



Name: Aaeysa M

Date:

Student Exploration: Titration

Directions: Follow the instructions to go through the simulation. Respond to the questions and prompts in the orange boxes.

Vocabulary: acid, analyte, base, dissociate, equivalence point, indicator, litmus paper, molarity, neutralize, pH, strong acid, strong base, titrant, titration, titration curve, weak acid, weak base

Prior Knowledge Questions (Do these BEFORE using the Gizmo.)

There are several definitions of acids and bases. According to the Brønsted-Lowry definition, an **acid** is a substance that is capable of donating a proton to another substance. A **base** is a substance that accepts protons. When an acid and a base are combined, the acid is **neutralized** as the base accepts the protons produced by the acid.



One way to determine if a solution is acidic or basic is to use **litmus paper**, as shown above. There are two types of litmus papers: red and blue.

How does litmus paper indicate an acid?

Both strips turn red.

How does litmus paper indicate a neutral substance?

The red strip stays red and the blue one stays blue.

How does litmus paper indicate a base?

Both strips turn blue.

Gizmo Warm-up

Litmus is an example of an **indicator**, a substance that changes color depending on its **pH** (pH is a measure of the concentration of protons, or H^+ ions). In the Titration Gizmo, you will use indicators to show how acids are neutralized by bases, and vice versa.

To begin, check that **1.00 M NaOH** is selected for the **Burette**, **Mystery HBr** is selected for the **Flask**, and **Bromthymol blue** is selected for the **Indicator**.



1. Look at the flask. What is the color of the bromthymol blue indicator?

yellow

2. What does this tell you about the pH of the solution in the flask?

pH is below 6.0

Solutions with a pH below 7.0 are acidic, while those with a pH above 7.0 are basic.

3. Move the slider on the burette to the top to add about 25 mL of NaOH to the flask. What happens, and what does this tell you about the pH of the flask?

The solution turns blue meaning the pH is now above 7.0.

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R Bogdan

A red circular graphic with a gradient, appearing as a semi-circle or a partial circle, located to the right of the author's name.

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