# Atoms, Compound and Elements



## L1 What is an atom?

Alright, let's dive into the world of atoms! Imagine you're holding a small piece of chocolate. Now, let's shrink it down, way down, until you can't see it anymore. Keep shrinking until it's so small that it can't be divided anymore. That tiny, invisible piece is what we call an atom.

#### What's an Atom?

An atom is the smallest building block of matter. Everything around us, whether it's the air we breathe, the water we drink, or the ground we walk on, is made up of atoms. They're like the building blocks of the universe!

#### John Dalton's Particle Theory:

John Dalton, a clever scientist from the past, came up with a theory about atoms. He thought of atoms like tiny, solid balls. According to Dalton, atoms are so small that we can't see them with our eyes, and they're indivisible, meaning they can't be broken down into smaller pieces.

Dalton's Key Ideas:

- 1. Atoms Are Indestructible: Dalton believed that atoms can't be created or destroyed. They remain the same, no matter what.
- 2. All Atoms of an Element are Identical: Atoms of the same element are exactly the same in every way. For example, all oxygen atoms are identical to each other.
- 3. Atoms of Different Elements are Different: Each type of atom is unique. Oxygen atoms are different from hydrogen atoms, for instance.
- 4. Atoms Combine in Simple Whole Number Ratios: When atoms combine to form compounds, they do so in simple ratios. This means if you have one oxygen atom and two hydrogen atoms, they'll combine to form water (H2O).





Independent practice

- 1. What is an atom?
- 2. Who was John Dalton, and what did he say about atoms?
- 3. List the key ideas of John Dalton's particle theory.
- 4. Can you explain Dalton's idea that all atoms of an element are identical?
- 5. Why did Dalton think atoms were like tiny, solid balls?

Extended Writing:

- 6. Compare and contrast Dalton's particle theory with the modern understanding of atoms. How are they similar, and how are they different?
- 7. Imagine you are John Dalton. Write a letter to a friend explaining your particle theory and why you believe atoms are the fundamental building blocks of matter.

### **L2 Element and Compound**

Absolutely, let's journey through the world of elements, compounds, and atoms together!

#### What are Elements and Compounds?

Imagine you have a magical box filled with colorful building blocks. Each block is unique, with its own special shape and color. Now, think of each unique building block in your box as an element. Elements are like the building blocks of the universe. They're pure substances made up of only one type of atom. For example, oxygen, hydrogen, and carbon are all elements.

Now, what if we take some of these building blocks and stack them together to make something new? That's where compounds come in. Compounds are formed when atoms of different elements join together in specific ways. Just like building a tower out of different blocks, compounds are created by combining atoms of different elements in fixed ratios. Water (H2O) is a famous compound made up of two hydrogen atoms and one oxygen atom.

#### Atoms: The Tiny Building Blocks:

Now, let's shrink down to the tiniest level imaginable – the level of atoms! Atoms are like the microscopic building blocks that make up everything around us. Just as LEGO bricks are the basic units of your creations, atoms are the basic units of matter.



- 1. What are elements, and how are they like building blocks?
- 2. Can you give an example of an element?
- 3. What is a compound, and how is it different from an element?
- 4. Explain how compounds are formed.
- 5. What are atoms, and how do they relate to elements and compounds?

Extended Writing:

- 6. Imagine you're a scientist discovering a new element. Write a diary entry describing your excitement and the process you went through to identify and name the element.
- 7. Pretend you're explaining elements, compounds, and atoms to a younger sibling. Write a story using simple language and examples to help them understand these concepts.

## **L3 Chemical Formulae**

Let's dive into the fascinating world of chemical formulas!

#### **Understanding Chemical Formulae:**

Imagine you have a secret recipe for your favourite cake. In that recipe, you list all the ingredients you need to make the cake, like flour, sugar, eggs, and milk. Each ingredient plays a special role in making the cake taste delicious. Now, think of chemical formulas like the recipe for different substances, but instead of ingredients, we use elements and compounds.

#### **Elements and Compounds in Chemical Formulae:**

First, let's talk about elements. Elements are like the alphabet of chemistry. They're the simplest substances and cannot be broken down into any simpler substances by chemical reactions. Each element has its own symbol, usually one or two letters. For example, the symbol for oxygen is "O", and the symbol for carbon is "C".

Now, let's mix things up a bit and talk about compounds. Compounds are made when atoms of different elements join together in fixed ratios. When we write the chemical formula for a compound, we use the symbols of the elements that make up the compound and subscripts to show how many atoms of each element are present. For example, the chemical formula for water is "H2O", which means it contains two hydrogen atoms and one oxygen atom.



- 1. What are elements, and how are they like the alphabet of chemistry?
- 2. Can you give an example of an element and its chemical symbol?
- 3. What are compounds, and how do they differ from elements?
- 4. Explain how chemical formulas represent compounds.
- 5. Why do we use subscripts in chemical formulas?

#### Extended Writing:

- 6. Imagine you're a scientist trying to create a new compound. Write a story describing your journey, including the elements you combine and the compound you create.
- 7. Pretend you're teaching a younger sibling about chemical formulas. Write a guide explaining how to read and write chemical formulas, using simple language and examples.