ρH indicator lab—glue or tape in laboratory notebook

You are probably familiar with small strips of litmus paper to test the ρ H of a solution. Qualitative ρ H indicators are usually large, organic molecules that produce or remove H⁺ ions when dissolved in water. In this lab we will use anthocyanin extract from red cabbage to test the ρ H of various household items.



Anthocyanins can be found in red cabbage, grapes, eggplant, blackberries, radishes, cranberries and other foods.

The 'R' groups stand for other compounds bonded to the molecule, e.g. glucose.

Procedure:

- 1. Fill each of your 6 test tubes half-way with the purple/blue cabbage extract.
- 2. Obtain samples of the following items in small plastic cups:
 - a. Sodium hydroxide solution (NaOH)
 - b. Vinegar
 - c. Ammonia
 - d. Baking soda
 - e. Liquid detergent
 - f. Hydrochloric acid solution (HCl)
- 3. Carefully, transfer a small amount of NaOH to the first test tube. You should observe a distinct color change in the indicator solution.
- 4. Repeat this process with the other samples in test tubes 2 through 6.

Anthocyanin *pH* color key:

Color	Red	Light pink	Dark pink	Purple	Blue	Aqua	Green	Yellow
ρΗ	0	2	4	6	8	10	12	14

Record your observations and ρH estimation in the table. Then calculate $[H^{\scriptscriptstyle +}]$ and $[OH^{\scriptscriptstyle -}].$

 $[H^+]$ = concentration of H^+ ions. $1 \times 10^{-14} = [H^+] \times [OH^-]$

Solution	ρΗ	[H ⁺]	[OH ⁻]
NaOH			
Vinegar			
Ammonia			
Baking soda			
Detergent			
HCl			

- 1. Why do the most acidic substances have the lowest ρH numbers?
- 2. What kind of solution prevents human blood from becoming acidic after eating acidic foods?