

# Christian Alliance S W Chan Memorial College

## "pH in Everyday Life" Education Kit #1 & 2

Warm Up Questions:

1. When an acid and base combined what reaction results?
2. What ion found in a solution would make it acidic?
3. What scale is used to determine whether a solution is acidic or basic?
4. A pH of less than 7 indicates the solution is a/an \_\_\_\_\_.
5. A pH greater than 7 would indicate the solution was a/an \_\_\_\_\_.
6. A neutral solution has a pH of \_\_\_\_\_.



***Check the answer in the last page***

### Natural pH indicators Preparation Guide

**Here is the example of beet juice preparation**

- (1) Chop the beetroot (or cabbage) into small pieces until you have about 2 cups of chopped vegetable.
- (2) Place the pieces in a beaker or large container and add enough boiling water to cover them.
- (3) Wait for 15 minutes for the food color to seep out into the water, giving them a stir now and then.
- (4) Beetroot juice will turn the water red. Filter the juice with filter paper and collect it with a new container.



# Kit #1

pH

	3	5	7	9	11	13	
A	1	2	3	4	5	6	natural pH indicator (1)
B							natural pH indicator (2)
C							natural pH indicator (3)
D							natural pH indicator + household items

## Instruction

- (1) Add 1 ml of water into each well to dissolve all the powder.
- (2) Add 1 ml of fruit/vegetable juice into each well and mix well. Observe the color change of the juice. Record the pH scale for the indicators.  
(If the color does not change immediately, try to mix the solution thoroughly)
- (3) Pick one natural pH indicator from the above and mix with the household items that you interested inside the wells of last row. Determine their acidity or alkalinity.

**Natural pH indicators: Beets, Blackberries, Blueberries, Curry Powder, Grapes Red onion, Red cabbage, Rose Petals etc.**

**Acids & Bases Found in Homes: Citrus Fruits, Lemon juice, Toothpaste, Vinegar, Carbonated Beverages, Baking Soda, Bleach, Soap, Tap water, Milk, Beer etc.**

Table 1: pH scale for \_\_\_\_\_ (Name of the natural indicators)

pH	3	5	7	9	11	13
Color						

Table 2: pH scale for \_\_\_\_\_ (Name of the natural indicators)

pH	3	5	7	9	11	13
Color						

Table 3: pH scale for \_\_\_\_\_ (Name of the natural indicators)

pH	3	5	7	9	11	13
Color						

**Color: Pink, Dark Red, Red, Violet Blue, Blue, Green, Greenish Yellow etc.**

Determining Acids & Bases			
Well	Household items	Acid?	Base?
D1			
D2			
D3			
D4			
D5			
D6			

## Kit #2

	1	2	3	4	5	6	
A	pH3	pH5	pH7	pH9	pH11	pH13	Reference pH scale
B	pH__	pH__	pH__	pH__	pH__	pH__	Find the unknown
C	pH__	pH__	pH__	pH__	pH__	pH__	
D	pH__	pH__	pH__	pH__	pH__	pH__	

### Instruction

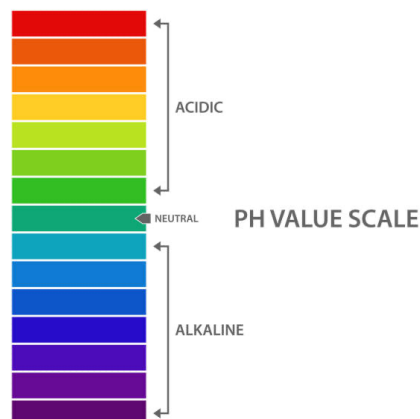
- (1) By looking at the result of kit #1, choose a natural pH indicator that has a distinct pH scale for acid and alkaline.
- (2) Add 1 ml of water into the wells of row A to dissolve all the powder. Add 1 ml of the natural pH indicator to complete the **reference pH scale**.
- (3) Repeat the above steps for the remaining wells (row B-D) and estimate the pH of the solution in each well. Fill in your answers in the above figure.
- (4) Check the answers in the last page.

## Answers

Warm Up Questions:

- (1) Neutralization
- (2) Hydrogen ion
- (3) pH scale
- (4) acidic
- (5) alkaline
- (6) 7

Kit #2



	1	2	3	4	5	6	
A	pH3	pH5	pH7	pH9	pH11	pH13	Reference pH scale  Find the unknown
B	pH7	pH9	pH11	pH3	pH13	pH5	
C	pH11	pH5	pH13	pH7	pH3	pH9	
D	pH5	pH3	pH7	pH11	pH9	pH13	

### WARNING Safety precautions

- Clean benches after the completion of each test. Wash thoroughly after handling.
- Dispose of contents/ container properly in accordance with local regulations.
- Harmful if swallowed, cause severe skin burns and eye damage. Do not breath mist or vapor. Do not get in eyes, on skin, on clothing. Do not eat, drink, or smoke while using the product. Keep container closed and away from heat, source of ignition.
- Wear protective gloves during the experiment.
- In case of accident or if you feel unwell, seek medical advice immediately.