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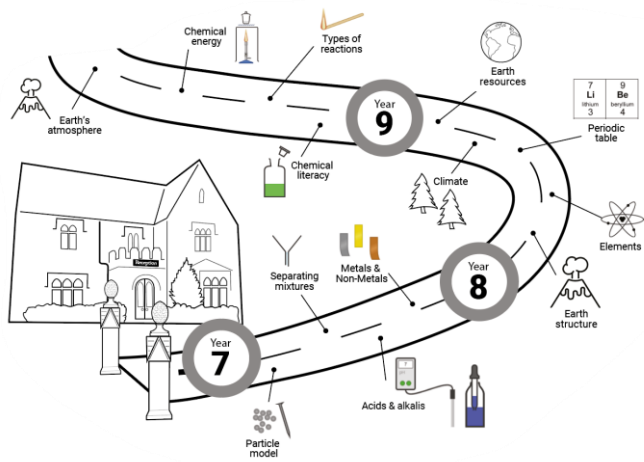
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Glue on this side

Separating Mixtures

1	I can describe how to carry out simple techniques for separating mixtures
2	I can describe pure substances and mixtures, including dissolved substances
3	I can identify pure and impure substances from data
4	I can explain how mixtures are different from elements and compounds
5	I can describe dissolving, with reference to particles

chromatography	A technique to separate mixtures of liquids (often coloured) that are soluble in the same solvent.
dissolve	The complete mixing of a solute with a solvent to make a solution.
distillation	A technique that uses evaporation and condensation to obtain a solvent from a solution.
filtration	A way of separating pieces of solid that are mixed with a liquid or solution by pouring through filter paper.
pure substance	A single material with no other substances mixed with it.
soluble (insoluble)	A soluble substance can dissolve in a given solvent. An insoluble substance cannot dissolve in a given solvent.
solute	The solid or gas that is dissolved in a liquid.
solution	A mixture of a solute dissolved in a solvent. All parts of the mixture are the same.
solvent	A substance, normally a liquid, that dissolves another substance.



Prior knowledge from KS2:

In KS2 you learnt to compare and group together everyday materials on the basis of their properties and that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution. You also should have knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating.

Why?

The particle model helps us to explain a wide range of observations and engineers use these principles when designing vessels to withstand high pressures and temperatures, such as submarines and spacecraft.

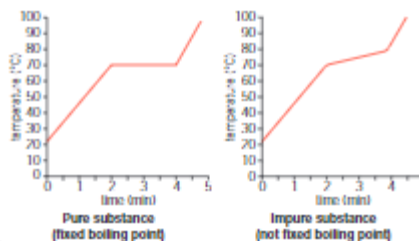
Careers:
Scientist
Chemist
Artist
Pharmacist

Future learning:

The particle model is widely used to predict the behaviour of solids, liquids and gases and this has many applications in everyday life. At GCSE you will understand how the movement of particles affects if a substance is a solid, liquid or gas.

Melting and boiling points

- The **melting point** of a substance is the temperature at which it turns from a solid to a liquid, or a liquid to a solid
- The **boiling point** of a substance is the temperature at which it turns from a liquid to a gas or a gas to a liquid
- Pure substances** have a fixed (sharp) boiling or melting point, whereas **impure substances** have a range which appears as a diagonal line on a graph



Mixtures

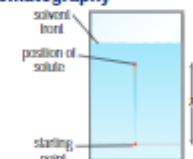
- Mixtures** are different **substances** which are together, they are not chemically bonded and so are easy to separate
- The substances which make up a mixture keep their own **properties** unlike those in a compound
- A mixture is an **impure substance** as it does not have a fixed melting point, instead it has a range
- A **solution** is a type of mixture which is made up of two parts
- A **solute** is the part which has dissolved in the solution
- A **solvent** is the liquid part which the solute has dissolved into
- The **solubility** of a substance is a measure of how much of it will **dissolve**
- Not all solutes will dissolve in all solvents
- Solutes which do not dissolve are known as **insoluble**
- Substances which do dissolve are known as **soluble**
- The **solubility** of a substance can be increased by increasing the temperature of the solution or by stirring the solution
- A **saturated solution** is one where the maximum amount of solute has dissolved in it, no more solute will be able to dissolve

Separating Mixtures

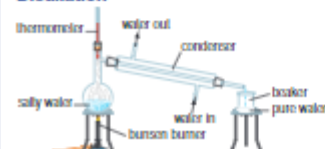
Filtration



Chromatography



Distillation



Evaporation



Topic	1 Point	2 Points	4 Points	6 Points	10 Points
Elements and Mixtures 	Create a collage of pictures of mixtures and elements, and label each one.	Create a poster with five chemical reactions and five physical reactions.	Create a poem to explain the difference between mixtures and compounds. Remember that poems do not have to rhyme!	Plan a three course meal, where everything is a mixture!	Find out the difference between a homogenous and heterogeneous mixture and include pictures of three examples of each.
Compounds 	Create a poem about diffusion.	List the three states of matter in order of which would diffuse fastest to slowest, if at all.	State two gases that diffuse into lungs and leave, and in which direction (diffuse in or diffuse out).	Research how both lungs and leaves are adapted for diffusion and create a poster on these.	Design an experiment to investigate one of the factors that affects diffusion. Write a brief method and state your independent, dependent and control variables.