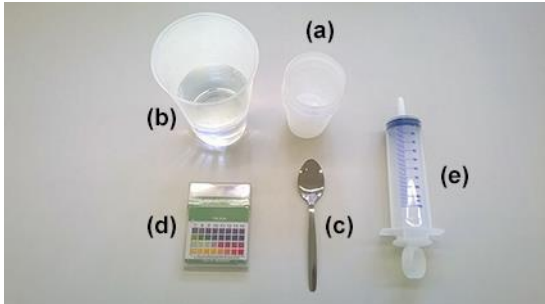


## Water 3: Detect invisible substances in water (1)

### 1 Apparatus and materials

#### Your materials



- 1 marker (water-soluble)
- 3 small plastic cups (100 ml) (a)
- 1 large plastic cup (500 ml) (filled halfway with water) (b)
- 1 spoon (c)
- 3 pH test strips with color scale (d)
- 1 syringe (100 ml) (e)

#### Materials for everyone



- Washing soda
- Citric acid

#### 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

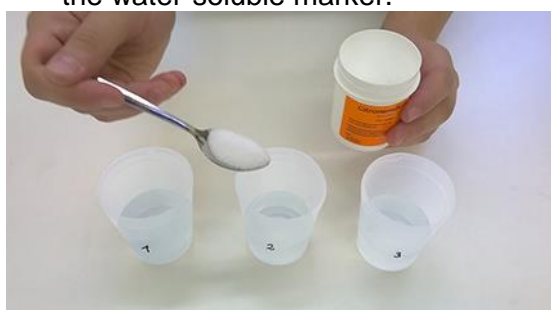
In experiments with acids and alkalis or if you use acids and alkalis, you must observe the teacher's safety information. You must also pay attention to safety in day-to-day life when you handle acids and alkalis.



1. Number the small cups from 1 to 3 using the water-soluble marker.



2. Use the syringe to carefully dispense 50 ml of water into each small cup.



3. Add a spoonful of citric acid to the second cup.



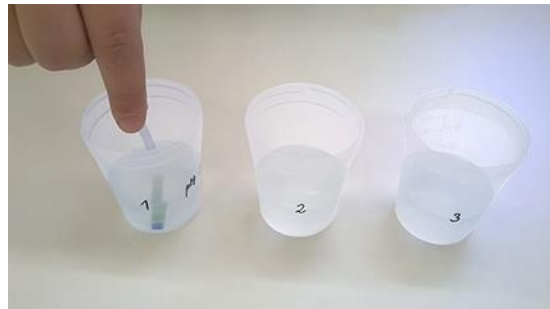
4. Add a spoonful of washing soda to the third cup.

## 2.1 Assignment 1

Conduct the experiment according to the instructions.



1. Use the spoon to stir the liquids in the cups numbered 2 and 3.



2. Dip a pH test strip into the first cup for 5 seconds.



3. Match the color of the test strip to the same color on the color scale.



4. Read the pH value on the color scale.



5. Use the water-soluble marker to write the pH value on the cup.



6. Repeat the experiment with the liquids in the other two cups. Use a new test strip each time.

## 2.2 Assignment 2

Fill in the table.

Cup no.	1	2	3
Liquid	Water	Water + citric acid	Water + washing soda
pH value			

## 2.3 Assignment 3

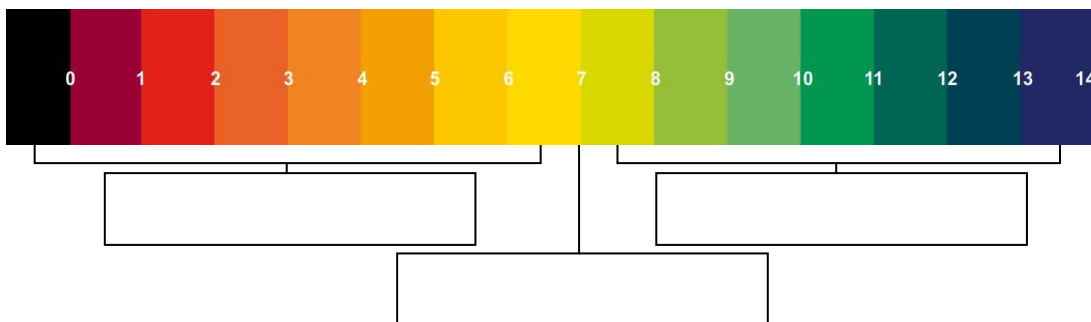
Read the following text.

Clear liquids are difficult to distinguish. They are not always pure water. For example, an acid or an alkali could also be dissolved in the water.

The pH value indicates whether a liquid is an acid (pH value 0 to 6) or an alkali (pH value 8 to 14). Another term used for “alkali” is “base”. Pure water (pH value 7) is neutral.

## 2.4 Assignment 4

Fill in the terms *acid*, *alkali*, and *neutral* on the pH value scale.



## 2.5 Assignment 5

Fill in the missing words.

The pH value indicates whether a liquid is an \_\_\_\_\_ or an \_\_\_\_\_.

The liquid with citric acid has a pH value of \_\_\_\_.

It is an \_\_\_\_\_.

Water has a pH value of \_\_\_\_\_. Water is \_\_\_\_\_.

The liquid with washing soda has a pH value of \_\_\_\_.

It is an \_\_\_\_\_.

Another designation for “alkali” is \_\_\_\_\_.

Invisible substances in water can be detected by measuring the \_\_\_\_\_.