Year 5 Science - Properties of materials

Key Vocabulary

Solution	A mixture of solvent and solution (e.g. a cup of coffee)
Solvent	The liquid in which a solute is dissolved (e.g. water in a cup a coffee)
Solute	A substance that is dissolved into a solvent (e.g. coffee in a cup of coffee)
Dissolve	When a solid is mixed into a liquid without being able to be detected by eye.
Reversible change	A change that is made to a substance which can be changed back to put the substance back in its original state, e.g. melting or freezing.
Irreversible change	A change that is made to a substance which cannot be changed back to be as it was before, e.g. burning or cooking.
Chemical reaction	A change where two or more substances combine to make a new one
Filter	A method of separating substances (usually solids from liquids) using paper.
Soluble	A substance that can be dissolved in a solvent (e.g. sugar).
Insoluble	A substance that cannot be dissolved (e.g. sand).

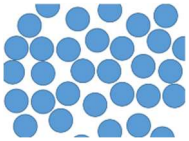
Stem Sentences

F- Have they kept all the variables the same apart from the one being changed?

A-How accurate were their measurements?

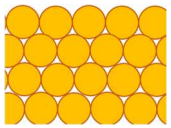
R-Were the repeated measurements very similar? Maybe they could then suggest improvements for their investigation.

Solvent and solute



Solvent (e.g. water)

The solvent is a liquid so it has gaps between the molecules making up the liquid.



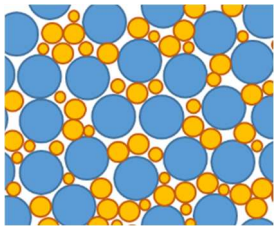
Solute (e.g. coffee)

The bits of coffee are each a solid. The molecules making up the coffee are tightly packed together.

Dissolving

- When coffee is added to hot water, the heat in the water gives the coffee molecules extra energy and they begin to break up into smaller particles.
- These particles of coffee can get so small, they fit in the gaps between the water molecules.
- The solution may change colour but will no longer have any solid visible.

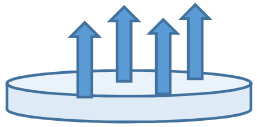
If you keep adding solute, the gaps between the solvent molecules will fill with solute until there is no more room. At this point no more solute will dissolve and you will be left with undissolved solid at the bottom of the liquid.



We call the solution saturated – meaning completely filled.

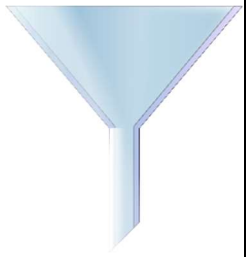
Separating by evaporation

- Solute can be removed from the solvent again by using evaporation.
- Adding more heat will provide all molecules in the solution more energy.
- If the water molecules in our coffee gets more heat, the water will evaporate.
- This will leave the coffee particles (that were dissolved) behind.



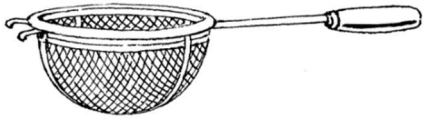
Separating by filtering

- For mixtures such as sand and water (that won't dissolve) we can use filtering to separate the water from the sand.
- Filter paper lets liquids and solutions through but anything with particles that are too big to fit between the fibres in the paper are trapped.
- We put the paper into a funnel to stop it falling over!



Separating by sieving

Sieving is a method for separating large solids from smaller solids.



- The sieve is a barrier made from mesh or plastic with holes of a certain size in.
- The holes between the mesh or in the plastic allow objects up to a certain size through.
- Any objects that are bigger than those holes or spaces are trapped behind the barrier.
- We use sieves in baking to make flour lumps smaller.
- We use sieves in the garden to remove roots and rocks from the soil.