



LO: To identify change in materials



Have a look at this grid and feel free to put in your own ideas.

Think of other ideas to observe or measure in particular (this means things that you can investigate in the experiment).



Enquiry question:	Which materials dissolve in water?
VARIABLES	
Thing I could change/vary	
Think about the enquiry question above for ideas...	
Thing I could observe or measure	
How long materials take to dissolve or change?	
Which method works best? (eg: stirring, mashing).	
Is this a fair test?	

Have a look at these terms to help you use 'scientific language.'



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

Here are suggested solids to use to test for solubility- but feel free to vary!

Guidance for completing investigation

Equipment:

➤ Solids to test for solubility:

- Crushed biscuits
- Flour
- Baking powder
- Coffee (instant and filter)
- Salt
- Oil (use a cooking oil)
- Sugar
- Cocoa powder
- Andrew's salts or Alka Seltzer® tablets
- Ready Brek
- Plaster of Paris (check your school's policy – you may wish to use Alginate)
- **Stones**



- #### ➤
- Beakers
 - Glass rods or old spoons for stirring
 - Goggles
 - Stop watches
 - Thermometers



Looking at the suggested materials on the previous page, fill into this grid the materials you think will and will not dissolve. I have filled in a few of my predictions already to help you.

If you really want to extend yourself, you can explain WHY.

Predicting	
The materials that I think will dissolve	salt sugar (because it dissolves in my tea)
The materials that I think will not dissolve	oil because it is a different kind of liquid

This grid is very important to make sure we test fairly. I have filled in a few for you already to help you think of ideas for each box.

Only ONE thing can change. What do you think is most suitable to change in this experiment (seeing as we are investigating which **material** is soluble).

Think - would it be fair to use water to see if biscuit crumbs or soluble, then using milk to see if cement is soluble?

Ensuring my test is fair		
I will change		
I will observe	The time it takes for the materials to dissolve or change. How does the water/material look when finished? What does the material/ water feel like after the experiment?	
I will keep these things the same		
the liquid		

This part is important so you can compare these answers to your findings after experimenting. I have done the first three for you. Try to explain WHY you predict a certain idea.

Predictions

What do you think will happen when you mix these materials with water?

Material	Prediction
stones	It will form a paste.
small seeds	The seeds will not change because they need water to grow.
flour	The flour will not dissolve as it is used with liquids to make different things.
baking powder	
cocoa powder	
salt	
sugar	
Plaster of Paris	
Andrew's salts or equivalent	
coffee	
Ready Brek	
oil	

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 min
3. Inspect with a magnifying glass
4. Leave for 5 mins to see if any sediment settles on the bottom
5. Classify as soluble or not

Do this on
the grid
overleaf.



Ensure you have identified those variables that need to remain the same in order for the investigation to be 'fair'.

REMEMBER: You only change **ONE** variable (in our case, this is the material we are using to dissolve in water. **EVERYTHING** else must stay the same eg: the water's temperature, the volume of water used, the type of beakers used, etc).

Definitely try and get an adult to take photos of you experimenting to publish on the school website if you send them to me! :)

Fill in this grid after you have completed the experiment. Try to describe what happened DURING the experiment too. The first one is done for you.

Findings

Material	Dissolved	Did not dissolve (formed sediment)	Reacted with water to form new substance	Observations/explanation
cement		✓	✓	The stones did not change. The water changed colour slightly from the mud on the stones.
small seeds				
flour				
baking powder				
cocoa powder				
salt				
sugar				
Plaster of Paris				
Andrew's salts or equivalent				
coffee				
Ready Brek				
oil				

