



Frogs – Science KCV – Properties and changes of materials



Key facts to learn:

- Know that materials can have useful properties for a given job (Prior)
- Know that things are composed of a matter commonly in one of three states of matter: solid, liquid or gas (Prior)
- Know that things are made of particles (tiny building blocks) and that these are organised differently in each state (Prior)
- Know that materials can change state when temperature changes (Prior)
- Know that there are bonds between the particles (building blocks) in a solid; as temperature increases, these bonds are somewhat overcome as the particles absorb energy and solids can change into liquids; with a further increase in temperature, the particles become even more energetic and the bonds are overcome entirely so the liquid changes into a gas (Prior)
- Know that when liquids turn into gases, this is called evaporation and that the reverse process is called condensation (Prior)
- Know that when solids turn into liquids, this is called melting and that the reverse process is called freezing
- Know that materials can be sorted in a variety of ways based on their properties
- Know that in some solid materials the bonds between particles break when surrounded by a liquid; this allows the liquid to absorb the solid; when this happens, the solid is called a solute, the liquid is called a solvent and the result is a solution.
- Know that Marie Curie was a genius physicist, earning two Nobel Prizes

Key skills to do:

- Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.
- Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate.
- Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.
- Use test results to make predictions to set up further tests.
- Report and present findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations.

Words to know and spell (Tier 2 Vocabulary)

Properties	Hardness	Transparency
Conductive	Dissolve	Liquid
Solid	Gas	Solution
Solvent	Separating	Filtering
Sieving	Evaporating	Mixing
Melting	Burning	Rusting

Words to understand and spell (Tier 3 Vocabulary)

Solubility	The ability to be dissolved, especially in water.
Reversible	Capable of being reversed so that the previous state is restored.
Irreversible	Not capable of being reversed.
Sublimation	To change a solid directly into a gas without the solid first becoming a liquid.
Diffusion	The process of spreading through or into a surrounding substance by mixing with it (of a gas or liquid).

Concept check questions. Test yourself:

Describe a reversible and an irreversible change of state.
What does the word 'dissolving' mean?
What are evaporation and condensation?
Explain how water can change state.

Opportunities for Investigation:

Observing over time: How does a nail in salt water change over time?