KEY STAGE THREE CURRICULUM KNOWLEDGE AND SKILLS MAPPING TOOL

SUBJECT: Science

	KNOWLEDGE	SKILLS (All Units)
YEAR 7	• **Organisms**: Breathing, cells and digestion • **Reproduction:** Human and plant reproduction • **Particles:** The properties and the arrangement of particles in solids, liquids and gases • **Atoms and Elements:** Representing substances using models and formulae from the Periodic Table, combining elements • **Alien:** Forces, mass and weight, the Solar System and the Universe; the conditions required for life to exist • **Electricity:** Magnets, simple electrical circuits and static electricity	• Interpreting graphs, identifying patterns and drawing conclusions from data • Planning investigations, understanding the key variables, recording observations and drawing valid conclusions based on the data • Precision of measuring instruments • Risk assessment and identifying hazards • Use of scientific models and an appreciation of their limitation • Consideration of the benefits and risks of technological developments • Research into contemporary issues in science

Different classes will study the units in a different order

	Organisms	Reproduction	Particles	Atoms and Elements	Alien	Electricity
Content	Structure of cells and specialised cells. Breathing and gas exchange. Diets, food groups and the digestion systems.	The menstrual cycle and human reproduction from fertilization to birth. Plants adaptations to disperse seeds. Plants reproduce sexually.	Changes of state. Simple particle model. Linking the particle model to properties. Diffusion. The difference between chemical and physical changes.	Chemical symbols and formulae for elements and compounds. Identifying elements and compounds. Naming compounds. Writing chemical formula.	Contact and non-contact forces. Balanced and unbalanced forces. Weight and mass. The Solar System and the Universe.	Making series and parallel circuits. Circuit components. Current, voltage and resistance. Magnetic and non-magnetic materials, and magnetic fields. Static electricity.
Skills	Describe patterns in data. Use data to make predications. Interpret graphs and bar charts.	Describe patterns in data. Use data to make predications. Interpret graphs and bar charts.	Making measurements. Using models. Risk assessment and working safely.	Graph plotting and interpreting results.	Interpreting graphs, identifying patterns in data and drawing conclusions from data.	Using models. Making predications. Identifying hazards. Planning practical procedures.
Assessment	End of unit test.	End of unit test.	End of unit test.	End of unit test.	Alien test and Hubble Trouble written task.	Electricity test.

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<table>
<tr><td rowspan="8">YEAR 8</td><td colspan="2">KNOWLEDGE</td><td colspan="5">SKILLS (All Units)</td></tr>
<tr><td colspan="2">Ecosystems: Respiration in cells, photosynthesis in plant cells and food webs, and interdependence
Genes: Variation, evolution and inheritance
Separating techniques: The differences between pure substances and mixtures, and techniques for separating mixtures
Reactions: The reactions of metals and their compounds; the reactions of acids
Energy: Energy transfer, the conservation of energy, generating electricity and the energy stored in food
Earth: Structure of the Earth and the Rock Cycle. Composition of the Atmosphere and the Carbon Cycle</td><td colspan="5">Interpreting data from graphs
Sketch graphs
Develop arguments from evidence to support a theory
Draw bar charts
Make predictions based on evidence
Complete research
Use data to critique claims made by other scientists
Use appropriate techniques during practical work, paying attention to health and safety
Write a word equation to represent a chemical reaction
Write a balanced chemical equation using formulae and numbers
Use the pH scale to describe acids and alkalis
Describe what a chemical formula means</td></tr>
<tr><td colspan="7">Different classes will study the units in a different order</td></tr>
<tr><td></td><td>Ecosystems</td><td>Genes</td><td>Separating Mixtures</td><td>Chemical Reactions</td><td>Energy</td><td>Earth</td></tr>
<tr><td>Content</td><td>Respiration as a series of chemical reactions.
Photosynthesis in plant cells.
Organisms in a food webs depending on each other for nutrients.</td><td>Variation between individuals of the same species.
Inherited and environmental variation.
Natural selection and biodiversity.
Chromosomes, DNA and genes.</td><td>Mixtures/pure substances.
Using the following separation techniques:
Filtration
Evaporation
Distillation
Chromatography
Solutions – use of key words when dissolving substances.
Conservation of mass.</td><td>Energy changes in reactions.
Thermal decomposition.
Metals and acids.
The reactivity series and displacement.
Conservation of mass.
Balancing equations.
Acids, alkalis and pH.
Neutralisation.</td><td>Energy transfer from a higher temperature to a lower temperature.
The conservation of energy and Sankey diagrams.
Advantages and disadvantages of different methods for generating electricity.</td><td>Structure of the Earth and the Rock Cycle.
Igneous, sedimentary and metamorphic rocks
Composition of the Atmosphere and the Carbon Cycle.</td></tr>
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	Skills	Interpret graphs and recognise trends and patterns in data. Develop arguments from evidence to support a theory.	Interpret graphs and recognise trends and patterns in data. Develop arguments from evidence to support a theory	Use scientific vocabulary, terminology and definitions. Interpret graphs to draw conclusions.	Write a word equation. Write a balanced chemical equation. Predict, describe and explain observations in chemical reactions. Recognise patterns in results.	Interpret graphs and recognise trends and patterns in data. Develop arguments from evidence to support an idea. Energy calculations and algebra skills.	Interpret graphs and recognise trends and patterns in data. Develop arguments from evidence to support an idea.
	Assessment	End of unit test.	End of unit test.	End of unit test on separating mixtures.	End of unit test on chemical reactions.	End of unit test.	End of unit test.