Richmond Hill Primary School - Science

Topic: States of Matter	Year: 4	Strand: Chemistry

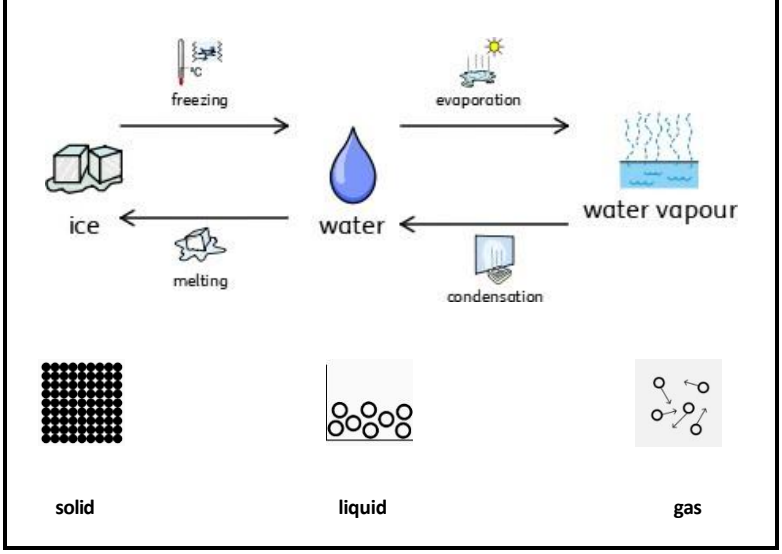
What should I already know?

- Why some materials are used for certain purposes because of their **properties**
- The **water cycle,** and the **processes** of **evaporation, condensation** and **precipitation.**

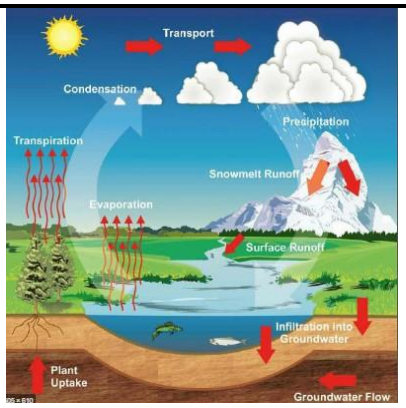
Vocabulary

condensation	small drops of water which form when **water vapour** or steam touches a cold **surface**, such as a window
cooling	lowering the **temperature** of something
evaporation	to turn from liquid into gas; pass away in the form of **vapour**.
freezing	If a **liquid** or a substance containing a **liquid freezes**, it becomes **solid** because of low **temperatures**
freezing point	The **freezing point** of a particular substance is the **temperature** at which it **freezes**. The **freezing point** of water is 0°C.
gas	a form of matter that is neither **liquid** nor **solid**. A **gas** rapidly spreads out when it is warmed and contracts when it is **cooled**.
heating	raising the **temperature** of something
liquid	in a form that flows easily and is neither a **solid** nor a **gas**.
melting	to change from a **solid** to a **liquid** state through heat or pressure
melting point	The **melting point** of a particular substance is the **temperature** at which it **melts**.
particles	a tiny amount or small piece
precipitation	rain, snow, sleet, dew, etc, formed by **condensation** of **water vapour** in the atmosphere
process	a series of actions used to produce something or reach a goal.
properties	the ways in which an object behaves
solid	having a firm shape or form that can be measured in length, width, and height; not like a **liquid** or a **gas**
temperature	a measure of how hot or cold something is
vibrations	when something **vibrates,** it shakes with repeated small, quick movements
water cycle	the **process** by which water on the earth **evaporates**, then **condenses** in the atmosphere, and then returns to earth in the form of **precipitation**.
water vapour	water in the **gaseous** state, esp when due to **evaporation** at a **temperature** below the boiling point

Diagram



What will I know by the end of the unit?

What is a **particle?**	• **Particles** are what materials are made from. • They are so small that we cannot see them with our eyes. • The **properties** of a substance depend on what its particles are like, how they move and how they are arranged • **Particles** behave differently in **solids, liquids** and **gases.**
What is a **solid?**	• In the **solid** state, the material holds its shape. • **Solids** have **vibrating particles** which are closely packed in and form a regular pattern. • This explains the fixed shape of a solid and why it can't poured. • **Solids** always take up the same amount of space.
What is a **liquid?**	• In the **liquid** state, the material holds the shape of the container it is in. • This means that **liquids** can change shape, depending on the container. • **Liquids** have **particles** which are close together but random. • **Liquid particles** can move over each other. • **Liquids** can be poured.
What is a **gas?**	• In the **gas** state, **particles** can escape from open containers. • **Gases** have **particles** which are spread out and move in all directions.
What happens to the **particles** in water when it is **heated** or **cooled**?	• When water (in its **liquid** form) is **heated**, the particles start to move faster and faster until they have enough energy to move about more freely. The water has **evaporated** into a **water vapour.** • When water is **cooled**, the particles start to slow down until a solid structure (ice) is formed. The water has **frozen.** • The **temperature** at which water turns to ice is called the **freezing point.** This happens at 0°C.
What is the **water cycle?** (see separate knowledge organiser Geography - The Water Cycle)	

Investigate!

- Group materials according to their states.
- Explain the **particle** structure of **solids, liquids** and **gases.**
- Explore the effect of **temperature** on substances such as chocolate, butter, cream. Compare their **melting points** and place them in a table.
- Research the **temperature** at which materials change state, for example, when iron **melts** or when oxygen **condenses** into a **liquid**.
- Observe and record **evaporation** over a period of time, for example, a puddle in the playground or washing on a line, and investigate the effect of **temperature** on washing drying or snowmen melting.
- Analyse and interpret different forms of data (tables, graphs) to show the effects of **temperature** on states of matter.
- Present what you know about the water cycle using a variety of skills using appropriate vocabulary (The Water Cycle Knowledge Organiser).
- Observe **evaporation** and **condensation** in action by using bowls of water and mirrors /glass (The Water Cycle Knowledge Organiser).