# Bomere and the XI Towns Federation Knowledge Organiser—Science

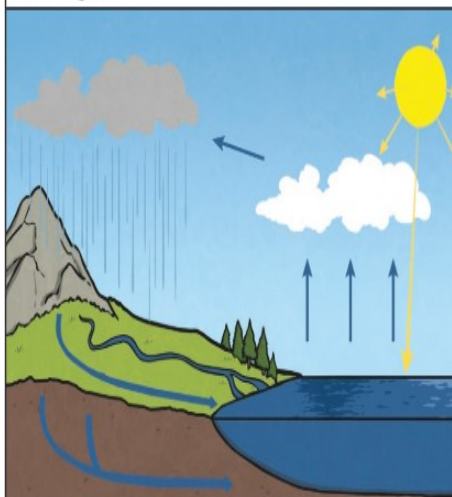| Topic: Science— States of Matter | Class/Year Groups: Year 3 and 4 | Term: Summer |
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**What you already know?**

Pupils have studied the properties of materials but have not looked at them as solids, liquids or gases.

Condensation and evaporation occur within the water cycle.



**What you will learn:**

There are three states of matter.

| Solid | Liquid | Gas |
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| 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.

solid → heat → liquid

If a **solid** is heated to its **melting** point, it **melts** and changes to a **liquid**. This is because the particles start to move faster and faster until they are able to move over and around each other.

liquid → cold → solid

When **freezing** occurs, the particles in the **liquid** begin to slow down as they get colder and colder. They can then only move gently on the spot, giving them a **solid** structure.

**Vocabulary:**

| 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. |
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| Solids | These are materials that keep their shape unless a force is applied to them. They can be hard, soft or even squashy. Solids take up the same amount of space no matter what has happened to them. |
| Liquids | Liquids take the shape of their container. They can change shape but do not change the amount of space they take up. They can flow or be poured. |
| Gases | Gases can spread out to completely fill the container or room they are in. They do not have any fixed shape but they do have a mass. |

**National Curriculum Objectives:**

- 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.