Block 3B1K

Indicators Lab

There are three sets of activities and a set of questions you must complete during this lab. You may do the activities in any order. You are also welcome to take the trays back to your table to work or stay at the station.

Station #1-pH Paper Identification

1. Pick one of the clear solutions and pour about 50 mL into a beaker.
2. Take one piece of pH paper from the tray and touch the end of it to the surface of the liquid in the beaker.
3. Match the color of the paper to the scale on the side of the container.
4. Repeat steps 1-3 for the other two clear liquids.
5. Place an antacid tablet in the beaker that contains the acid and observe what happens.
6. Test the pH of the acid after the antacid has been added.
7. Throw the pH paper away. Pour the liquids into the sink. Clean out the beakers and wipe them dry. Wipe down the sink counter.

What was the pH of solution A? 4

Is solution A an acid, base, or neutral? acid

What was the pH of solution B? 6

Is solution B an acid, base, or neutral? acid

What was the pH of solution C? 4

Is solution C an acid, base, or neutral? acid

How did the pH change when the antacid tablet was added to the acid?
more basic

What is in your stomach an acid, base, or neutral? acid

What do you use antacid tablets for? neutralize the acid in your stomach

Is an antacid tablet an acid, base, or neutral? base

What will an antacid do to your stomach? make it feel better

Station #2-Raddishes

1. Take the radish and index card form the tray. Rub the radish onto the index card so that the card becomes red (you only need to make part of the card red, not the entire card).
2. Take the Q-Tip from the Dixie cup containing orange juice and dab it onto one spot on the index card. Note the color on that spot of the index card.
3. Repeat step 2 for each of the remaining solutions.
4. Throw away the index card. Wipe down the counter or table top. Tell Miss Slater if anything is empty or needs to be changed.

What color should have appeared for the acids? yellow

What color should have appeared for the bases? blue

List the solutions as either acids or bases.

Acids	Bases
orange juice coke	mouth wash

What are most of the acids used for? food.

What kind of taste do acids have? sour

What are most of the bases used for? cleaning

What kind of taste do bases have? bitter

What do you have in your stomach (acid, base, or neutral)? acid

Would it be better to add acids or bases to your stomach? bases

Station #3-Cabbage

1. Place half a leaf of cabbage into a plastic baggie.
2. Add two plastic cups full of water.
3. Close the baggie (make sure most of the air is out of the baggie).
4. Use your hands to mix the cabbage and water together for about a minute.
5. Pour the solution into two Dixie cups (you want an equal amount in each cup).
6. Add one teaspoon of glass cleaner to one cup.
7. Add one teaspoon of lemon juice to the other cup.
8. Pour the liquids into the bucket. Throw the cups, cabbage and baggie away. Wipe off the desk top.

Which solution was your acid? lemon juice

What color did the acid turn in the cabbage solution? pink

What is this acid used for? cleaning

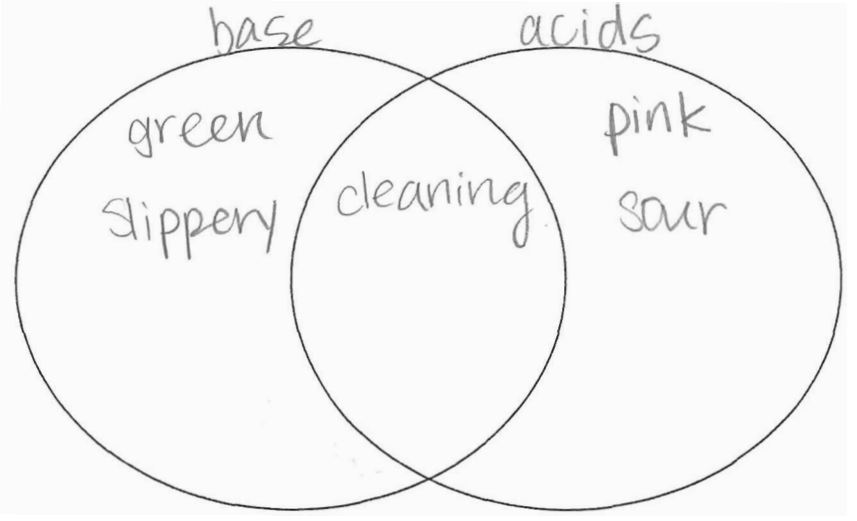
Which solution was your base? glass cleaner

What color did the base turn in the cabbage solution? green

What is this base used for? cleaning

Questions

4. Use the Venn Diagram to compare and contrast acids and bases.



1. What is the name of the type of chemical that tells if you have an acid or a base solution?

Indicator

2. What is the color for acids? pink

3. What is the color for bases? green

4. What is pH? The pH of a solution is the negative logarithm of the hydrogen ion concentration.

5. What is pOH? The pOH of a solution is the negative logarithm of the hydroxide ion concentration.

6. List the two models of acids and bases from your notes. Arrhenius model, Bronsted-Lowry model

7. According to **Arrhenius**, label each as an acid (A) or a base(B).

H_2S A	CH_4 A	NaOH B
HCl A	KOH B	HNO_3 A
NH_3 A	C_2H_6 A	$Mg(OH)_2$ B

8. What is a conjugate base?

a H^+ to a base

9. What is a conjugate acid? made when a base accepts a H^+ from an acid.

10. Label the acid (A), base (B), conjugate acid (CA), and conjugate base (CB) in the following reactions.

B A CA CB
$NH_3 + H_2O \rightarrow NH_4^{+1} + OH^{-1}$

A B CA CB
$HBr + H_2O \rightarrow H_3O^{+1} + Br^{-1}$

A B CB CA
$HNO_2 + H_2O \rightarrow NO_2^{-1} + H_3O^{+1}$

A B CB CA
$H_2CO_3 + H_2O \rightarrow HCO_3^{-1} + H_3O^{+}$

A B CA CB
$H_2SO_4 + H_2O \rightarrow H_3O^{+1} + HSO_4^{-1}$

B A CA CB
$NaOH + HCl \rightarrow H_2O + NaCl$

11. Write the formula for the conjugate base of each acid.

HNO_3 NO_3 $HC_2H_3O_2$ $C_2H_3O_2$ HF F

H_2SO_4 HSO_4 HCl Cl H_2O HO

12. Write the formula of the conjugate acid for each base.

OH^{-1} OH_2 NH_3 NH_4 H_2O H_3O

13. Your stomach uses acid to help digest the food you eat. When the stomach contains too much acid, a person will use an antacid (like Alka-Seltzer). Antacids decrease the amount of acid, making the person feel better. Why do medications like antacids decrease the amount of acid in the stomach?

Because antacids contain base.

14. Would you predict most medications to be acids or bases? Why?

bases. Because our stomach cotains acid, if the medications contains acid, when we take the medicine, our stomach will contains too much acid, then we will feel sick.

15. Most of the foods you eat are acids. What would happen if you ate too many acidic foods? How could you fix it?

Too much acidic foods will make people's stomach feel sick. take antacid to make it feel better.

16. What happens when acids and bases mix together? produce water and salt. Neutralize.

17. What is the danger of eating a base (like a cleaning product)? cleaning product is unable to eat. chemical base would kill us.