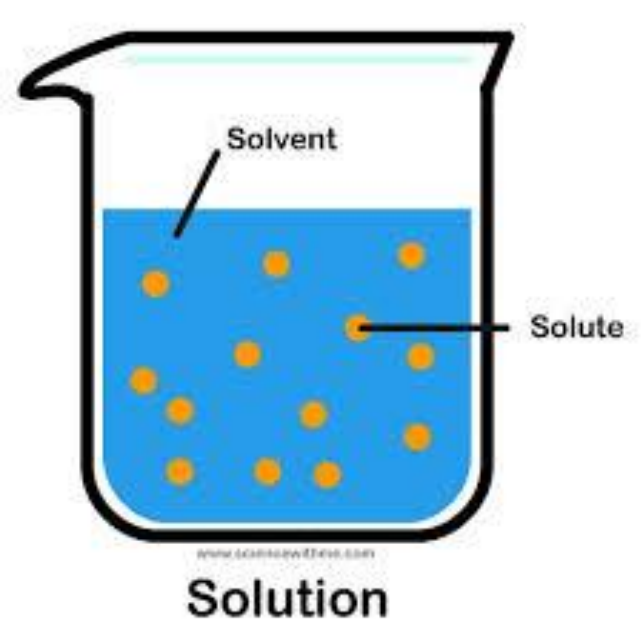
Soluble Solutions Investigation



SOLUTE	The substance that dissolves in a liquid to make a solution
SOLUTION	A liquid consisting of a solvent in which one or more substances have dissolved
SOLVENT	A liquid in which a substance is dissolved to make a solution
SOLUBLE	A substance is soluble if it dissolves in a solvent
SOLUBILITY	A measure of how much solute dissolves in a solvent
INSOLUBLE	A substance is insoluble if it does not dissolve in a solvent

Solutions – What are these?

SOLUTION: This is when a substance is dissolved in a liquid. For an explanation of what 'dissolved' means, click here to go to the BBC Bitesize website.

Not all substances dissolve, we say that those that do are called **SOLUBLE**, and those that don't are called **INSOLUBLE**.

The liquid that the substance dissolves in is called the **SOLVENT**.
The soluble substance that dissolves in the liquid is called the **SOLUTE**.

SOLUTE + SOLVENT = SOLUTION e.g. salt + hot water = salty water

What investigation could you carry out to test solubility?

Click here to watch a video about testing materials for solubility.

What will your investigation measure or observe?

Dependent Variable

In my investigation I will observe what happens when different solids are mixed with water.

What will you ensure stays the same during the tests? How will it be a fair test?

Controlled variable

To make sure the test is fair, I will keep these variables the same:

- the amount of water that is mixed with each material/solid
- the amount of material/solid put in the water
- the amount of time the material/solid is left in the water before an observation is made

What do you think will happen when the material/solid is mixed with water?

Make a prediction

Before each material/solid is mixed with water, you will need to predict what you think will happen on the table:

- Will the material/solid dissolve?
- Will the material/solid still be seen in the water?
- Will there be some sort of change to form a new substance?

Investigation

You will need:

- the materials – sugar, biscuits, salt, cooking oil, cocoa powder, flour, paracetamol, coffee
- a timer or stopwatch
- glasses for the water and materials
- a teaspoon

Investigation

Suggested process:

1. Fill beakers with a given amount of tap water.
2. Put a set amount of substance in (e.g. 1tsp, or 5g) and stir for 1 minute.
3. Inspect with a magnifying glass (if you have one).
4. Leave for 5 minutes to see if any sediment settles on the bottom.
5. Classify as soluble or not.

Results

Material/ solid	Prediction	Results			
		Dissolved	Did not dissolve	Reacted with water to form new substance	Observations/ explanation
Flour					
Crushed biscuits					
Cocoa powder					
Salt					
Sugar					
Paracetamol					
Coffee					
Cooking oil					

Record your results in the grid on your sheet.

Conclusion

What do the results show?

Were your predictions correct?

Complete the conclusion part on your sheet, making sure that you refer back to the enquiry question.