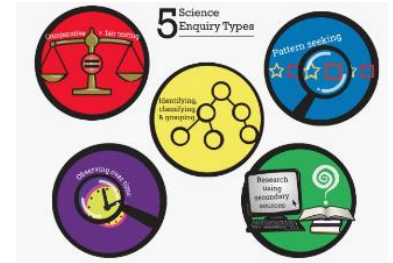


Year 4 Spring Term

Materials / states of matter



Prior knowledge learned in year 1

distinguish between an object and the material from which it is made, identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock, describe the simple physical properties of a variety of everyday materials, compare and group together a variety of everyday materials on the basis of their simple physical properties year 2 - identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses, find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching

National Curriculum for year 4

compare and group materials together, according to whether they are solids, liquids or gases - observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius ($^{\circ}\text{C}$) - identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.

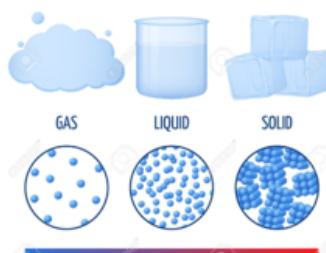


STATES OF MATTER

KNOWLEDGE ORGANISER

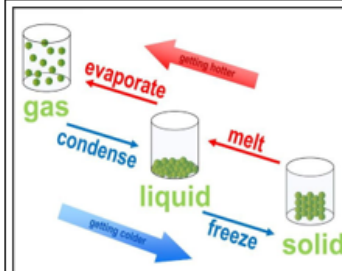


Overview



- Matter makes up our planet and the whole Universe.
- There are three main states of matter - solids, liquids and gases.
- Matter can change state, depending on its temperature.
- Several processes describe the processes of changing states, e.g. melting, evaporation, freezing and condensation.
- The water cycle depends upon some of these processes.

Changing States of Matter



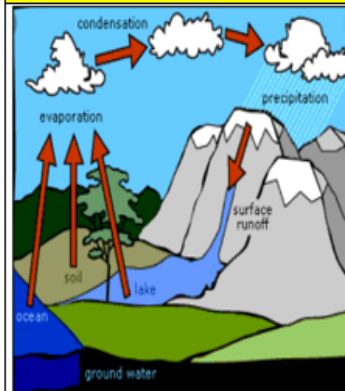
- States of matter can change, depending upon the temperature of the matter.
- **Melting** is the process of changing a solid into a liquid.
 - **Evaporation** is the process of changing a liquid into a gas.
 - **Condensation** is the process of changing a gas into a liquid.
 - **Freezing** is the process of turning a liquid into a solid.

Solids, Liquids and Gases

All matter exists in three states: solids, liquids and gases.

SOLIDS - Solids hold their shape - Solids are rigid - Solids have a fixed volume Examples include ice cubes, rock, glass and most metals.	 SOLID
LIQUIDS - Liquids do not hold their shape - They are not rigid - However, they have a fixed volume. Examples include water, oil, blood and milk	 LIQUID
GASES - Gases do not hold their shape - They are not rigid - They do not have a fixed volume. Examples include oxygen, carbon dioxide and helium.	 GAS

Role in the Water Cycle



Changing states of matter play an important part in 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 evaporate into the air.

CONDENSATION
 As the water vapour rises, it cools in the higher air and turns back into liquid - condensation. This creates clouds.

PRECIPITATION
 When too much water has condensed, the clouds become too big for air to hold them. Precipitation occurs.

Key vocabulary

Solid, liquid, gas, evaporation, condensation, particles, freeze/frozen, heat/heating, temperature

Suggested texts

Foxton - states of matter - solids, liquids and gases.

Solids	Liquids	Gases
Wood, Ice Cube, Glass	Coffee, Water, Shower Gel	Carbon Dioxide, Air, Oxygen

Scientists

Joseph Priestly, Lord Kelvin - Absolute zero (temperature), Anders Celsius - Temperature Scale, Daniel Fahrenheit - Temperature Scale / Invention of the Thermometer, George Washington Carver - chemist

What is a solid / liquid / gas?

What happens to... (water / chocolate) when heated / cooled?

What is evaporation / condensation?

What is a water cycle and how does it take place?

