Science (Y4) – Materials and Matter
States of matter

Identity | Sacrifice | Forgiveness | Courage | Explore

Prior Knowledge

- Distinguish between an object and the material it is made from
- Identify, name & describe simple properties of common materials
- Compare and group materials based on their properties
- Discuss the suitability of everyday materials for particular uses
- Know that the shapes of solid objects made from some materials can be changed squashing, bending, twisting and stretching

Key Knowledge

- A **solid** keeps its shape and has a fixed volume
- A **liquid** has a fixed volume but can change its shape to fit a container. It can be poured and keep a level surface
- A **gas** fills all available space; it has no fixed shape or volume
- Even though they can be poured sugar, salt and sand are all solids; each grain keeps the same shape and volume

- **Melting** is a change of state from solid to liquid.
- **Freezing** is a change of state from liquid to solid. The freezing point of water is at 0°C.
- **Boiling** is a change of state from liquid to gas that happens when a liquid is heated to a certain temperature and bubbles of gas can be seen in the liquid. Water boils when it is heated to 100°C.

Evaporation is the same change of state as boiling (liquid to gas) but it happens slowly, at lower temperatures and only at the surface of the liquid.	 *A puddle evaporating*
Condensation is the change back from a gas to a liquid caused by cooling.	 *Condensation on a window*

- **Water evaporates into the air**
- The sun heats up water at the surface of seas, rivers, lakes and turns it into water vapour (a gas). The water vapour rises into the air.
- **Water vapour condenses into cloud**
- Water vapour in the air cools and changes back into tiny drops of liquid water, forming clouds.
- **Water falls as rain, snow, sleet etc...**
- When too much water has condensed the water droplets in the clouds get too heavy and water falls back down as rain, snow, sleet etc… This is called precipitation.
- **Water returns to the sea**
- Rainwater runs over the land and collects in lakes and rivers which take it back to the sea. **The cycle starts all over again.**

Key Vocabulary

solid	liquid	gas
Change of State	When a material changes from one state to another	
melting	A solid changing into a liquid	
freezing	When a liquid becomes cold enough to turn solid, it freezes	
Melting point	The temperature at which a solid becomes a liquid	
Boiling point	The temperature at which a liquid turns to gas	
Evaporation	When liquid at the surface changes into a gas	
Condensation	The process when a gas changes into a liquid, caused by cooling	
Water cycle	The never-ending process of water moving from the oceans, up into the atmosphere and back to the Earth and oceans	
Temperature	The measure of how hot or cold something is	

What is our world made up of?

The Water Cycle