

pH Art

How do we know if something is acidic or basic? Let's explore the pH scale through painting!

Big Idea

Students will observe and create chemical reactions using two different types of paper, as well as acidic and basic substances.

(This lesson can serve as an introduction to the pH scale for young learners, but students should not be expected to firmly grasp the difference between acids and bases at the end of this lesson. Rather, it is an investigation into a chemical change and noticing what reactions are taking place in front of them.)

Standards

11.A.ECf Make meaning from experience and information by describing, talking and thinking about what happened during an investigation.	Students will describe the effect of different acids and bases on the two different types of paper and make predictions or conclusions about the reaction.
11.A.ECg Generate explanations and communicate ideas and/or conclusions about their investigations	Students will communicate the color changes that happen on the paper, based on which liquid they apply.

Materials

- Paint brushes and paint cups
- [Goldenrod paper](#) and [red cabbage paper](#), taped together or set next to each other
- Lemon juice
- Vinegar
- Milk
- Baking soda and water
- Borax and water
- Milk of magnesia
- Coffee
- Tomato juice
- Soapy Water
- Various other acidic or basic substances

Setup

Place one piece of goldenrod paper and one piece of red cabbage paper in front of each student. Have clear paint cups containing different acidic and basic substances with labels and 1-2 paint brushes inside each paint cup.

Directions

1. Have the students use the different materials to paint on their paper, observing the different reactions. They can compare and contrast the color of the actual liquid to the color that shows up on the paper, further noting that the same substance will bring out different reactions in the two types of paper.

- Encourage them to wipe off their brush before they apply it to the paper, to avoid oversaturating the material.
2. Encourage the students to apply acids to the bright red goldenrod paper and see if an adverse reaction occurs. Can they write secret messages by using acids on the goldenrod paper first and applying the base after?

Investigation Questions:

- What do you notice when you add the different liquids to the goldenrod paper?
- What do you notice when different liquids are put on the red cabbage paper?
- How is the paper changing?
- What's happening to the different liquids when you put them on the paper?
- Why do you think the paper is changing colors?
- Why do you think the liquids are different colors in the cup versus on the paper?