

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.