

# Knowledge Organiser: States of Matter

## The Water Cycle

### Evaporation

Energy from the sun heats up the surface of the earth. This causes the temperature in rivers, lakes and oceans to rise and the water evaporates into the air (becoming a gas called 'Water Vapour').

### Condensation

As the water vapour rises, it cools and turns back into a liquid - called condensation. This creates clouds.

### Precipitation

When too much water has condensed, the clouds become too big for the air to hold them. This is when precipitation occurs (meaning the water falls as rain, snow, sleet or hail).

## Sticky Knowledge

- Know that things are composed of a material in one of three states of matter: solid, liquid or gas
- Know that things are made of particles (tiny building blocks) and that these are organised differently in different states
- Know that materials can change state when temperature changes
- Know that when solids turn into liquids, this is called melting and the reverse process is called freezing
- Know that when liquids turn into gases, this is called evaporation and the reverse process is called condensation
- Know that when a solid turns into a gas without passing through the liquid state, this is called sublimation
- Know that the melting point of water is 0°C and the boiling point 100°C
- Know that water flows around our world in a continuous process called the water cycle
- Know that, along with evaporation, water on the Earth's surface moves to the air in a process called transpiration, where water turns into water vapour (gas) on the surface of leaves on plants
- Know that there are bonds between particles in a solid; as temperature increases, these bonds are partially overcome as the particles absorb energy and solids can change into liquids; with a further increase in temperature the particles become even more energetic and the bonds are overcome entirely so the liquid changes into a gas



## Possible Scientific Enquiry Questions

Observing over time	How does the level of water in a glass change when left on a windowsill?
Pattern seeking	Is there a pattern in how long it takes different sized ice lollies to melt?
Identifying, classifying and grouping	Can you group these materials into solids, liquids and gases?
Fair testing	How does the mass of a block of ice affect how long it takes to melt?

## Extended Specialist Vocabulary

Word	Definition
<b>New Vocabulary</b>	
bond	joined securely to something else
condensation	turn a gas into a liquid.
evaporation	turn a liquid into a gas.
precipitation	liquid or solid particles that fall from a cloud as rain, sleet, hail or snow.
boiling point	the temperature at which a liquid boils and turns to vapour
melting point	the temperature at which a given solid will melt
states of matter	materials can be one of three states: solids, liquids or gases. Some materials can change from one state to another and back again.
liquid	a substance that flows freely but is of constant volume
gas	a substance which will expand freely to fill a whole container and has no fixed shape or volume
thermometer	an instrument for measuring and indicating temperature
water cycle	the cycle of processes by which water circulates between the earth's oceans, atmosphere, and land
transpiration	the exhalation of water vapour in plants
sublimation	When a substance changes from a solid to a gas, without going through the liquid change