive issues 2. **STEM** – explaining observable phenomena **STEM** – planning for food. **Sust.** – linking plant reproduction to endangered species and linking to plant security
Learning End Points	By the end of this unit students will know and understand: - How different factors affect journey times - How transport options affect the environment - How chemicals can be used to support our everyday life - How to calculate speed, distance and time using the equation speed=distance/time (MS3c) - How to convert m to km, cm and mm (WS4.3, WS4.5)	By the end of this unit students will know and understand: <u>Matter – Particles</u> - The arrangement, movement and energy in a solid, liquid and gas - Identify and describe the changes of state - How the properties of solids, liquids and gases can be explained with particle theory - What diffusion is and the factors that affect the rate of diffusion - What causes gas pressure and explain how it can be changed. <u>Forces – Contact Forces</u>	By the end of this unit students will know and understand: <u>Forces – Gravity and the Universe</u> - How to describe gravity and weight as forces and describe the factors that affect it. - How to calculate mass, weight and gravitational field strength using the equation W=mg - The objects found in the universe, how they move and what causes this. <u>Organisms – Cells</u> - The main organelles found in animal and plant cells, and the	By the end of this unit students will know and understand: <u>Matter – Separating Mixtures</u> - What makes a solution, including solvent and solute, and what it means to be soluble - The factors affecting solubility - How mixtures are separated depending on physical properties, including filtration, evaporation, distillation and paper chromatography - How separating techniques work in terms of particles <u>Earth – Rocks</u>	By the end of this unit students will know and understand: <u>Electromagnets – Electricity and Charge</u> - How objects become charged with static electricity - What electrical conductors and insulators are and how they are used - How circuit symbols are used to draw circuit diagrams, including series and parallel circuits - What current and potential difference are and how they	By the end of this unit students will know and understand: <u>Genes – Human Reproduction</u> - Key organs in the male and female reproductive systems and their functions - Explaining how the structure of each organ allows it to complete its function - The difference between puberty and adolescence, what causes puberty and what key changes will be

	- How to convert minutes to seconds and hours. (WS4.5)	- How forces affect our lives, both usefully and not usefully. - That forces can be contact or non-contact - How to represent balanced and unbalanced forces on force diagrams and use them to calculate resultant force and direction. - The factors affecting friction and air resistance - The factors affection squashing and stretching. <u>Ecosystems – Interdependence</u> - What producers, consumers and decomposers are and the role they have in an ecosystem - How food chains are used to represent energy transfers - What bioaccumulation is and how this can impact humans - The causes of a predator-prey relationship and how this can be represented on a graph.	function of each cell organelle - The main features of specialised cells and how these features support it to do its job. - The key parts of a microscope and how to use one - The differences between unicellular and multicellular organisms	- How weathering and erosion occur and the different causes of them. - Properties of the different types of rock, including sedimentary, igneous and metamorphic, and how they are formed. - How rocks are transformed from one type to another in the rock cycle	change in series and parallel circuits - What resistance is, how to calculate it from current and potential difference <u>Reactions – Metals and Non-Metals</u> - The properties of metals and non-metals - How metals react with oxygen and acids to form new substances - What a displacement reaction is and how these occur	identified in girls and boys. - The key events in the menstrual cycle - The biological processes of fertilisation, where this occurs and how it leads to pregnancy. - The key stages of pregnancy and birth, what could cause someone to be infertile and how this can be treated. - How pregnancy can be prevented, explaining how each method works in terms of barrier, chemical or surgical methods, and advantages and disadvantages of each. <u>Waves – Light</u> - How light travels, how this can lead to shadows and how it allows us to see - How different materials emit, transmit or absorb light - Law of reflection - What causes refraction and dispersion - How we see colour in terms of the spectrum and reflection - Key features of the eye and how this allows us to see.

						<u>Ecosystems – Plant Reproduction</u> - The key parts of a flower and how these take part in reproduction. - How pollination occurs and what things can affect it. - The stages of fertilisation of a flower. - Methods of seed dispersal including water, wind and animal, and how seeds are adapted for their method of dispersal.
	By the end of this unit students will be able to: - Draw a results table (WS3.1) - Plot data on a graph (MS4c) - Plan a method (WS2.2, WS2.3) - Identify risks in a practical method (WS2.4) - Make simple conclusions based on experimental data (WS3.6, WS3.5) - Evaluate the impact of our choices on the environment - Calculate a mean average (MS2b) - Use simple equipment safely to make observations (WS2.4)	By the end of this unit students will be able to: <u>Matter – Particles</u> - Use particle theory to explain simple observations (WS1.2) - Use models to explain observations - Make predictions - Interpret observations and data, identifying patterns in observations <u>Forces – Contact Forces</u> - Plot data on a graph (MS4c) - Make observations and record data in a table - Identify patterns in a graph to write a conclusion	By the end of this unit students will be able to: <u>Forces, Gravity and the Universe</u> - Explaining why some things in science are difficult to study and why theories develop over time (WS1.1) - Appreciate the power and limitations of science (WS1.3) - Use mathematical skills to perform calculations including standard form and orders of magnitude, with support. (MS1b, MS2h) <u>Organisms – Cells</u> - Draw from a microscope, displaying correct technique along with	By the end of this unit students will be able to: <u>Matter – Separating Mixtures</u> - Use particle theory to explain observations (WS1.2) - Use specific practical equipment in isolation with due regard for health and safety (WS2.4) <u>Earth – Rocks</u> - Use models to explain scientific concepts (WS1.2)	By the end of this unit students will be able to: <u>Electromagnets – Electricity and Charge</u> - Use models to explain scientific concepts - Describe limitations of models (WS1.2) - Use a range of electricity equipment to make and record observations - Complete simple calculations using a given formula (MS3c) <u>Reactions – Metals and Non-Metals</u> - Record qualitative data from observations Use word equations to represent chemical reactions.	By the end of this unit students will be able to: <u>Genes – Human Reproduction</u> - Communicate effectively when discussing sensitive issues - Consider ethical and moral issues of using science to solve problems around infertility. (WS1.3, 1.4) <u>Waves – Light</u> - Measure angles using a protractor - Manipulate equipment such as ray boxes, mirrors and prisms to make observations

	- Use simple equipment to make measurements - Use simple formulae to calculate speed Use dissection equipment with appropriate regard for health and safety	<u>Ecosystems – Interdependence</u> - Draw conclusions from simple evidence and construct a reasoned argument Interpret a graph showing two sets of data.	magnification and stain information. - Develop an understanding of scale			<u>Ecosystems – Plant Reproduction</u> Explain the wider implications of changes to the environment and consider how science can be used to help (WS1.4, WS1.5)
Key Vocabulary	Beaker Bunsen burner Speed Average Chemical Dissolve	Particle Evaporate Condense Freeze Melt Sublimation Diffusion Friction Air resistance Resultant force Predator Prey Bioaccumulation	Weight Gravity Mass Orbit Planet Star Galaxy Solar system Cell Nucleus Cell membrane Cytoplasm Chloroplast Microscope	Solute Soluble Solvent Distillation Chromatography Sedimentary Metamorphic Igneous	Voltage Potential difference Current Resistance Series Parallel Reactant Product Reaction Displacement Thermal conductor Thermal insulator Electrical conductor Electrical insulator Sonorous Ductile Malleable	Reproduce Fertile Fertilisation Implantation Menstruation Transparent Translucent Opaque Reflect Refract Stigma Style Pollen Filament Anther