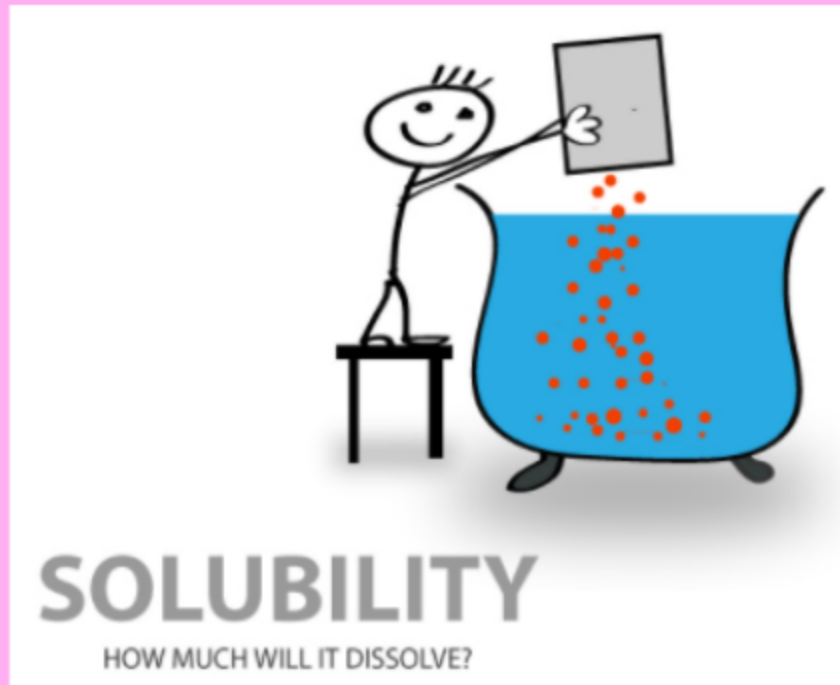


SCIENCE INVESTIGATION

LO: To investigate which materials are soluble in water.



Year 5, don't worry if
you don't have all of
the resources, just do
your best.

ASK parents before
you do anything
PLEASE!

Scientific play.

Take a cup of water. Add a sugar cube and stir it until you can't see the sugar cube anymore. What has happened to the sugar cube?

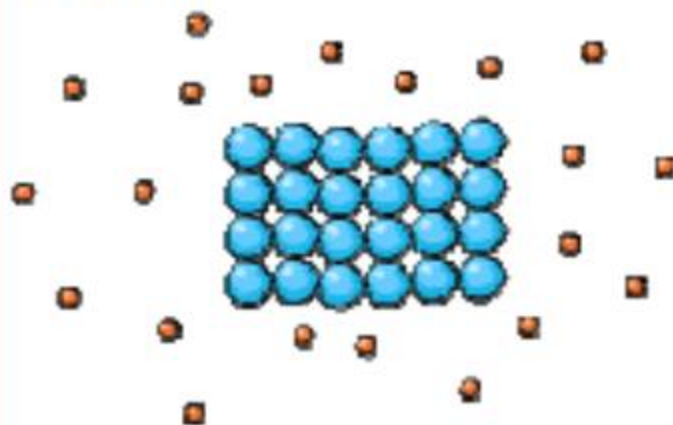
Taste the water. Is the sugar still there?
How do you know?

When the mixture is a solid in a liquid it will either produce a solution or a suspension. A solution is clear and will never settle out, a suspension is cloudy and will eventually settle out. If the solid (solute) dissolves in the liquid (solvent), a solution is formed. Although at primary level the solvent mostly used is water, older children need to know that there are others. These will dissolve other solids that may not dissolve in water eg nail varnish is dissolved by propanone (acetone). Various factors that affect dissolving will be familiar to children, such as stirring, temperature, time, amount of solute, amount of solvent and can be equated with their everyday life such as stirring sugar in a cup of tea.

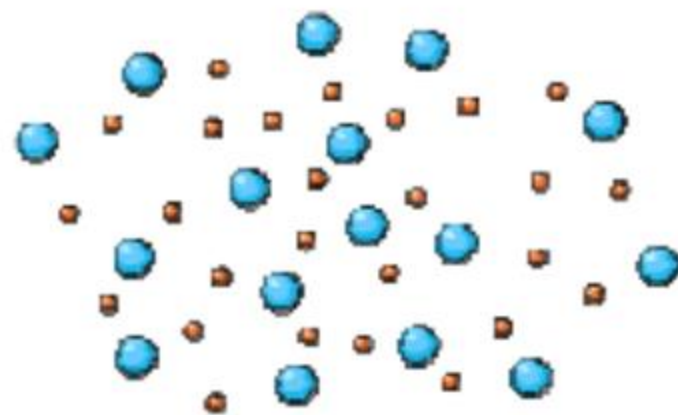
Sometimes a solid dissolves in a liquid to produce a solution, but not of the original substances, because the change is a chemical one, for example when Alka-Seltzer dissolves in water.

Dissolving in water

Some materials **dissolve** in water. This means that they break into tiny parts which cannot be seen and spread out throughout the water. The material which dissolves is called the **solute**. The water which dissolves the solute is called the **solvent**. The mixture of solute and solvent is called a **solution**.



The particles of solute are all together in one piece.



The particles of solute have separated and spread out.

Sugar is a substance that dissolves in water. When sugar and water are mixed together, the sugar (**solute**) dissolves in the solvent (**water**), producing a **solution** of sugar and water.

We are going to investigate the solubility of a number of substances and experiment to answer predictions we make.

There are many different types of solvent besides water, but they can be dangerous, so we tend to use water when investigating dissolving in Primary school.

Scientific question

Which materials dissolve in water?

You will need:

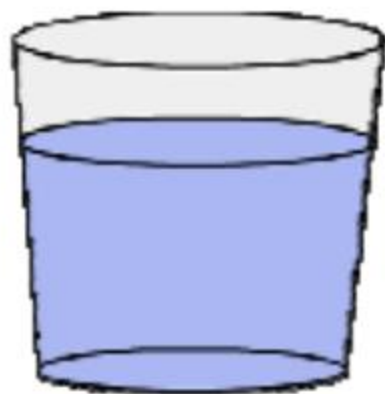
- 5 large cups of water
- Sand
- Sugar
- Salt
- Flour
- Iron filings



Can you name any solvents?

Method

Predict whether each of the materials will dissolve in water. Test each material by adding 1 small spoonful to a cup of water and stirring for 30 seconds. If you can no longer see the material, it has dissolved in the water.



Fair testing

This is the **variable** - the one thing that we are changing:

We are trying to keep everything else the same, including:

Measurement

This is what we are measuring:



Table showing whether different materials are soluble in water

Name of material	Prediction	Observation
Sand		
Sugar		
Salt		
Flour		
Iron Filings		

When completing this part of the investigation PLEASE ask parent to help.

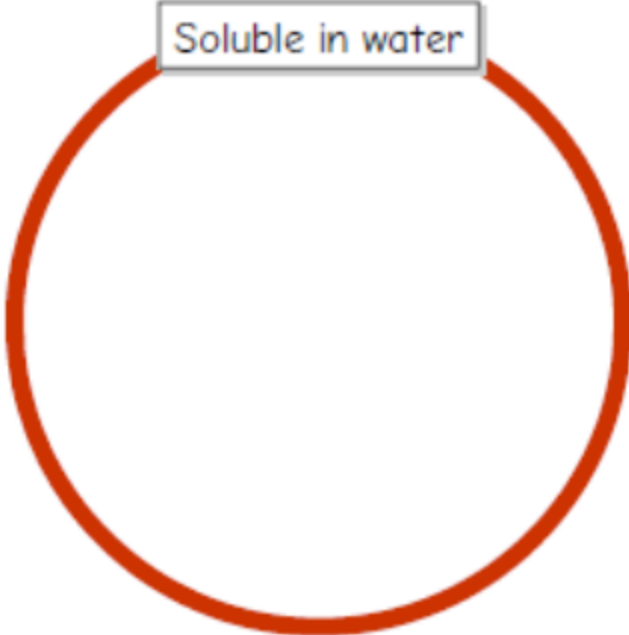
Water and:	Prediction: will it dissolve?	Did it dissolve?	Describe any other changes that occurred
Sand			
Chalk			
Sugar			
Salt			
Alka-Seltzer			
Oil			
Flour			
Coffee			

The coffee dissolved and went brown.

The Alka-Seltzer dissolved and fizzed.

Venn diagram showing materials

Soluble in water



Completing the Venn diagram

Look at the observations on your table. If there is a tick, then that material is soluble in water. Write the name of the material inside the set labelled 'Soluble in water'. If there is not a tick, write the name of the material outside the set.

Discussion

How accurate were your predictions?

Are your results the same as those of other children in your class?

Was our test fair? How could we make it fairer?

Look at the cups containing materials that did not dissolve.

How could we separate these mixtures?

Look at the cups containing materials that did dissolve. How could we separate these mixtures?