



Year 7 Science knowledge organiser

Module – Matter

Topic – Particle model and separating mixtures

Length of topic – Approx. 12 lessons

Method of assessment – Summative assessment

Links to prior learning

KS2 Year 5 Properties of materials topic

- Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating
- Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution

Knowledge to be taught.

- Properties of solids, liquids and gases can be described in terms of particles in motion but with differences in the arrangement and movement of these particles: closely spaced and vibrating (solid), in random motion but in contact (liquid), or in random motion and widely spaced (gas).
- Observations where substances change temperature or state can be described in terms of particles gaining or losing energy.
- A pure substance consists of only one type of element or compound and has a fixed melting and boiling point.
- Mixtures may be separated due to differences in their physical properties.
- The method chosen to separate a mixture depends on which physical properties of the individual substances are different.

Skills to be covered

Use standard techniques to separate mixtures.

Working scientifically strands covered

Analyse patterns	✓
Discuss limitations	✓
Draw conclusions	✓
Present data	✓
Communicate ideas	✓
Construct explanations	✓
Critique claims	
Justify opinions	
Collect data	✓
Devise questions	✓
Plan variables	
Test hypothesis	✓
Estimate risks	✓
Examine consequences	
Review theories	✓
Interrogate	

Assessment

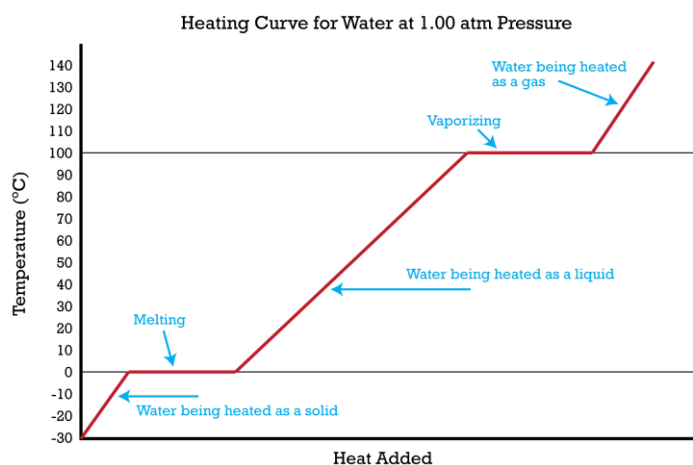
Summative assessment based on knowledge taught through the topic



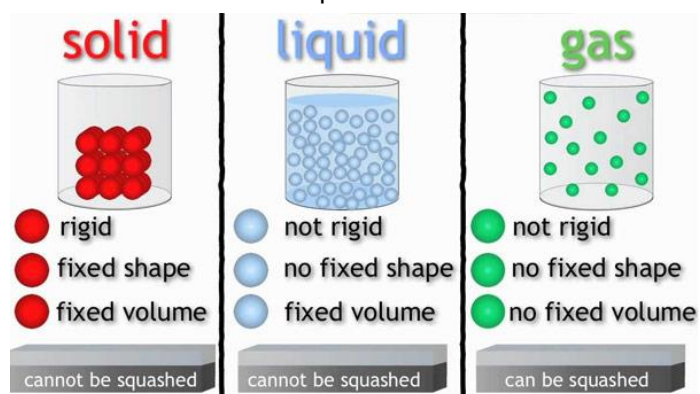
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Facts

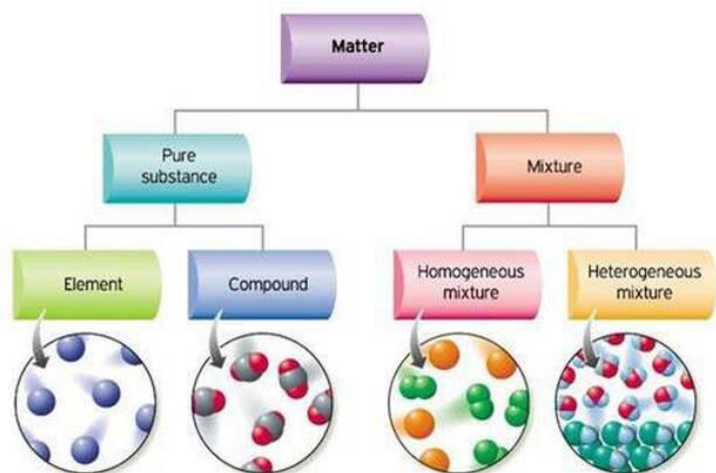
A substance is a solid below its melting point, a liquid above it, and a gas above its boiling point.



Properties of solids, liquids and gases can be described in terms of particles in motion but with differences in the arrangement and movement of these particles



Air, fruit juice, sea water and milk are mixtures.



Liquids have different boiling points.

Keywords

Boil: Change from liquid to a gas of all the liquid when the temperature reaches boiling point.

Chromatography: Used to separate different coloured substances.

Condense: Change of state from gas to liquid when the temperature drops to the boiling point.

Density: How much matter there is in a particular volume, or how close the particles are.

Diffusion: The process by which particles in liquids or gases spread out through random movement from a region where there are many particles to one where there are fewer.

Dissolve: When a solute mixes completely with a solvent.

Evaporate: Change from liquid to gas at the surface of a liquid, at any temperature.

Filtration: Separating substances using a filter to produce a filtrate (solution) and residue.

Freeze: Change from liquid to a solid when the temperature drops to the melting point.

Gas pressure: Caused by collisions of particles with the walls of a container.

Melt: Change from solid to liquid when the temperature rises to the melting point.

Mixture: Two or more pure substances mixed together, whose properties are different to the individual substances.

Particle: A very tiny object such as an atom or molecule, too small to be seen with a microscope.

Particle model: A way to think about how substances behave in terms of small, moving particles.

Pure substance: Single type of material with nothing mixed in.

Soluble (insoluble): Property of a substance that will (will not) dissolve in a liquid.

Solubility: Maximum mass of solute that dissolves in a certain volume of solvent.

Solute: A substance that can dissolve in a liquid.

Solution: Mixture formed when a solvent dissolves a solute.

Solvent: A substance, normally a liquid, that dissolves another substance.

Sublime: Change from a solid directly into a gas.