



Big Question: What are 'States of Matter'?

Key Vocabulary:

Matter: anything that has weight and takes up space.

Solid:

Liquid:

Gas:

Melting:

Freezing:

Evaporation:

New knowledge that will help me answer the big question:

Matter can be changed into different **states** through changing its temperature.

For example solid water (**ice**) can be melted to make it into a liquid, which can be heated further to turn it into water vapour (**steam**) for example, when boiled in a kettle. This process can be **reversed** but sometimes the process is **irreversible**.



freezing



evaporation



melting



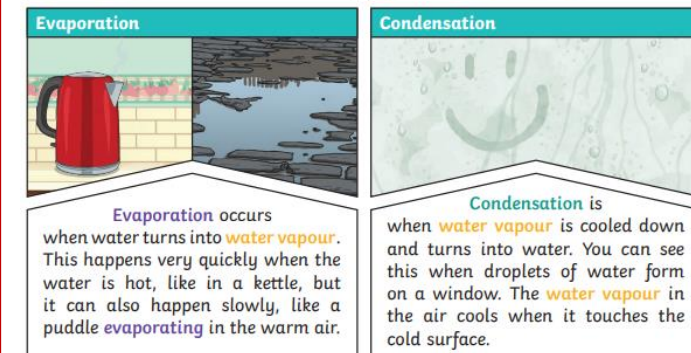
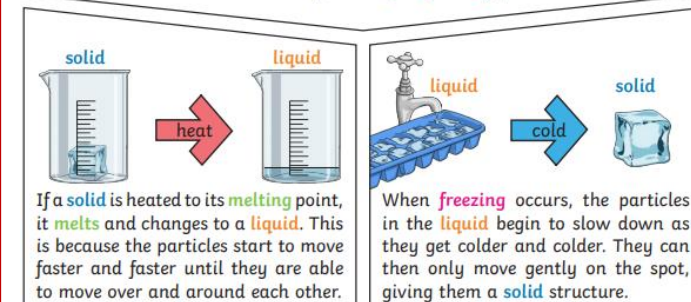
condensation

New knowledge that will help me answer the big question:

There are three states of matter. Solids, liquids and gases.

Solid	Liquid	Gas
Particles in a solid are close together and cannot move. They can only vibrate.	Particles in a liquid are close together but can move around each other easily.	Particles in a gas are spread out and can move around very quickly in all directions.

When water and other **liquids** reach a certain temperature, they change state into a **solid** or a **gas**. The temperatures that these changes happen at are called the boiling, **melting** or **freezing** point.



New knowledge that will help me answer the big question:

Some materials are unusual because they have properties of more than one state!

- **Gel:** gel is a thick liquid that has **properties** of a solid and a liquid. **It can be held like a solid but can fill the shape of a container.** Hand sanitisers and tooth pastes are types of gel.
- **Foam:** a foam is bubbles of gas trapped within a liquid. A foam has **characteristics** of a solid, liquid and a gas. **It can be held like a solid, take the shape of a container like a liquid and can be compressed like a gas.** Shaving foam and whisked egg whites are a type of foam.
- **Powder:** a powder is lots of **small solid particles**. A powder has characteristics of a solid and a liquid. **It can be held like a solid but poured and take the container of a liquid.** Sand and sugar are examples of powders.



As a scientist, the essential knowledge I need to answer the big question is:	Date
<p>Solids stay in one place and can be held. Some solids can be squashed, bent, twisted and stretched. Examples of solids include wood, metal, plastic and clay. Liquids move around (flow) easily and are difficult to hold. Liquids take the shape of the container in which they are held. Examples of liquids include water, juice and milk. Gases spread out to fill the available space and cannot be held. Air is a mixture of gases.</p>	
<p>Materials can be grouped according to whether they are solids, liquids or gases.</p>	
<p>Heating or cooling materials can bring about a change of state. This change of state can be reversible or irreversible. The temperature at which materials change state varies depends on the material. Water changes state from solid (ice) \rightleftharpoons liquid (water) at 0°C and from liquid (water) \rightleftharpoons gas (water vapour) at 100°C. The process of changing from a solid to liquid is called melting. The reverse process of changing from a liquid to a solid is called freezing. The process of changing from a liquid to a gas is called evaporation. The reverse process of changing from a gas to a liquid is called condensation.</p>	