



More About Dissolving



investigation 1

Does temperature make a difference to how fast a substance dissolves?

What would you expect? How can we make sure the test is fair?

I predict that _____

We can make sure that the test is fair by _____

Dissolve one teaspoonful of sugar in 100ml of water of different temperatures.

water temp.	°c	number of stirs	time to fully dissolve in seconds
ice cold			
room temp.			
hand warm			

Did you get the result you expected? YES/NO

investigation 2

If you keep adding sugar will it still dissolve?

What do you think? How could you test this? How much sugar do you think will dissolve?

If I keep adding sugar it _____

I could test this by _____

I predict that _____ spoons of sugar will dissolve.

Did you get the result you expected? YES/NO

When you can not dissolve any more the solution is saturated.

investigation 3

Do you know how to get the sugar back again from the solution? Can you reverse the change? Try pouring the liquid into a flat saucer and leaving it on a window ledge.

What do think will happen to the liquid?	What happened to the liquid?	What is left in the saucer?

Try making up a salt solution by dissolving as much salt as possible in 50ml of water. Dangle a thin thread into the water and leave it on a window ledge. What forms on the string ?

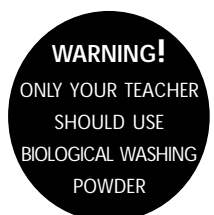
investigation 4

Not everything dissolves in water.

Can you dissolve fat (margarine) in liquid?

Try dissolving a blob of margarine in different liquids and see what happens.

liquid	YES - dissolved	NO - did not dissolve
water		
washing up liquid		
biological washing powder solution		



Why do you think people use washing powder or washing up liquid?

I think people use washing powder because _____



More About Dissolving - notes



A look at some of the factors that affect dissolving and how to reverse the change by evaporating off the liquid. Children should also understand that different solids dissolve in different liquids, for example some solids which do not dissolve in water may dissolve in other liquids.

investigation 1

Does temperature make a difference to how fast a substance dissolves?

Make predictions and plan a fair test.

EQUIPMENT NEEDED:

beakers, stirrer (teaspoon), sugar, kettle, ice cubes, thermometers*, timer or clock with second hand.

Dissolve one teaspoonful of sugar in 100ml of water. To make a fair test the same amount of water and sugar should be used in each experiment. The stir rate should also be approximately the same. Younger children can just use 3 temperatures of water and have a race.

Older children can measure the temperature of the water using a thermometer and time the experiment. If the time is plotted against temperature in the form of a line graph, this can be used to predict the time to dissolve at other temperatures.

WARNING!

* USE ALCOHOL OR SPIRIT THERMOMETERS. DO NOT USE MERCURY THERMOMETERS

investigation 2

This experiment looks at **"saturated" solutions**. It is especially good for making predictions as children will have no experience to base this on. The same experiment can be repeated using salt.

EQUIPMENT NEEDED:

beaker, water, sugar, teaspoon.

Stir in one spoonful of sugar at a time until all the sugar has dissolved and there are no particles left. Stop adding sugar when it will no longer dissolve.

investigation 3

Reversing the changes.

EQUIPMENT NEEDED:

sugary water (close to saturation gives the most satisfying results), flat saucer.

Do you know how to get the sugar back again from the solution? Can you reverse the change? It may help to prompt children by asking "what will happen if the liquid is poured into a flat saucer and left on a window ledge?" and "will the same happen to the sugar?"

Try making up a salt solution by dissolving as much salt as possible in 50ml of water. Dangle a thin thread into the water and leave it on a window ledge. Salt crystals should form on the string over the period of a week.

investigation 4

Not everything dissolves in water

This experiment shows that different solids dissolve in different liquids, for example some solids that do not dissolve in water, may dissolve in other liquids.

EQUIPMENT NEEDED:

beakers, water, margarine, washing up liquid, biological washing powder solution.

WARNING! BIOLOGICAL WASHING POWDER IS AN IRRITANT AND SHOULD BE USED IN A TEACHER DEMONSTRATION ONLY.

WEAR GLOVES AND READ THE INSTRUCTIONS ON THE PACKET.

First try dissolving a small blob of margarine in water. Does it dissolve?

Next try dissolving margarine in washing up liquid then in biological washing powder (wear gloves).

Washing powder or washing up liquid is used to dissolve fats from clothing and crockery.

investigation 5

What does wax dissolve in?

This is an extension experiment that should only be undertaken by a teacher. It further demonstrates that solids that do not dissolve in water may dissolve in other liquids.

EQUIPMENT NEEDED:

wax, white spirit, container, grater or knife

WARNING! WHITE SPIRIT IS FLAMMABLE AND TOXIC, REFER TO THE MANUFACTURERS GUIDELINES AND SAFETY DATA SHEETS.

Pour some white spirit into a container. Grate a small amount of wax into the white spirit. Leave for a couple of hours in a well ventilated area away from pupils. The wax should turn into blobs and then dissolve into the white spirit.