# Objective

By the end of this lesson, the student will have a foundational understanding of matter and atoms, including their definitions, properties, and how they interact with one another. The student will also be able to identify different states of matter and explain the concept of atoms as the building blocks of matter.

## **Materials and Prep**

- Paper and pencils for notes and drawings
- Access to a computer or tablet for research (optional)
- Everyday household items (e.g., water, ice, air in a balloon) to demonstrate states of matter
- Knowledge of basic scientific terms like "matter," "atom," "solid," "liquid," and "gas"

### Activities

### • States of Matter Exploration:

The student will gather household items to represent the three main states of matter: solids (e.g., a rock), liquids (e.g., water), and gases (e.g., air in a balloon). They will observe and describe the properties of each state.

### • Atom Model Creation:

Using paper and pencils, the student will draw and label a simple atom model, including protons, neutrons, and electrons. They can also create a 3D model using items like balls or beads.

#### • Research and Presentation:

The student will choose an element from the periodic table and research its atomic structure and properties. They will then present their findings in a short oral presentation or written report.

### **Talking Points**

- "Matter is anything that has mass and takes up space. Can you think of examples of matter around us?"
- "Atoms are the building blocks of matter. Every solid, liquid, and gas is made of atoms."
- "There are three main states of matter: solids, liquids, and gases. How do you think the arrangement of atoms differs in each state?"
- "In a solid, atoms are closely packed together and vibrate in place. In a liquid, they are more spread out and can move past each other. In a gas, they are far apart and move freely."
- "Each element on the periodic table has a unique atomic structure. What element did you choose, and what makes it special?"