Gunthorpe Primary School – Knowledge Organiser

Focus:	States of Matter	Year 4:	Autumn Term 2

Grouping Materials

Materials fall into four main categories: Solids, liquids, gases and plasma (not part of our curriculum)

How to spot each type of material

SOLIDS	LIQUIDS	GASES
• Solids stay in one place and can be held • Solids keep their shape – they do not flow • Solids always take up the same amount of space – they do not spread out	• Liquids can easily ***flow*** or be ***poured*** • Liquids are not easy to be held • Liquids change their shape depending on the container they are in	• Gases are often invisible • Gases do not keep their shape – they spread out and change shape to fill whatever space they are in

Changes of state

What does 'change of state' mean?	When a material changes from one state to another we say 'it has changed state'

What are the changes of state?

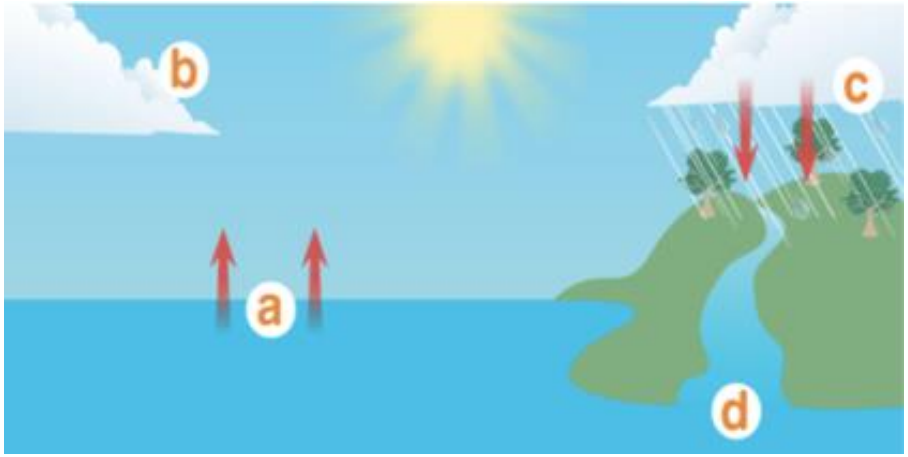
What	Explanation	Process	Example
Solid to liquid	When a solid **melts** it changes to a liquid	Melting	An ice cube melting
Liquid to gas	A liquid **evaporates** into a gas when heated	Evaporation	Water on a roof warming and turning to steam
Gas to liquid	When a gas cools it **condenses** into a liquid	Condensation	Steam cooling on a mirror and turning to liquid
Liquid to solid	When a liquid ***freezes*** it turns into a solid	Freezing	A pond freezing and turning to ice

At what temperature does each happen?

Boiling	Water boils at exactly 100°C
Melting	Different solids melt at different temperatures: Ice melts at 0°C Chocolate melts at 35°C
Freezing	Water freezes at 0°C
Evaporation and Condensation	Water can evaporate and condense at any temperature; however, the warmer it is the faster evaporation occurs

The Water Cycle

Water on Earth is constantly moving. It is recycled over and over again. This process is called the **water cycle**



a) Water evaporates into the air
The sun heats up water on land, and in rivers, lakes and seas and turns it into water vapour. The water vapour rises into the air.

b) Water vapour condenses into clouds
Water vapour in the air cools and changes back into tiny drops of liquid water, forming clouds.

c) Water falls as rain
Water from the clouds falls back to Earth in the form of rain or snow.

d) Water returns to the sea
Rainwater runs over the land and collects in lakes or rivers, which take it back to the sea.

The cycle starts all over again.

Key Vocabulary

• Solid / solids	• Melting	• Evaporation
• Liquid / liquids	• Freezing	• Condensation
• Gas / gases	• Boiling	• Temperature
• Changes of state	• Melting point	• Water cycle
• Material	• Boiling point	