Name _____ Section _____

Chemistry

Photograph used under Creative Commons license.

A1.4

apply knowledge and understanding of safe practices and procedures

A1.5

conduct inquiries, controlling some variables, adapting or extending procedures as required, & using standard equipment & materials safely, accurately, & effectively, to collect observations & data

A1.6

gather data from laboratory, and organize and record the data using tables

A1.10

draw conclusions based on inquiry results and research findings, and justify their conclusions

C3.7

describe how the pH scale is used to classify solutions as acidic, basic, or neutral

Warning!

Never add water to acid — this may splatter and burn you. Always add acid to water.

Red Cabbage Experiment

Question: How does the colour of red cabbage change in solutions with different pHs?

Hypothesis:

Materials

5.0 mL	1.0 mol/L hydrochloric acid
5.0 mL	1.0 mol/L sodium hydroxide
10 mL	natural indicator (red cabbage)
250 mL	water

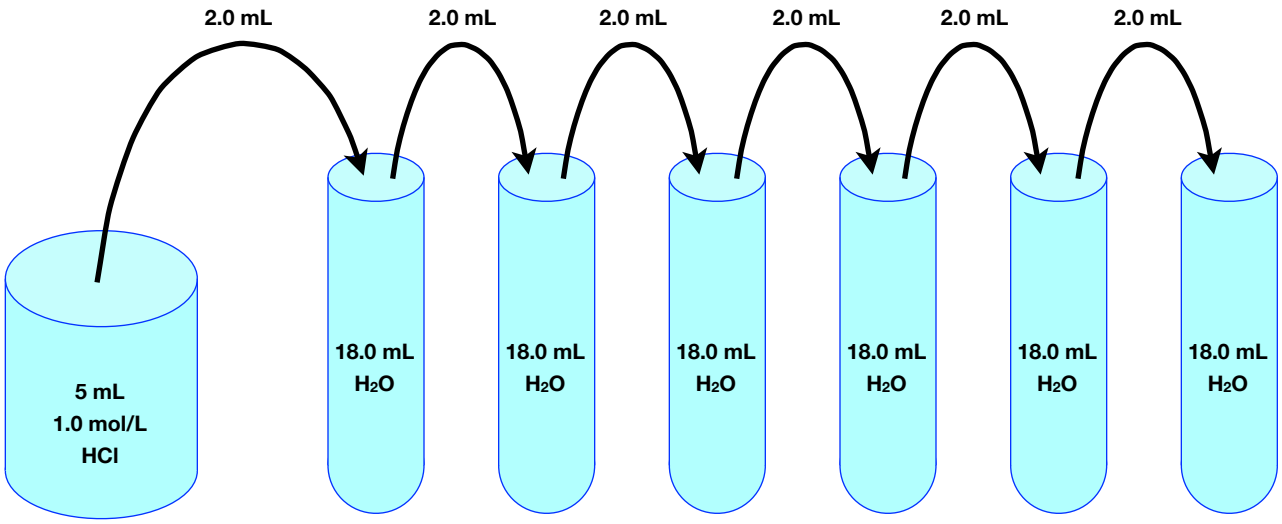
Apparatus

6	test tubes
1	test tube rack
2	50 mL beakers
2	eye droppers
1	10 mL graduated cylinder

Procedure

1. Put on safety goggles.
2. Clean glassware before use.
3. Obtain approximately 10 mL of the red cabbage indicator in a 50 mL beaker.
4. Obtain approximately 5.0 mL of 1.0 mol/L hydrochloric acid into a 50 mL beaker.
5. Accurately measure and add 18.0 mL of water into all test tubes.
6. Accurately measure 2.0 mL of the 1.0 mol/L hydrochloric acid and pour it into the **first test tube** in the test tube rack.
7. Gently swirl the first test tube in a circular manner to mix the solution.
8. Leave the rest of the 1.0 mol/L hydrochloric acid in the beaker.
9. Accurately measure 2.0 mL of the solution from the **first** test tube and pour it into the **second** test tube in the test tube rack.
10. Gently swirl the second test tube in a circular manner to mix the solution.
11. Repeat steps 9-10 for test tubes three, four, five, and six.
12. Add 2-3 drops of red cabbage indicator to each test tube **and** the beaker with the hydrochloric acid.
13. Observe and record the results.
14. Place all waste in the waste container and clean all glassware. Keep the red cabbage juice.
15. Repeat steps 4 to 14, substituting sodium hydroxide for hydrochloric acid.
16. Observe the sample of red cabbage juice in water at the front desk.

Procedure Diagram



Observations

Record all observations in the chart provided below.

pH							
Colour							

pH							
Colour							

Errors and Limitations

pH	チ
Colour	

1.

2.

3.

How can these errors and limitations be addressed if the experiment were to be performed again?

Conclusion