

Science

4th Grade Chemicals Lesson Plan

1. **Goal** –

The learning goal for this lesson is for student exploration of unknown chemicals, achieved through small-group work as students conducted a chemical test on each of the unknowns mixing them with vinegar. Students participated in the scientific process as they made predictions, followed a procedure, and wrote down observations. These observations will later be used as students create inferences to determine the identity of each of the five unknowns, drawing on their observations and the properties they discovered through the tests..

2. **Objective(s)** –

- A. During this lesson, students will learn about the unknowns' chemical properties.
- B. Students will predict the results of testing the five unknowns with vinegar.
- C. Students will test the unknowns and record and discuss their observations of the different reactions.
- D. Students will discuss how the use of a compare circle, or control will help them interpret the results.
- E.

3. **Connections** –

- A. This lesson fits into an unknown chemicals unit, adapted from the STC Chemicals curriculum. Students have already begun testing unknown chemicals as they work through various labs to determine properties and characteristics of known substances and unknown. Students will use the information gathered in this lab to determine the unknown substances by comparing the properties to the data gathered in this lab.

4. **Instructional Activities**

Vocabulary:

With students, define *chemical properties* (substances ability to transform into new materials) and *control* (an unchanged basis of comparison). Ask students to think about these terms in relation to previous tests done with the chemicals. These words will be referenced again during the procedure.

Predictions:

In their notebooks, have students write down their predictions for how each unknown will react with vinegar. Remind them to look back at how each one reacted with water. Discuss how mixing with water produces a physical change and mixing with vinegar may result in a chemical change, where the unknown is transformed into a new substance.

Procedure:

Go over the procedure with the students so that they understand what they will be doing. Students can follow along in the Student Investigation Book on page 37, which has step-by-step directions for testing the unknowns with vinegar. Discuss with the students what they will be looking for and how to record observations.

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****Pass out Chemical Test Record Sheet to each student. This is where students will be recording their observations.**

Demonstration

Demonstrate the procedure for testing the unknowns with vinegar for the class. Remind students that they do not need a lot of each unknown or the vinegar. Talk about the control circle and how it can be used to compare the unknowns before and after vinegar was added.

Chemical Testing

Call up groups individually to send their materials person to get the supplies. While students are working, circulate the class to ask questions and probe students' observations. Ask students what happens when the blue unknown (Baking Soda) is mixed with vinegar.

For clean-up, have each group clean up their tables. When this has been done, call on groups to send their materials to the counter.

Students will hand in their observations into the hand-in bin at the end of the class period.

5. **Assessment** –

End of the Unit Poster Project: After completing the entire Chemicals Investigation with the five unknown solids and determining what common chemical each unknown was, students created Chemical Posters. Students included information about the unknowns that was gathered through their investigations as well as common uses and characteristics of the chemicals.