

Advent 1
Science Year 4: Changing State (Chemistry)

Scripture Link: Exodus 15:8

National Curriculum Objective

Enquiry Question: What are the 3 states of matter and how do they react?

	Lesson 1	Lesson 2	Lesson 3
Learning intention for each lesson	To explore 'matter'.	To make predictions about different types of matter.	To investigate what happens to some materials when they are heated or cooled.
Recall and Retrieval	Know the difference between an object and a material. know that friction and gravity are forces and what they do. Know what a magnet is and how it works	know that there are 3 states of matter; solid, liquid, gas and what defines them know how they react when placed in a container.	Know What magnet poles are and what is meant by attract and repel. know how to group materials according to whether they are solids, liquids or gases.
Sequence of substantive knowledge throughout the lesson	<p>I know what 'matter' is</p> <p>I know that there are 3 states of matter; solid, liquid, gas (and plasma Y4 do not do plasma).</p> <p>I know that a liquid is a material whose particles have gaps between them.</p> <p>That a liquid takes the shape of the container it is in.</p> <p>I know that a solid is a substance that holds its shape because its particles are packed closely together.</p> <p>I know that a gas is a substance whose particles are constantly moving rapidly.</p> <p>I know how to group materials according to whether they are solids, liquids or gases.</p> <p>I know how they react when placed in a container.</p>	<p>I know how to make a prediction.</p> <p>I know that different types of matter behave in different ways.</p>	<p>I know that some materials change when they are heated or cooled.</p> <p>I know the melting and boiling points of water.</p>

Key Skills/disciplinary knowledge	<ul style="list-style-type: none"> • asking relevant questions and using different types of scientific enquiries to answer them; • setting up simple practical enquiries, comparative and fair tests; • making systematic and careful observations • gathering, recording, classifying and presenting data in a variety of ways to help in answering questions; • recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables; • reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions; • using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions; • identifying differences, similarities or changes related to simple scientific ideas and processes 	<ul style="list-style-type: none"> • asking relevant questions and using different types of scientific enquiries to answer them; • setting up simple practical enquiries, comparative and fair tests; • making systematic and careful observations • recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables; • reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions; • using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions; • identifying differences, similarities or changes related to simple scientific ideas and processes 	<ul style="list-style-type: none"> • asking relevant questions and using different types of scientific enquiries to answer them; • setting up simple practical enquiries, comparative and fair tests; • making systematic and careful observations • gathering, recording, classifying and presenting data in a variety of ways to help in answering questions; • recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables; • reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions; • using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions; • identifying differences, similarities or changes related to simple scientific ideas and processes
Key Vocabulary	Solid, liquid, gas, state, change,	Solid, liquid, gas, ice	Solid, liquid, gas, state, change, melting, freezing, melting point, boiling point, ice, water, water vapor, steam, heated, heat, cooled, cool, temperature, melt, melting point, freeze, freezing point, solidify,
Main teaching activity <i>If the school has another short term planning format, this does not need to be included.</i>			
Scaffolding	You could provide pictures/word bank or children could draw the items If recording is a barrier. LA children could work in a group with TA/Teacher and complete this as a group- take picture and put in books.	This may need to be guided for some children and use STEM sentences. Encourage partner work.	You can provide LA children statements of the process to order if they are struggling to record ideas or even record what they say.
Challenge		All children should be able to access this- use MA reader to read for children who cannot access the text. Can be discussed in groups but completed individually.	Challenge - children draw diagrams to accompany the explanation.

Diversity Links			
Catholic Social Teaching Principles	Stewardship – All things are connected		Stewardship – All things are connected
British Values			
Wider links			

Advent 1
Science Year 4: Changing State (Chemistry)

	Lesson 4	Lesson 5	Lesson 6
Learning intention for each lesson	To observe a liquid changing to a solid.	To investigate evaporation and condensation.	To observe the different states in the Water cycle.
Recall and Retrieval	know that some materials change when they are heated or cooled. know the melting and boiling points of water. know that different types of matter behave in different ways.	Explain what is meant by freezing and solidifying know that there are 3 states of matter; solid, liquid, gas and what defines them Explain what is meant by opaque, transparent and translucent	know that evaporation is what happens when a liquid is heated. know that condensation is when water vapour (gas) changes into a liquid. know how a compass works
Sequence of substantive knowledge throughout the lesson	That if a liquid changes into a solid by lowering the temperature it is called freezing. That if a liquid changes to a solid by increasing the pressure, it is called solidifying. .	I know that evaporation is what happens when a liquid is heated. I know that condensation is when water vapour (gas) changes into a liquid.	I know what is meant by The Water Cycle Heat makes water evaporate. That water from the lakes turns into a gaseous substance (water vapour). Condensation is the process by which a gas turns back into a liquid. Condensation is the opposite of evaporation. I know the part played by evaporation and condensation in the Water cycle
Key Skills/disciplinary knowledge	<ul style="list-style-type: none"> • asking relevant questions and using different types of scientific enquiries to answer them; • setting up simple practical enquiries, comparative and fair tests; • making systematic and careful observations • gathering, recording, classifying and presenting data in a variety of ways to help in answering questions; • recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables; 	<ul style="list-style-type: none"> • asking relevant questions and using different types of scientific enquiries to answer them; • setting up simple practical enquiries, comparative and fair tests; • making systematic and careful observations • gathering, recording, classifying and presenting data in a variety of ways to help in answering questions; • recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables; 	<ul style="list-style-type: none"> • asking relevant questions and using different types of scientific enquiries to answer them; • reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions; • using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions; • identifying differences, similarities or changes related to simple scientific ideas and processes

	<ul style="list-style-type: none"> • using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions; • identifying differences, similarities or changes related to simple scientific ideas and processes 	<ul style="list-style-type: none"> • using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions; • identifying differences, similarities or changes related to simple scientific ideas and processes 	
Key Vocabulary	Solid, liquid, state, change, melting, freezing, melting point, boiling point, evaporation, temperature, ice, water, heated, heat, cooled, cool, temperature, degrees Celsius, melt, melting point, freeze, freezing point, solidify, boil, boiling point,	evaporation, temperature, water, water vapor, steam, heated, heat, cooled, cool, temperature, degrees Celsius, boil, boiling point, evaporate,	Solid, liquid, gas, state, change, evaporation, temperature, water cycle, water, heated, cooled, temperature, evaporate, condense, condensation, precipitation,
Main teaching activity <i>If the school has another short term planning format, this does not need to be included.</i>			
Scaffolding	Any children who are still struggling with the 3 states could work with TA to embed language and focus more on each state and relate to real life substances.	Fair test planning sheet available	Children to work in mixed ability groups.
Challenge			
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British Values			
Wider curriculum links			

