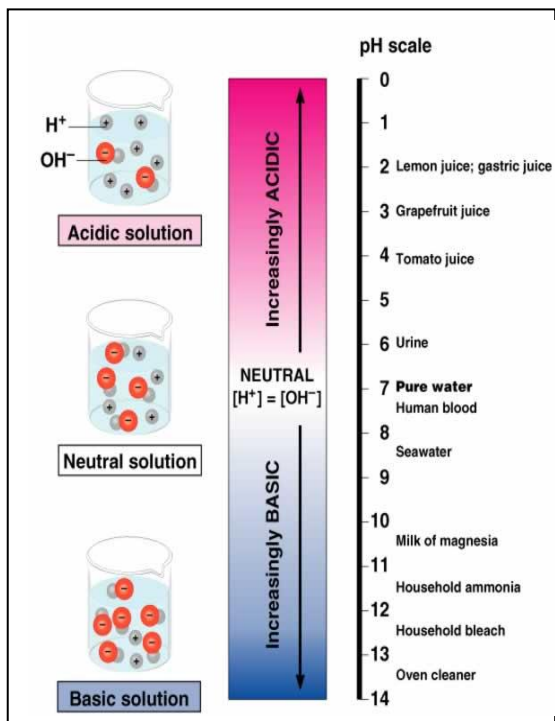


Name: _____ Date: _____ Period: ____ Seat No: _____

pH Lab: Acidic or Basic?



Introduction: The name "acid" makes our mouth little watery with the images of tartness or sourness in fruit like lemon or oranges (citric acids). Most of the food we eat is acidic and our stomach produces very strong acids. This acidity helps us digest our food. Images of laboratory strength acids like sulfuric acid and hydrochloric acid can however, bring the horrible images of acid eating through materials like metals and human flesh. If our water is acidic, plumbing fixtures and our hot water heaters can be damaged. Substance with pH lower than 7 is considered acidic.

The name "base" however is not as well known. Even when the older term "alkali" is used, it does not bring to our mind an image. In their industrial applications, bases too can be highly powerful. As with acids, they have many household uses, in substances such as baking soda or oven cleaners. If the water is basic, minerals can settle out of the water causing our water pipes to clog and give us low water pressure.

From a taste standpoint, (as anyone who has ever brushed his or her teeth with baking soda knows), bases are bitter rather than sour. How do we know when something is an acid or a base? Acid-base

indicators offer a means of judging these qualities in various substances. Substance with pH higher than 7 is considered basic.

In this investigation, you will use different pH indicators to identify the pH of several different household solutions then determine whether a substance is acidic, basic, or neutral.

Purpose: _____

Hypothesis (write down the names of the household products then write (your prediction) acidic, basic, or neutral in the parenthesis next to them):

Safety: _____

Procedure:

1. Obtain a 96 well spot plate.
2. Place two drops of each household items on the first four rows.
3. Place one drop of the universal indicator in the first row and record its color.
4. Place one drop of the phenolphthalein in the second row and record its color.
5. Place one drop of the cabbage juice in the third row and record its color.
6. Place one drop of the bromothymol blue in the fourth row and record its color.
7. Record its colors and predict its pH using the color chart and indicator information below.

Characteristics of Acids and Base

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Table 1. pH Indicators and its colors.

pH level	Universal Indicator	Cabbage Juice Indicator	Phenolphthalein	Bromothymol blue
pH2	Red	Fuscia	Colorless	Yellow
pH3	Red	Fuscia	Colorless	Yellow
pH4	Red	Purple-pink	Colorless	Yellow
pH5	Orange	Purple	Colorless	-----
pH6	Yellow	Purple	Colorless	-----
pH7	Light-green	Blue	Colorless	Green
pH8	Green	Blue-green	Pink	-----
pH9	Turquoise	Green	Pink	-----
pH10	Purple	Green	Pink	Blue
pH11	Dark purple	Green	Pink	Blue
pH12	Deep purple	Grass green	Pink	Blue

Data:

Table 2: pH (list the color) of household items

Household Item	Chemical Formula	Universal indicator	Cabbage Juice	Phenolph -thalein indicator	Bromothymol Blue	pH prediction (#)	Acid, base, or neutral
Table salt	NaCl(aq)						
Vinegar	C ₂ H ₄ O ₂ (aq)						
Rubbing alcohol	C ₃ H ₈ O(aq)						
Window cleaner	NH ₄ OH(aq)						
Distilled water	H ₂ O (l)						
Stomach juice	HCl(aq)						
Washing soda	Na ₂ CO ₃						
Lemon Juice	C ₆ H ₈ O ₇ (aq)						
Drain cleaner	NaOH(aq)						

Post Lab Questions:

Define the following terms. Be sure include pH for each and phenolphthalein indicator colors

Acid: _____

Base: _____

Neutral (pH): _____