


Science Knowledge Organisers

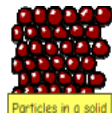
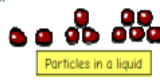

Science Focus

Changing States

Year 3

Autumn 1

Key Knowledge	
On Earth, all matter exists in one of three different states : solid, liquid or gas.	☐ Solids ☐ Liquids ☐ Gases
Melting	<ul style="list-style-type: none"> Solids stay in one place and when something melts, it has been changed from a solid to a liquid through heating
Ingredients	<ul style="list-style-type: none"> cocoa mass is separated into cocoa solids and cocoa butter, and then these two ingredients are recombined in different amounts, depending on the type of chocolate being made.
Heat	<ul style="list-style-type: none"> heat always travels from warmer to cooler places
What does changes of state mean?	What a material changes from one material type to another, we say 'it has changed state.'
	
Boiling	Water boils at exactly 100°C
Melting	Different solids melt at different temperatures
Freezing	Water freezes at 0 degrees Celcius (0°C)
Evaporation and Condensation	Water can evaporate and condense at any temperature. But, the warmer it is the faster the evaporation takes place
Possible Experiences	
Observing that some materials change state when they are heated or cooled. Investigate what is needed to make chocolate melt. Look at changes when chocolate is cooled then reheated. (cooking based)	

Key Vocabulary	
Temperature	The measure of warmth or coldness of something.
Degrees celsius	The common scale in the UK for measuring temperature
Solidify	To make or become hard or solid
Thermal insulator	Insulators are materials which do not conduct heat very well and so we can use them to control heat and keep things hot or cold.
Diagrams and Symbols	
<p>Melting and boiling</p> <p>In a solid, the particles have little energy and are packed tightly together. This causes solids to tend to keep their shape.</p>  <p style="text-align: right; font-size: small;">Particles in a solid</p> <p>When we heat a solid, we are giving the particles more energy. When the particles get enough energy, they stop being packed together and start to slide over one another. The solid has become a liquid. When a solid is heated and changes state to become a liquid, it is called melting. The temperature at which this happens is called the melting point. Melting points vary from material to material. The melting point of water is 0°C.</p>  <p style="text-align: right; font-size: small;">Particles in a liquid</p>	
<p>We can reverse these changes. If we cool a gas, the particles don't have enough energy and so the gas becomes a liquid. This is called condensation. If we keep cooling the liquid, the particles don't have enough energy and the liquid becomes a solid. This is called freezing.</p> 	

Greater Depth Thinking

Show understanding of a concept by using scientific vocabulary correctly

Apply knowledge in familiar related contexts, including a range of enquiries

Work scientifically to explore the concept with a greater degree of independence

Consider a 'Big Question' to answer over a series of lessons to connect the learning