

# Chemical Tests Concept Storyline

## Unifying Concept

Materials may be ordered into groups or systems that display common chemical and physical behaviors.

## Unit Concept

The properties of materials may be identified by the use of physical and chemical tests.

## Grade-Level Concept

Everyday household materials have properties that may be identified using physical and chemical tests.

### Subconcept 1

**Materials have different chemical and physical properties.**

Lesson 1: Pre-Unit Assessment: Thinking about Chemicals  
*Students discuss what they know about chemicals and describe the properties of an unknown material.*

Lesson 2: Investigating Unknown Solids: Getting Ready  
*Students hone their observation skills as they describe common objects.*

Lesson 3: Exploring the Five Unknown Solids  
*Students explore the physical properties of five unknown solids.*

Lesson 4: Testing Unknown Solids with Water  
*Students examine the solubility of the five solids.*

Lesson 5: Exploring Water Mixtures  
*Students add more water to their mixtures and filter them.*

Lesson 6: Discovering Crystals  
*Students discuss the results of their filtration test, grow crystals, and learn about evaporation.*

### Subconcept 2

**Chemical and physical tests may be used to identify the properties of materials.**

Lesson 7: Testing Unknown Solids with Vinegar  
*Students begin their investigations of how the five unknown solids react chemically.*

Lesson 8: Testing Unknown Solids with Iodine  
*Students continue their examination of chemical reactions.*

Lesson 9: Testing Unknown Solids with Red Cabbage Juice  
*Students continue their examination of chemical reactions.*

Lesson 10: Testing Unknown Solids with Heat  
*Students examine the effects of heat on the five unknown solids.*

Lesson 11: Reviewing the Evidence  
*Students apply their test results to predict the identity of each of the unknown solids.*

### Subconcept 3

**Unknown solids and liquids may be classified on the basis of their physical and chemical properties.**

Lesson 12: Identifying the Unknown Solids  
*Students compare their test data with verified data from chemists to identify the five unknown solids.*

Lesson 13: Identifying the "Mystery Bag Chemical"  
*Students design and analyze tests to identify an unknown material and analyze their results.*

Lesson 14: Testing Mixtures of Two Unknown Solids  
*Students design, conduct, and analyze results of tests to identify two solids in a mixture.*

Lesson 15: Testing Household Liquids with Red Cabbage Juice  
*Students test common liquids and classify them as acids, bases, or neutrals.*

Lesson 16: Using the Known Solids to Identify Unknown Liquids  
*Students plan and carry out an investigation that uses solids to identify three liquids.*

Lesson 17: Post-Unit Assessment: Sharing What We Know about Chemical Tests  
*Students discuss and reflect on what they have learned.*