

The pH Scale

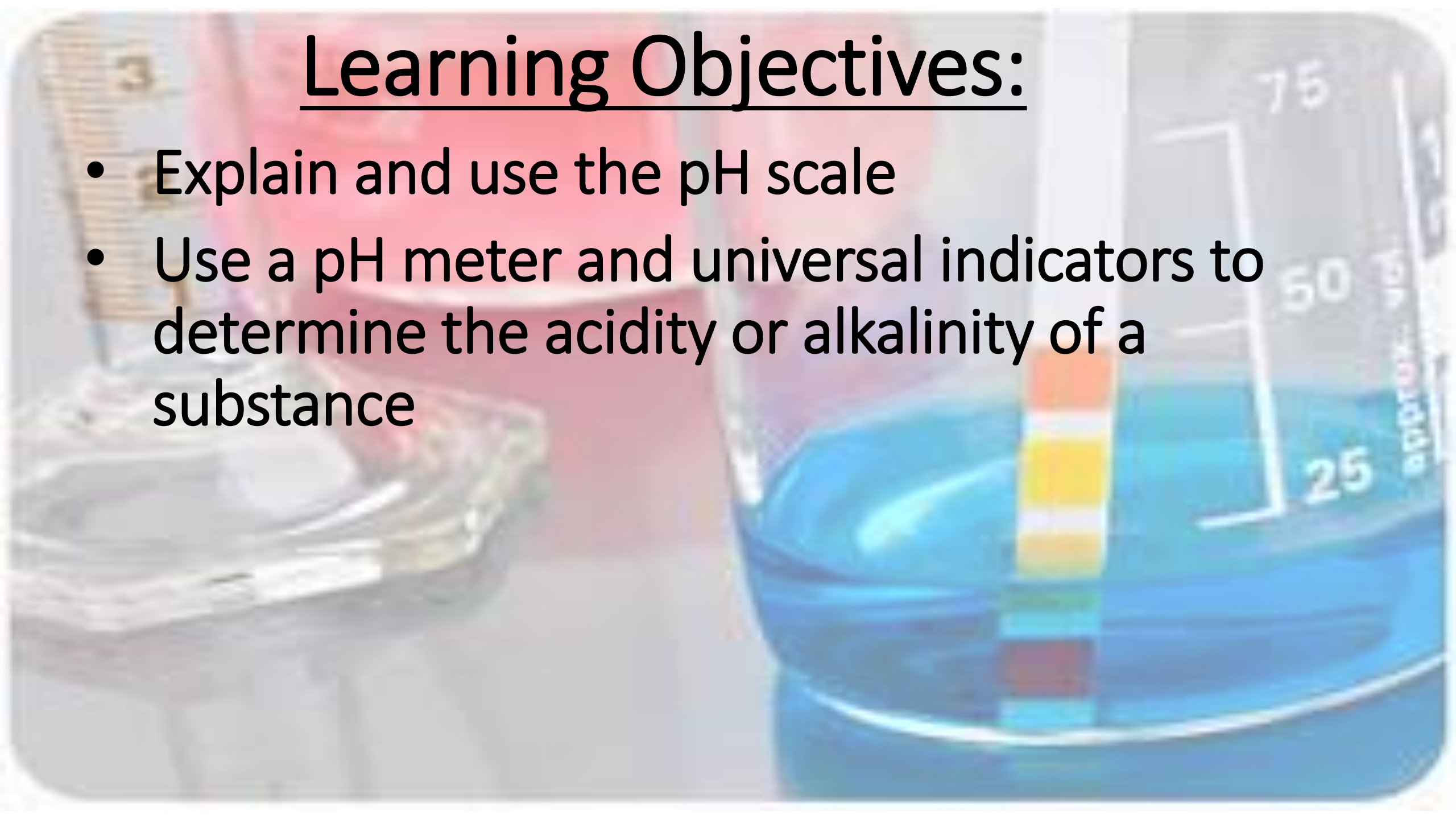
Chemistry 10

Mrs. Page



Learning Objectives:

- Explain and use the pH scale
- Use a pH meter and universal indicators to determine the acidity or alkalinity of a substance



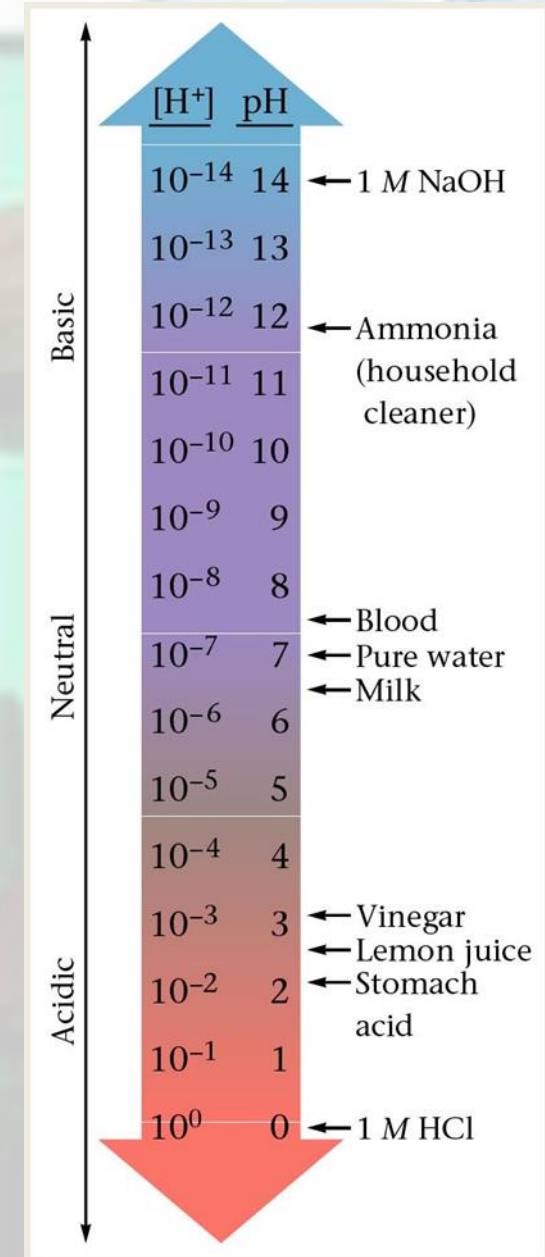
The pH Scale

- pH is a measure of how acidic or basic a solution is, which means it is a measure of the concentration of hydrogen ions $[H^+]$ in a solution.
- The pH scale ranges from 0 to 14.
- Acidic solutions have pH values below 7
- A solution with a pH of 7 is neutral (pure water)
- Basic/alkali solutions have pH values above 7.



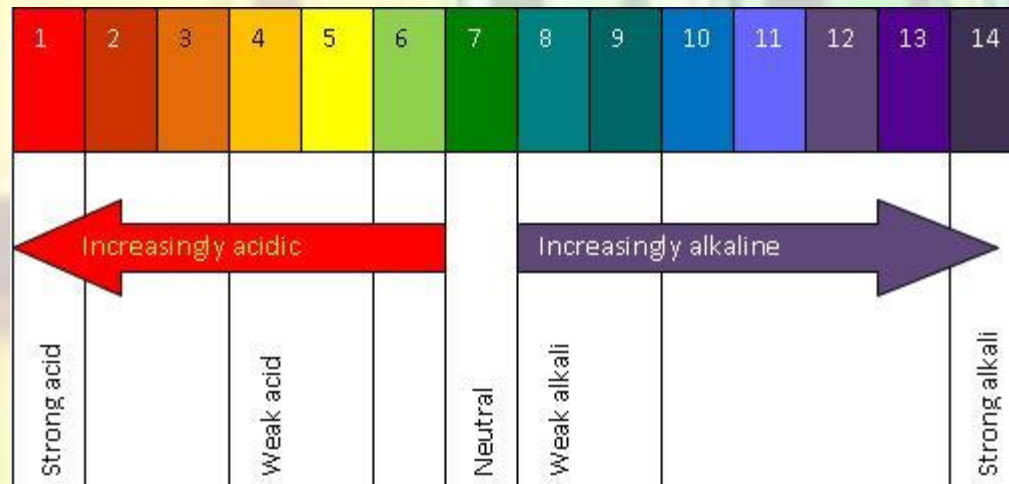
pH Scale

- The pH scale is a way of expressing the strength of acids and bases.
- Instead of using very small numbers, we just use the **NEGATIVE** power of 10 on the Molarity of the H^+ (or OH^-) ions.



pH Scale

- The pH scale is a logarithmic scale (not linear).
- A change of 1 pH unit represents a tenfold change in the acidity of the solution.
- For example, if one solution has a pH of 1 and a second solution has a pH of 2, the first solution is not twice as acidic as the second—it is ten times more acidic.



Measuring pH

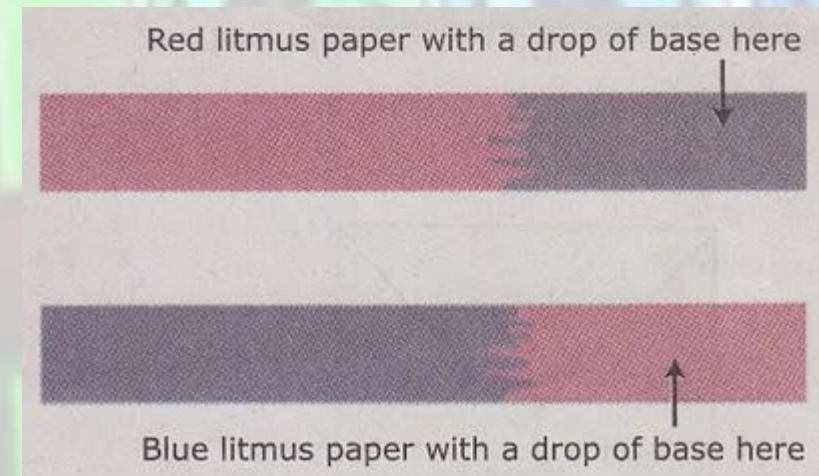
Use a pH meter and universal indicators to determine the acidity or alkalinity of a substance

- Indicators are substances that turn different colors in the presence of an acid or base

- Universal Indicator – color indicates pH



- Litmus paper – turns red acid, turns blue base

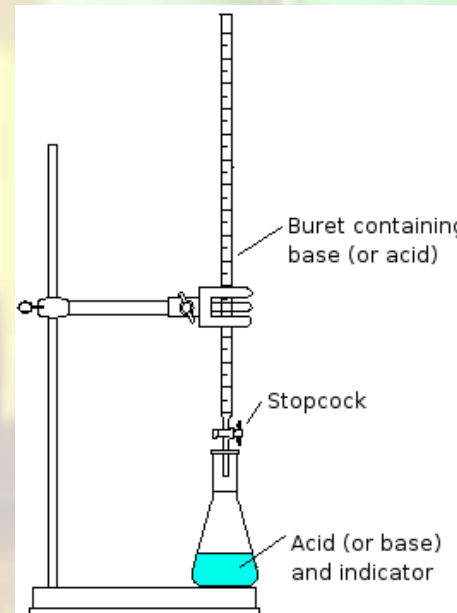
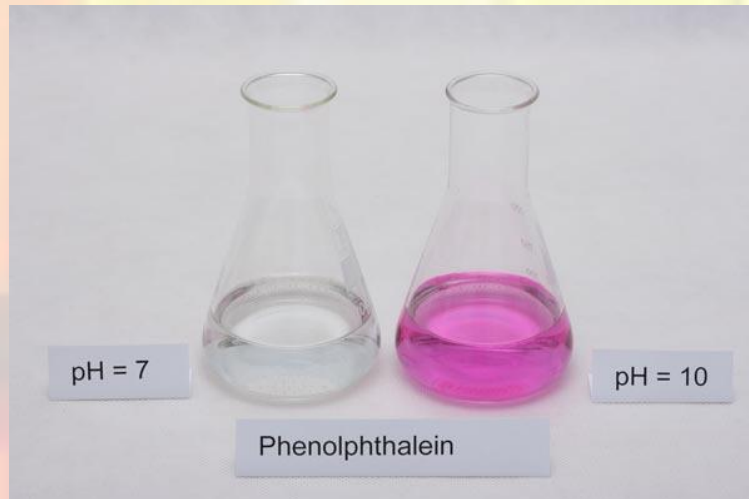


Measuring pH

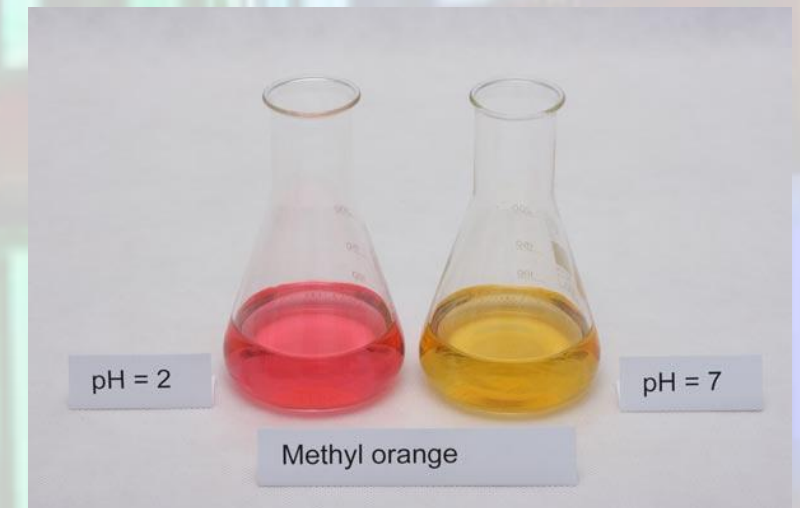
Use a pH meter and universal indicators to determine the acidity or alkalinity of a substance

- Indicators are substances that turn different colors in the presence of an acid or base

- Phenolphthalein: commonly used in titrations, turns pink in basic solutions



- Methyl orange: commonly used in titrations, turns orange in acidic solutions



Measuring pH

Use a pH meter and universal indicators to determine the acidity or alkalinity of a substance

- **pH Probe**: digital tool for measuring pH
- **Must be used with a GoPro and Logger Pro software**
- **Gives reading as a pH number**

