SfS Away from the Classroom!

C05: Acids and Bases (Recommended for Grades 5-8)

Please use the following resources to learn about Acids and Bases.

Watch this Video: https://youtu.be/mnbS56HQbaU

Answer these questions:

- What is the range of the pH scale?
- Are numbers lower than 7 acids or bases?
- What happens if you mix an acid and a base?

Activity: Determine if some household liquids are acids or bases.
***You should work closely with a responsible adult when completing this activity**

You will need:

• Vinegar • Baking powder • Water • Liquid soap	• Seltzer water (or sprite) • Lemon juice • Baking soda • Windex	• 6 clear cups • Notebook • Marker • Pencil • Optional: turmeric or curry powder


pH Indicator: to determine if your liquids are acids or bases, we need a pH indicator. This is something you can add to each liquid that will result in a visual change indicating an acid or base.

- You will use baking soda as our indicator. The reaction you see won't tell you *how* acidic or basic the liquid is on the ph scale. The following observable reaction will help you.
  - Baking soda will fizz and bubble when it's exposed to an acid.
  - Baking soda will have no reaction when exposed to a base.

1. Pour a ¼ cup of each liquid (vinegar, seltzer water, Windex, lemon juice) into 4 separate cups; label each cup with its contents.

2. In another cup, add a teaspoon of baking powder and a ¼ cup of water. Stir the solution until the baking powder dissolves. Label the cup with the contents.

3. In another cup, add 1 teaspoon of liquid soap and a ¼ cup of water. Gently stir to mix completely; try not to make bubbles. Label the cup with the contents.

4. In your notebook, make three columns - one for the name of the 6 liquids, the second for your observations, and the third for recording if the liquid is an acid or a base.

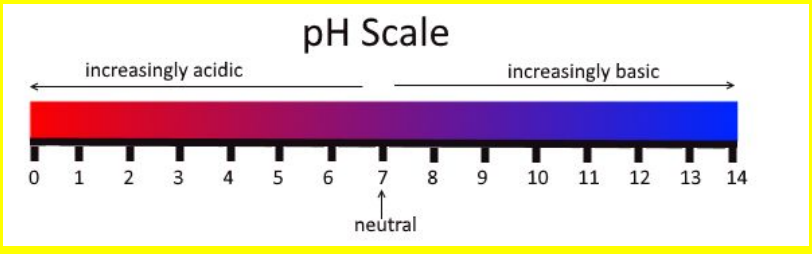
5. Start with the vinegar. Add 1 teaspoon of baking soda. Observe what happens. If there are bubbles and fizzing then it's an acid. If there's no reaction, then it is a base.

6. Record your observations and your conclusion for the liquid.

7. Continue the experiment by following Steps 5 & 6 with the other liquids (seltzer water, Windex, lemon juice, baking powder, and soap).

Optional: After cleaning up the first experiment, refill the 6 cups following Steps 1-3. This time, add ½ teaspoon of turmeric or curry powder to each cup instead of baking soda. What do you observe?

- When exposed to bases, these spices will turn from yellow to red. Did this confirm your results from the baking soda experiment?



Watch this video if you need help with the activity: C05 Acids and Bases.mp4

Make observations & use Claims, Evidence, and Reasoning!

1. **Claim**: Acids and bases react differently to pH indicators.
   - **Evidence**:
   - **Reasoning**:

2. **Claim**: Liquid soap is a base.
   - **Evidence**:
   - **Reasoning**: