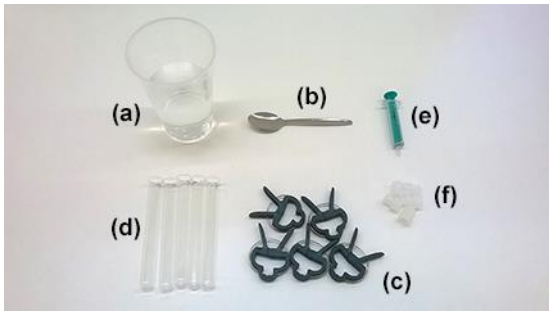
Water 1: Do all substances dissolve in water?

1 Apparatus and materials

Your materials



- *1 marker (water-soluble)*
- 1 plastic cup (500 ml) (a)
- 1 spoon (b)
- 5 plant clips (c)
- 5 test tubes (d)
- 1 syringe (5 ml) (e)
- 5 stoppers (f)
- *250 ml water*

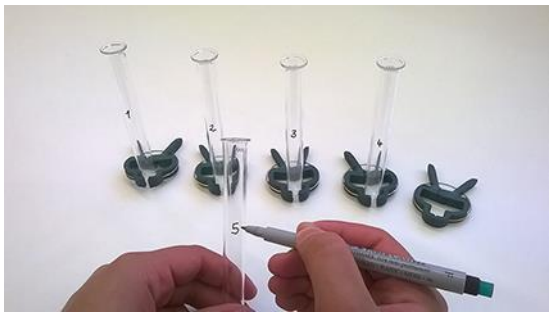
Materials for everyone

- Silica sand
- Salt
- Cooking oil
- Dish detergent
- Clay

1.1 Safety information

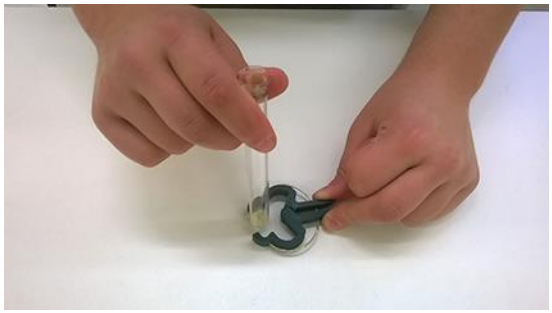
The materials may be used only as instructed by your teacher or as described in the experimentation instructions.

2 Preparing the experiment



1. Number the test tubes from 1 to 5 using the water-soluble marker.

2. Place as much clay as fits on the tip of the spoon handle in test tube 1.



3. Place the test tube vertically in a plant clip.

4. Place as much salt as fits on the tip of the spoon handle in test tube 2 and place the test tube in a second plant clip.

5. Place as much silica sand as fits on the tip of the spoon handle in test tube 3 and place the test tube in a third plant clip.

6. Place one drop of dish detergent in test tube 4 and place the test tube in a fourth plant clip.

7. Place one drop of cooking oil in test tube 5 and place the test tube in a fifth plant clip.

8. Now the experiment is ready.

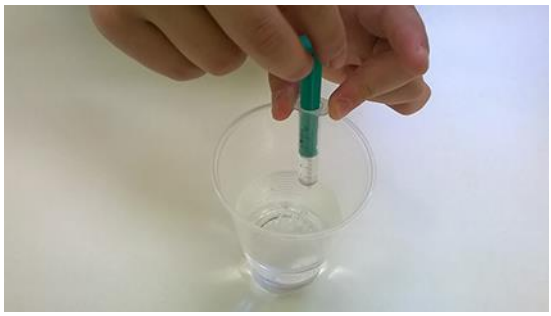
2.1 Question

Which materials will dissolve in water? What is your guess? Mark with an X.

	1 Clay	2 Salt	3 Silica sand	4 Dish detergent	5 Cooking oil
Dissolves					
Does not dissolve					

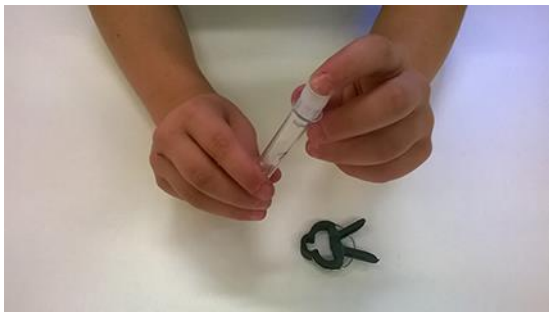
3 Conducting the experiment

Conduct the experiment according to the instructions.



1. Fill the syringe with 5 ml of water.

2. Slowly and carefully dispense the water from the syringe into the test tube.



3. Remove the test tube from the plant clip. Seal the test tube with a stopper.

4. Hold your thumb on the stopper. Shake the test tube for 20 seconds.

5. Place the test tube back in the plant clip. Remove the stopper from the test tube.

6. Repeat this process with the other test tubes.

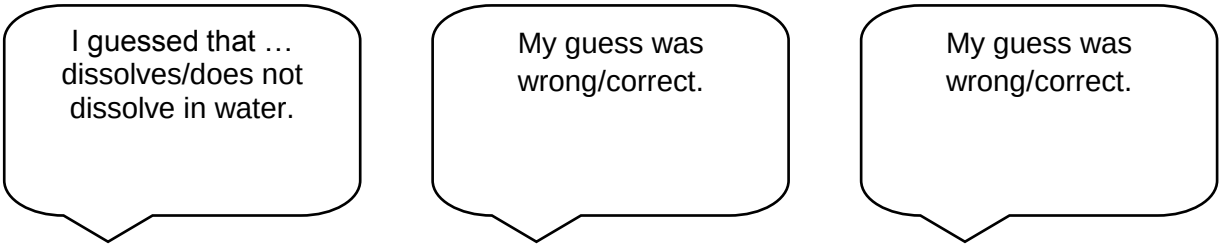
3.1 Assignment 1

Examine the test tubes for two minutes. What do you see?
Note the key points of your observations.

Substance	Observation
1 clay	
2 salt	
3 silica sand	
4 dish detergent	
5 cooking oil	

3.2 Assignment 2

Form sentences in the speech bubbles. Use the names of the substances you used.



3.3 Assignment 3

Mark the correct answer with an X.

Substance	Observation
1 clay	☐ Dissolves completely in water. ☐ Changes the color of the water. A residue remains at the bottom. ☐ Collects on the surface of the water.
2 salt	☐ Dissolves completely in water. ☐ Colors the water blue. ☐ Remains at the bottom of the test tube.
3 silica sand	☐ Dissolves completely in water. ☐ Settles on the bottom; the water becomes somewhat cloudy. ☐ Reacts with the water to form a slippery substance.
4 dish detergent	☐ Dissolves completely in water and changes the color. ☐ Does not dissolve; it remains on the bottom of the test tube. ☐ Dissolves in the water and produces foam with a pungent odor.
5 cooking oil	☐ Dissolves completely in water. ☐ Forms sediment that does not mix with the water. ☐ Forms a layer above the water that does not mix with the water.