

Lesson 2



- I can explore making and separating mixtures.



Quiz Time! Are the statements below true or false?

	True	False
One material can be used to make different objects.		
One object can be made from different materials.		
Two materials can be mixed to create a new material.		



Glossary

Mixture: two or more substances that can be separated
Dissolve: to combine a solid with a liquid to make a solution
Evaporation: the process by which a liquid turns into a gas when heated
Distillation: the process of capturing the liquid that has evaporated from a solution
Filtration: the process of separating a mixture of solids and liquids using a filter
Solution: mixture of solid and liquid in which the solid is no longer visible



Separating mixtures

When materials are put together, they form a mixture. Sometimes, we can separate them. How?



Sieving

A mixture made of solid particles of different sizes, for example sand and gravel, can be separated by **sieving**.



Filtering

You can separate a mixture of sand and water by passing it through a piece of **filter paper**. The water is able to pass through the tiny gaps in the paper but the sand particles are too big and are left on the surface of the filter paper.



Evaporating

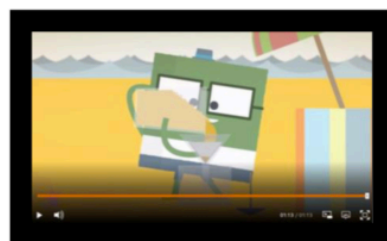
By dissolving salt in water you make a **solution**. You can separate the salt from the water again by boiling the solution. The water will evaporate until it is all gone. The salt will be left behind.



How can you separate those mixtures?

Watch the video to find out and match the separating options. One has been done for you.

[What is separation? - BBC Bitesize](#)

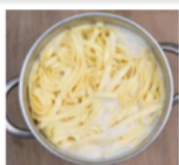




paper clips in uncooked rice



gravel and sand



cooked pasta in hot water



oil and water



sand and water



paper filter



sieve



magnet



funnel



separatory funnel



Mixtures, solutions and suspensions

A **mixture** contains more than one **substance**. These are not chemically joined, which means they are easy to separate. A **substance** may dissolve in one liquid but not in another. For instance, nail varnish dissolves in acetone, but not in water.



A **solution** is usually **transparent**, even if it is coloured. Things like instant coffee do not really **dissolve** – instead, small particles remain in **suspension** and the liquid is murky. Focus on the “disappearance” of the solid granules as evidence of dissolving.



Salt dissolves
in water.

It is a
solution.



Coffee
doesn't
dissolve
completely in
water.

It is a
suspension.

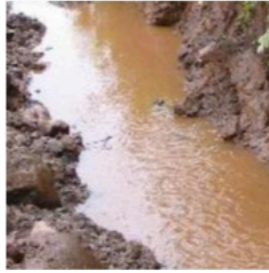
When a solid is added to water, the water particles surround the solid edges. If the attraction between the water and the solid particles is greater than that between the solid particles, then it will dissolve. This process is affected by things like **temperature** and the amount of solid. There is always a limit as to how much solid can dissolve in a given amount of liquid.



Investigation

We will investigate whether soil and water make a solution or a suspension, by recording our careful observations.

Solution?



Suspension?

You will need:

- a transparent glass
- soil
- some water
- a spoon



First, put some soil in your glass and add some water until it is $\frac{3}{4}$ full. Stir well with a spoon for one minute.

What can you see?



After stirring the soil in water for one minute, I can observe _____

Then, leave the mixture to rest for 6 hours.

What has changed?



Six hours later, the soil has _____

As a result, the water is now _____

Following my observations, I can conclude that mixed water and soil form a _____

because _____

How could you separate the soil from the water?
