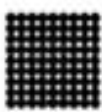




States of Matter

Prior knowledge	Key knowledge	Subsequent knowledge
<p>Science - Materials in KS1 - Year 2:</p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> 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. 	<p>Statutory requirements Pupils should be taught to:</p> <ul style="list-style-type: none"> 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 (°C) Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature. 	<p>Science - Properties and Change of Materials in UKS2 Year 5:</p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating Demonstrate that dissolving, mixing and changes of state are reversible changes Explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda.

Working Scientifically Skills - Year 3 & 4

- asking relevant questions and using different types of scientific enquiries to answer them
- setting up simple practical enquiries, comparative and fair tests
- making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers
- gathering, recording, classifying and presenting data in a variety of ways to help in answering questions
- recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables
- reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions
- using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions
- identifying differences, similarities or changes related to simple scientific ideas and processes
- using straightforward scientific evidence to answer questions or to support their findings.

<p>What is a solid?</p> 	<ul style="list-style-type: none"> • In the solid state, the material holds its shape. • Solids have vibrating particles which are closely packed in and form a regular pattern. • This explains the fixed shape of a solid and why it can't be poured. • Solids always take up the same amount of space.
<p>What is a liquid?</p> 	<ul style="list-style-type: none"> • In the liquid state, the material holds the shape of the container it is in. • This means that liquids can change shape, depending on the container. • Liquids have particles which are close together but random. • Liquid particles can move over each other. • Liquids can be poured.
<p>What is a gas?</p> 	<ul style="list-style-type: none"> • In the gas state, particles can escape from open containers. • Gases have particles which are spread out and move in all directions.

Word	Meaning
Particle	A tiny bit of matter. Matter is anything that has mass and takes up space.
Heating	Making something warmer. If you heat up the classroom, you are making the classroom warmer.
Cooling	Making something colder. If we were cooling the classroom, we would be making the classroom colder.
Evaporation	If water (liquid) is heated, it changes to water vapour (gas). This change is called evaporation.
Condensation	If water vapour (gas) is cooled down, it changes into water (liquid). This change is called condensation.

<p>What happens to the particles in water when they are heated or cooled?</p>	<ul style="list-style-type: none"> - When water (liquid) is heated, the particles move faster and faster until they have energy to move more freely. The water will evaporate into water vapour (gas) - When water is cooled, the particles will start to slow down until ice is formed (solid) - Water boils and turns to vapour at 100°C - Water freezes and turns to ice at 0°C
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