

Changes Concept Storyline

Unifying Concept

Change is a characteristic of chemical reactions and of phase changes.

Unit Concept

Different mixtures of materials may change their properties by chemical or physical processes.

Grade-Level Concept

Materials may react with each other and change to form new substances. Some substances may be changed from one state to another by heating and cooling.

Subconcept 1

Materials may change their properties or state.

Lesson 1: Pre-Unit Assessment: Thinking about How Things Change

Students discuss how familiar objects change.

Subconcept 2

Changes in state result from changes in the external environment.

Lesson 2: Freezing and Melting
Students examine melting and freezing by observing an ice cube.

Lesson 3: Where Did the Water Go?
Students investigate evaporation and condensation.

Subconcept 3

Mixed materials may change as the result of chemical or physical interactions.

Lesson 4: Mixing and Separating Solids
Students examine the products of a mechanical mixture (salt and gravel).

Lesson 5: Mixing Solids and Liquids
Students mix gravel, toilet tissue, and salt with water and describe the results.

Lesson 7: A Dissolving Race:

Two Forms of Sugar

Students compare the rates of dissolution of a sugar cube and granulated sugar.

Lesson 8: A Dissolving Race:

Warm and Cold Water

Students evaluate how the temperature of the solute affects the rate of dissolution.

Subconcept 4

The chemical and physical properties of materials may be used to separate their mixtures.

Lesson 6: Separating Solid and Liquid Mixtures

Students use a filter to examine how solids may be separated from liquids.

Lesson 9: Changing Salt Water to Crystals

Students observe what happens when salt water evaporates.

Lesson 10: Separating Mixtures of Color

Students use chromatography to separate black and green inks into their component colors.

Lesson 11: Separating a Mystery Mixture

In an embedded assessment, students develop a strategy to separate the components of an unknown mixture.

Subconcept 5

Chemical reactions can produce new materials.

Lesson 12: Bubbles and Fizz: Observing a Chemical Reaction
Students observe what happens when they mix baking soda with water and with vinegar.

Lesson 13: Gas in a Bag!
Students capture the gas produced by a chemical reaction.

Lesson 14: Looking at Rust
Students explore oxidation and observe thermal, color, and textural changes.

Lesson 15: Writing Our Recipes for Change
Student pairs test the properties of three new substances and design a plan to explore a particular change.

Lesson 16: Presenting Our Recipes for Change
Student pairs carry out the plan developed by another pair and share their results with the class.

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