

Scientist



[Dr Nira Chamberlain](#)
(Polymath—mathematician who studies applied mathematics in science.)



[Becky Schroeder](#)
(inventor of the glow sheet)

Skills

I'm setting up comparative and fair tests like a biochemist.

I'm planning different types of scientific enquiries like a chemical engineer.

Careers

Chemical engineer (solves problems involving chemicals)

Biochemist (investigates chemical processes that take place inside living things)

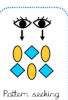
Enquiries



Which type of sugar dissolves the fastest?



How does a nail in salt water change over time?



Do all stretchy materials stretch in the same way?

Can you group these materials based on whether they are

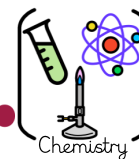


What are microplastics and why are they harming the planet?

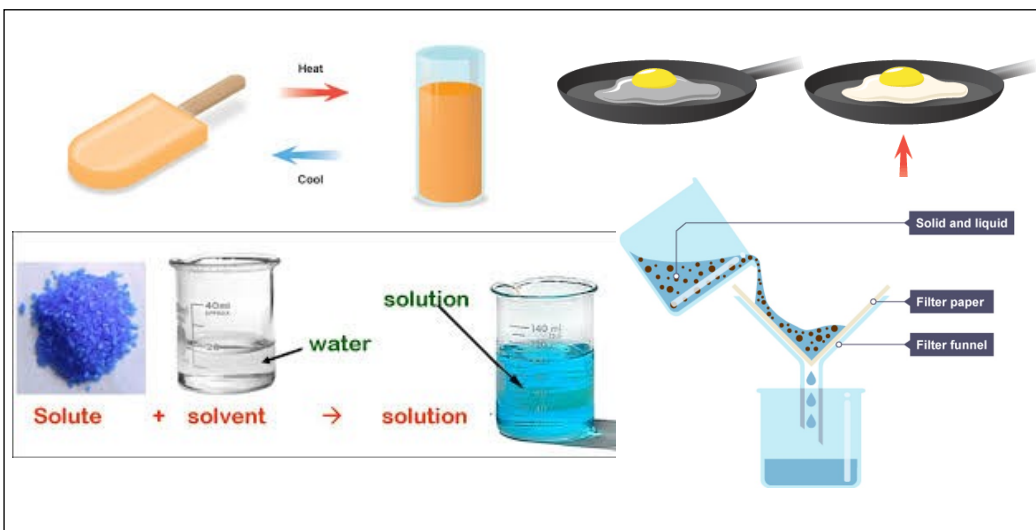
Y5 PROPERTIES AND CHANGES OF MATERIALS



Main idea



Pupils will learn to compare and group everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets. They will use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating.



Key Learning

- Pupils will build on their previous learning to compare and group everyday materials.
- They will learn that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution.
- They will give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic.
- Pupils will demonstrate that dissolving, mixing and changes of state are reversible changes and explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible.

What you should already know

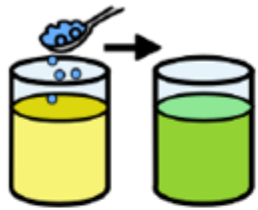
Pupils can compare and group materials according to whether they are solids, liquids or gases. They can observe that some materials change state when they are heated or cooled. Pupils can link evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.

What comes next?

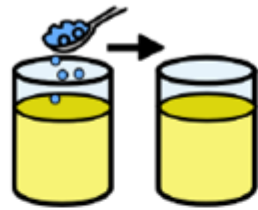
KS3 Chemistry: The particulate nature of matter, the properties of the different states of matter in terms of the particle model, including gas pressure, changes of state in terms of the particle model.

Key vocabulary

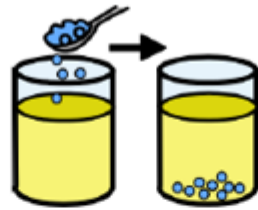
Solution	Filtering
Soluble	Burning
Insoluble	Rusting
Substance	Sieve
Evaporate	Separate
Dissolve	Conductivity
Filtration	Insulator



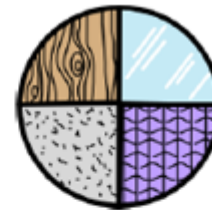
Solution: a mixture that contains two or more unlike substances combined evenly.



Soluble: can be dissolved in liquid.



Insoluble: cannot be dissolved in liquid.



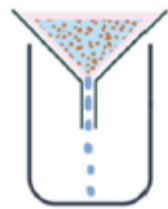
Substance: that of which something is made.



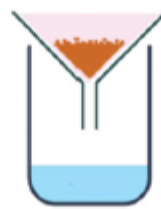
Evaporate: to turn from liquid into gas; pass away in the form of vapour.



Dissolve: to mix completely with liquid / to melt into liquid.



Filtration: to pass through or subject to a filter.



Filtering: to separate out by the use of a filter.



Burning: to be overheated or in flames.



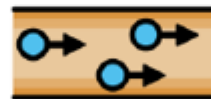
Rusting: an orange or reddish-brown coating that forms on metal that has been exposed to air and water.



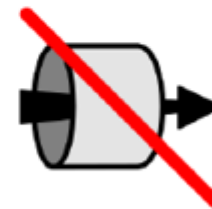
Sieve: a tool used to separate solid from liquid or to separate smaller pieces of something from larger pieces



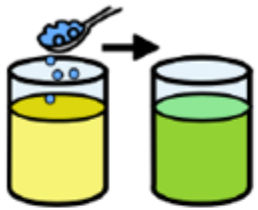
Separate: to divide into parts or break the connection between.



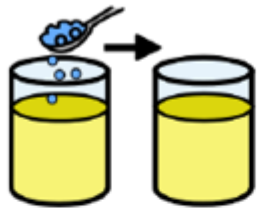
Conductivity: the capacity for or property of conducting or transmitting heat, electricity, or sound.



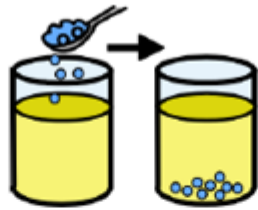
Insulator: a material or device that does not conduct electricity, such as an object of glass or porcelain, that is used to insulate and support electric wires.



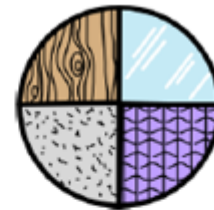
Solution



Soluble



Insoluble



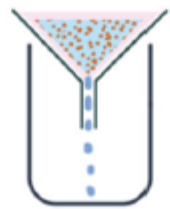
Substance



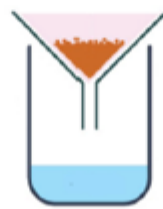
Evaporate



Dissolve



Filtration



Filtering



Burning



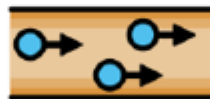
Rusting



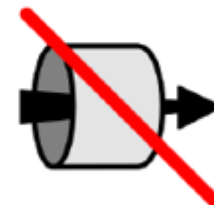
Sieve



Separate



Conductivity



Insulator