THE STANDARD

Molecules & Extended Structures

Develop models to describe the atomic composition of simple molecules and extended structures.

ANCHORING PHENOMENON

The Diamond and Pencil Lead Mystery

A pencil's "lead" is graphite. Soft, slick, dark gray, leaves a mark when you press it. A diamond is the hardest natural substance on Earth. Clear, sharp, glittery. Total opposites. But they're made of the exact same atom: carbon. Same building block, different stuff. Students will keep circling back to this all week.

> **DRIVING QUESTION**
> *"How can two substances made of identical atoms turn out so different?"*

INVESTIGATIVE 1

Water and Hydrogen Peroxide. Same Atoms, Different Story.

Two clear liquids. Water (H_2O) and hydrogen peroxide (H_2O_2). Same atoms, just one extra oxygen in the peroxide. Water is safe to drink. Hydrogen peroxide bleaches hair and disinfects cuts. One atom of difference, totally different behavior. Use this to sharpen the lens the anchor is pushing on: arrangement and count of atoms matter.

> **DRIVING QUESTION**
> *"If you can change a substance's behavior by adding one atom, how strict is the rule that 'matter is made of atoms'?"*

INVESTIGATIVE 2

A Salt Grain Up Close

A few grains of table salt under a hand lens. Most grains are cubic, even at the smallest visible scale. Zoom out to a salt formation underground. Still cubic. The crystal shape outside mirrors how the atoms are arranged inside. The cube you can see is the pattern repeating up to a scale you can hold.

> **DRIVING QUESTION**
> *"Why does salt always grow in cubes, and what does that tell us about how its atoms are arranged?"*