

## 2 Testing pH

Universal indicator paper changes color depending on the pH of the solution being tested. Many substances around your home are acids and have a low pH. Others are bases and have a high pH. In this lab you will use pH indicator paper to investigate the pH of several common substances.

### Problem

How acidic or basic are household substances?

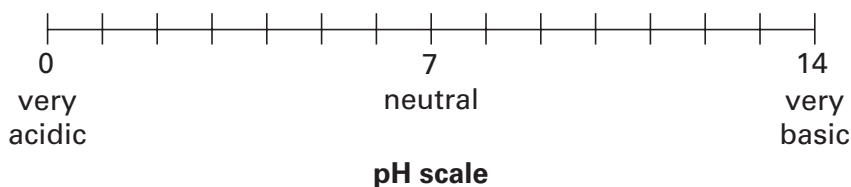
### Procedure

- 1 Label six test tubes with each of the six solutions, and place them in the test tube rack.
- 2 Pour 5 mL of the appropriate solution into each of the six test tubes. Use a different graduated cylinder each time.
- 3 Dip the tip of a strip of pH indicator paper into each test tube to test the pH of each known solution, as shown. Use a different strip of pH indicator paper for each solution. Use the color scale on the indicator paper package to estimate the pH of each solution. Record the pH of the known solutions in the table below.

**TABLE 1. pH OF COMMON HOUSEHOLD SUBSTANCES**

| Household Solution | pH |
|--------------------|----|
| lemon juice        |    |
| vinegar            |    |
| mouthwash          |    |
| window cleaner     |    |
| unknown 1          |    |
| unknown 2          |    |

- 4 Label the pH scale below with the known solutions. The pH scale ranges from 0 (very acidic) to 14 (very basic), with 7 (neutral) in the center.

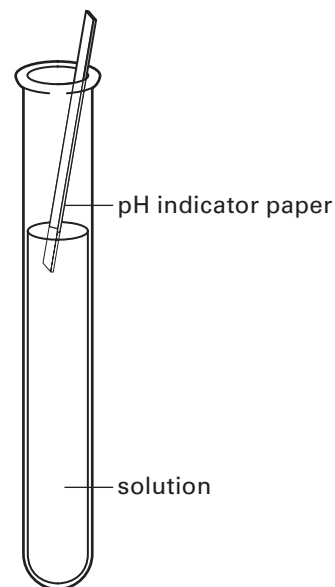


### MATERIALS

- 6 test tubes
- test tube rack
- marker
- 6 10-mL graduated cylinders
- lemon juice
- vinegar
- mouthwash
- window cleaner
- 2 unknown solutions
- pH indicator paper

### PROCESS SKILLS

- Observing
- Analyzing
- Inferring



Name

Period

Date

- 5 Test the pH of both unknown solutions with different strips of pH indicator paper, and record the pH of each in the table.
- 6 Add labels for the unknown solutions to the pH scale.

## Analyze and Conclude

1. **Identify** Find out from your teacher what the unknown solutions are. Is the pH of any of the solutions different than you might have expected? Why or why not?

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2. **Apply** What is the pH range of the solutions you tested? Are any of them very acidic or basic? What does this indicate about many common substances found in the home?

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3. **Infer** Describe the hydrogen ion concentrations in each of the six solutions.

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## EXTEND YOUR INVESTIGATION

Use red cabbage juice as a pH indicator to test the six solutions that you tested earlier. Is the red cabbage juice as accurate as the pH indicator paper? Explain.

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