

Food Chemistry Conceptual Story

Science & Technology for Children - Grade 4

K-12 Unifying Concept: Our physical world is made of substances, materials, and objects that can be identified by their unique properties, and is organized into systems that are interconnected. Interactions within and among systems cause changes in matter and energy. Living things are organized into systems that are interconnected. Interactions within and among living systems cause changes in matter and energy.

Fourth Grade Level Concept: Chemistry is the study of chemicals and how they interact. Food provides important chemicals called nutrients.

Sub-concept: Specific chemical and physical tests can be used to determine whether a food contains starches, glucose, fats, or proteins (macronutrients).

Lesson 3
Testing Liquids for Starch
Students use iodine to test for the presence of starches.

Lesson 6
Testing Liquids for Glucose
Students use test strips to test for the presence of glucose.

Lesson 9
Testing Liquids for Fats
Students use brown paper to test for the presence of fats.

Lesson 12
Testing Liquids for Proteins
Students use Coomassie blue to test for the presence of proteins.

Lessons 4, 7
Testing Foods for Starch/for Glucose
Students explore foods from plants (potatoes, rice, pastas, bread) that provide carbohydrate (starch and sugar).

Lesson 10
Testing Foods for Fats
Students find that fats occur in almost all foods but are abundant in some.

Lesson 13
Testing Foods for Proteins
Students discover that proteins are found in food derived from both plants and animals (e.g., meats, milk, and beans).

Lesson 16
What Is in a Marshmallow?
Students apply what they have learned to analyze a new food.

Sub-concept: Varying amounts of starches, glucose, fats, and proteins are found in foods.

Sub-concept: Food labels provide information about nutrients. Micronutrients, which the body needs in smaller quantities, include vitamins and minerals.

Lesson 15
Examining Labels: Making the Connection
Students compare labels to results for test foods. They discover that vitamins and minerals prevent some illnesses and help our bodies use nutrients from food.

Sub-concept: Nutrients are essential to human health.

Lesson 1
Thinking about Foods We Eat
Students list what they know about the foods they eat and complete a Venn diagram of "Foods We Eat for Different Meals."

Lesson 2
Identifying Healthy Foods: Getting Ready
Students use their four senses to explore the eight different foods that they will be testing over the course of the unit.

Lesson 5
Learning More about Starch
Students explore how starch is the body's main source of energy and how energy is essential for movement and growth.

Lesson 8
Learning More about Glucose
Students discover that glucose and other sugars provide temporary energy but are not a healthy long-term alternative to starch.

Lesson 11
Learning More about Fats
Students discover that fats provide energy, protect bones and organs, and store some vitamins. There are different types of fats.

Lesson 14
Learning More about Proteins
Students explore how proteins help your body grow and repair itself. Much of our body is made of proteins.