

Year 7 Science	Emerging	Developing	Secure	Mastery
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Term 1				
<b>C1 – States of Matter</b>	Identify basic lab equipment. Use laboratory equipment safely to gather evidence.	Name and draw equipment and explain obvious laboratory risks.	Select and draw apparatus accurately; explain safety precautions.	Use particle diagrams to explain the differences in energy and forces between the particles in different states of matter, accounting for differences in their properties.
	Represent particles as circles.	Compare the properties of solids, liquids and gases.	Draw circle diagrams to demonstrate the differences between the arrangement of particles in solids, liquids and gases, and describe their different properties.	Use the particle model to explain latent heat and how impurities affect melting and boiling points.
	Label a diagram with correct changes of state.	Use correct terminology and the particle model to describe changes of state, including evaporation.	Interpret and explain data relating to melting and boiling points.	Make predictions, using ideas about particles, about factors affecting the rate of diffusion.
	Understand that smells can spread across a room.	Describe how diffusion occurs in liquids and gases.	Explain observations relating to diffusion in terms of particles.	Use data to draw conclusions about solubility.
	Know that some solids dissolve in liquids and some do not.	Describe the process of dissolving and the effect of temperature.	Describe methods for producing crystals of different sizes.	Identify the uses and advantages of distillation.
	Understand the processes of evaporation and condensation.	Describe the process of distillation.	Explain the physical processes involved in distillation.	

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<b>C2 – Periodic Table</b>	<p>Identify basic lab equipment. Use laboratory equipment safely to gather evidence.</p> <p>Give some examples of elements.</p> <p>Identify metals and non-metals.</p> <p>Understand what a compound is.</p>	<p>Name and draw equipment and explain obvious laboratory risks.</p> <p>Give some examples of elements, locate them in the Periodic Table and use the table to identify metals and non-metals.</p> <p>Identify metals and non-metals using data and suggest a reason for applications.</p> <p>Describe an example of a compound and represent a chemical reaction using a simple model.</p>	<p>Select and draw apparatus accurately; explain safety precautions.</p> <p>Give examples of elements and explain how they are organised in the Periodic Table.</p> <p>Explain the properties of elements using data and why they are used for different applications.</p> <p>Explain how compounds can be formed and explain a chemical reaction using simple models.</p>	<p>Define elements, use symbols, link the organisation of the Periodic Table to element features.</p> <p>Select and justify the use of elements for different purposes, based on their properties.</p> <p>Make links between simple models of compounds and chemical symbols.</p>
<b>C3 – Earth Structure</b>	<p>Identify basic lab equipment. Use laboratory equipment safely to gather evidence.</p> <p>Identify the main gases found in air.</p> <p>Identify that there are three types of rocks.</p>	<p>Name and draw equipment and explain obvious laboratory risks.</p> <p>Describe the composition of air.</p> <p>State what each type of rock is made from.</p>	<p>Select and draw apparatus accurately; explain safety precautions.</p> <p>Describe the process of making Igneous, Sedimentary and Metamorphic rocks.</p>	<p>Explain in detail the rock cycle.</p>

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Term 2				
<b>B1 – Cells</b>	<p>Identify an animal and a plant cell.</p> <p>Recognise that substances are able to move in and out of cells.</p>	<p>Recognise and label normal and specialised animal and plant cells.</p> <p>Use a microscope to make observations.</p> <p>Recognise the role of diffusion in living organisms.</p>	<p>Describe the functions of the nucleus, cell membrane, mitochondria, cytoplasm, cell wall, vacuole and chloroplast.</p> <p>Describe the process of diffusion, and name the materials needed by and those removed from the cell.</p>	<p>Explain how different structures help organisms to survive.</p> <p>Explain the factors that affect diffusion.</p>
<b>B2 - Physiology</b>	<p>Name some common organs in the human body.</p> <p>Understand that our bodies are supported by a skeleton.</p> <p>Recognise that our skeleton is made of many bones joined together.</p> <p>Know that muscles can contract and relax.</p> <p>Understand that some muscles are stronger than others.</p>	<p>Put the terms cell, tissue, organ and organ system in order of hierarchy, naming some common tissues, organs and organ systems in humans.</p> <p>Put the terms cell, tissue, organ and organ system in order of hierarchy, naming some common tissues, organs and organ systems in humans.</p> <p>Identify the main bones of the skeleton.</p>	<p>Explain the terms cell, tissue, organ and organ system and the function of all the main organ systems in the body.</p> <p>Describe the functions of the skeleton.</p> <p>Identify some different joints and explain the role of tendons and ligaments in joints.</p> <p>Identify muscles that contract to cause specific movements.</p>	<p>Describe some benefits and disadvantages of multicellular organisms, compared to singlecelled organisms.</p> <p>Compare the movement allowed at different joints and explain why different types of joints are needed.</p> <p>Explain how muscles work antagonistically to bring about movement and evaluate a model.</p>

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		Describe the role of skeletal joints.  Recall that muscles contract to move bones at joints.		
<b>B3 – The body</b>	Name some of the parts of the human reproductive systems.  Understand that substances pass from a mother to her developing foetus.	Name the main parts of the male and female human reproductive systems.  Recognise changes that occur during adolescence. Identify substances passed on from a mother that will either help or harm her developing foetus.	Describe the structures and functions of the main parts of the male and female human reproductive systems.  Describe how fertility problems may arise. Describe how the menstruation cycle works.	Explain how the male and female reproductive structures are designed for fertilisation.  Describe methods to combat infertility.
<b>B4 - Biodiversity</b>	Label some of the parts of a flowering plant.  Recognise the role of a seed.	Describe the role of different parts of the flowering plant in reproduction.  Recognise different seed-dispersal methods by the structures of the seeds.	Explain the differences in insect pollinated and insect-pollinated plants.  Identify key variables that need to be controlled when investigating the effect of seed design on seed dispersal.	Explain the advantages and disadvantages of different seed.

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Term 3				
<b>P1 - Electricity</b>	<p>Understand that static causes objects to stick together.</p> <p>Understand that there are different ways of measuring electricity.</p> <p>Use an ammeter and a voltmeter.</p>	<p>Describe what is meant by current, voltage and resistance.</p> <p>Describe the relationship between current, voltage and resistance in a qualitative way.</p> <p>Make measurements of current and voltage in series and in parallel circuits.</p>	<p>Use data to identify a pattern between current, voltage and resistance.</p> <p>Use models and simple calculations to explain and compare what happens to the current and voltage in series and parallel circuits.</p> <p>Make comparisons between components in series and parallel circuits.</p>	<p>Use data and a mathematical relationship between current, voltage and resistance, to carry out calculations.</p> <p>Use calculations to make predictions about current and voltage in series and parallel circuits.</p> <p>Explain the advantages of using series or parallel circuits, including the domestic ring main as an example.</p>
<b>P2 – Energy</b>	<p>Name common types of energy.</p> <p>Know that energy can be transferred.</p> <p>Recall that energy is measured in joules.</p>	<p>Recognise that energy is transferred by a range of different processes.</p> <p>Identify simple energy transfers.</p> <p>Recall the units used to measure quantities of energy, including joules,</p>	<p>Interpret and draw energy transfer diagrams for a range of different energy transfers.</p> <p>Explain that energy can be neither created nor destroyed (the Law of Conservation of Energy).</p> <p>Explain the relationship between energy transfer and temperature difference.</p>	<p>Use Sankey diagrams to explain a range of energy changes and demonstrate that all energy is always accounted for.</p> <p>Carry out calculations of quantities of stored and transferred energy.</p>

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	State that hot objects give out heat.	calories and kilowatt-hours.  Describe the transfer of energy by heating and cooling.		Compare the transfer of energy by conduction and by radiation.
<b>P3 - Space</b>	<p>Know that some forces push and some pull.</p> <p>Know that gravity is the force that stops us floating into space.</p> <p>Understand that the earth moves around the sun.</p> <p>Place the earth, moon, sun and galaxy in order of relative size.</p>	<p>Identify gravity as a pulling force and distinguish between mass and weight.</p> <p>Describe the movement of the sun, earth and moon in relation to each other.</p> <p>Describe the differences between the sun, other stars and galaxies.</p> <p>Describe the effects that the tilt of the earth's axis has on earth.</p>	<p>Describe what is meant by mass, explain how gravity forces affect weight, explain why weight varies from planet to planet.</p> <p>Explain the effects of the relative motion of the sun, earth and moon.</p> <p>Explain the causes of daily seasonal changes.</p>	<p>Explain weight as a gravitational attraction between masses which decreases with distance.</p> <p>Use scientific concepts to explain the difference between mass and weight.</p> <p>Explain the relative movement of the sun, earth and moon using the idea of gravity.</p> <p>Explain what would happen if the earth's axis was tilted by a different amount.</p>