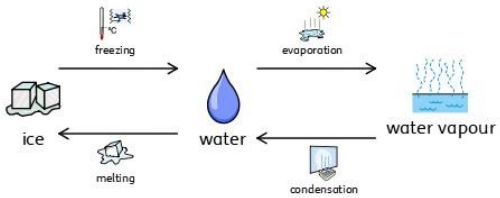
River View Primary School		
Topic: States of Matter	**Year: 4**	**Strand: Chemistry**

What should I already know?

- Materials are used for different **purposes** based on their **properties**.
- The properties that make materials suitable for a particular use.
- How you can change the shape of materials.

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. • **Particles** behave differently in **solids, liquids** and **gases.** 
What is a solid? 	• In the **solid** state, the material holds its own shape. • **Solids** have **vibrating particles** that are **attached** and **fixed** in place. • This is why solids **can't be poured.**
What is a liquid? 	• In the **liquid** state, the material holds the shape of the container it is in. • Liquids have **particles** which are **weakly attached** so they **can move** over and past each other. • This is why liquids **can be poured**.
What is a gas? 	• In the **gas** state, the material can escape from open containers. • Gases have **particles** which are **not attached** so they **spread out** and move in all directions. • This is why gases fill all the available space.
What happens when **a liquid** is **heated**?	• When a **liquid** is **heated**, the **particles** start to **move faster** until they have enough energy to move about more freely. • The liquid **evaporates** becoming a **gas**.
What happens when a liquid is **cooled**?	• When **liquid** is **cooled**, the particles start to slow down until a solid structure is formed. • The liquid has **frozen**. • The temperature at which water turns to ice is called the freezing point. This happen s at 0°C. 

Vocabulary – properties of materials	
condensation	small drops of water which form when water vapour or steam touches a cold surface.
continuous data	can take any value including decimal numbers e.g. temperature
cooling	decreasing the temperature
discrete data	is measured in whole numbers with nothing in between e.g. places in a race
evaporation	to turn from liquid into gas.
freezing	to turn from liquid into solid.
freezing point	The temperature at which a material freezes.
gas	A gas spreads out in all directions.
heating	increasing the temperature
liquid	a liquid flows easily taking the shape of its container
melting	to change from a solid to a liquid state through heat or pressure
melting point	the temperature at which a material 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.
solid	a solid has a fixed shape
temperature	how hot or cold something is
water cycle (see separate knowledge organiser)	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.

Data Handling

- Time graphs to record the effect that temperature has on the rate of evaporation (continuous data).

How Does the Water Cycle Work?

Evaporation:

- The Sun causes the water from the Earth to **evaporate.**
- This water **evaporates** from seas, lakes, streams and even puddles.
- When it **evaporates,** water turns into **water vapour.**

Condensation:

- As the **water vapour** rises, it cools down.
- As it cools down, **condensation** happens and **water vapour condenses** to small droplets of water.
- Clouds are made from a mix of dry air and small droplets of water.

Precipitation:

- As **condensation** continues to happen, more droplets of **water vapour** are formed.
- When the droplets become heavy and large enough, they fall back to the Earth's surface in the form of rain or snow.

Runoff and Transpiration:

- As **precipitation** happens in the form of rain or snow falling back to Earth, water is **absorbed into** the soil.
- This water is used by plants to grow - when water from plant leaves **evaporates** back into the atmosphere, this is called **transpiration.**
- Water may also run off and enter oceans, seas and rivers.
- Water then **evaporates** again and the water cycle begins again!