

## **ICE, STEAM, WATER**

### **KEY IDEAS**

- The sequence for HEATING water is: solid – (melting) – liquid – (evaporation or boiling ) - gas
- The sequence for COOLING water is: gas – (condensation) – liquid – (freezing) – solid
- Temperature can be measured

### **EXAMPLE QUESTIONS**

- What happens when water is heated?
- What can happen when water is cooled?
- What happens when water is boiled?
- What do you think steam is?
- How can you measure how hot something is?

### **HEATING AND COOLING WATER SEQUENCES**

- The sequence for heating is:
- ICE – melts – WATER – boils – WATER VAPOUR
- The sequence for cooling is:
- WATER VAPOUR – condenses – WATER – freezes - ICE

### **STEAM**

- We tend to think of steam as something that comes from a kettle full of boiling water, or from our mouths when we exhale in cold weather.
- We think of steam as something we can see.
- Strictly speaking though, steam is the scientific term for water vapour that is produced by boiling water.
- In its pure form, water vapour, or steam is invisible.

- Scientists refer to steam as water vapour that is over 100°C.
- Therefore, the 'steamy' breath coming out of our mouths on a cold morning is not really steam at all but condensed water vapour, because it is less than 100°C.
- The 'mist' that can be seen rising above a kettle of boiling water is steam that has cooled to just below 100°C to form tiny droplets of water.
- If you look closely at a boiling kettle spout, you will see that the gas coming out is invisible close to the spout, and that the visible droplets are forming a few centimeters away from the spout.
- This idea can be confusing because there is a difference between our 'everyday' use of the word steam and its 'scientific' term.

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