

23.4

Acids, Bases, and pH



Question: What is pH?

1 Setting up

  **Safety Tip: Wear goggles and a lab apron during the Investigation to protect your eyes and clothing from the household chemicals that you will be using.**

There are no questions to answer in Part I.

2 Make a pH scale using indicators

Name of solution	Color when mixed with red cabbage juice	Red litmus paper: If paper turns blue, write "base," or make an "x"	Blue litmus paper: If paper turns red, write "acid," or make an "x"	pH
1. lemon				2
2. vinegar				3
3. seltzer				4
4. red cabbage juice				6.5
5. baking soda solution				8.5
6. bar soap solution				10
7. ammonia				11
8. green tea				
9. antibacterial cleaner				
10. apple juice				
11. mystery solution A				
12. mystery solution B				

3**Evaluating the role of the pH test plate**

- a. What is the role of a pH indicator? What is the range of pH measured by each of the indicators you used (red cabbage juice, red litmus paper, blue litmus paper)?

- b. Which of your solutions has the highest concentration of H_3O^+ ions? Which has the highest concentration of OH^- ions? Explain your reasoning.

- c. The red cabbage juice used in the Investigations has two roles. It is the pH indicator and, in the series on the pH test plate, it is a *control*. Why is a control needed on the pH test plate?

4**Using pH indicators to measure unknown pH**

There are no questions to answer in Part 4.

