

Atoms and molecules

Learning objectives

- 1 Recognise and draw diagrams of atoms and molecules.
- 2 Explain the relationship between atoms and molecules.
- 3 Write independently about atoms and molecules, using the suggested key words.

Introduction

Atoms are the building blocks of all substances. They are the simplest unit of matter that retains the properties of the element. Atoms make up everything from the materials we use to build, to the air we breathe and the food we eat.

Very few substances exist as simple atoms, most substances are made up of atoms chemically bonded together to form molecules. In this structure strip you will explore the relationship between atoms and molecules.

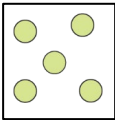
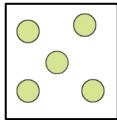
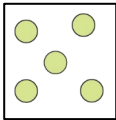
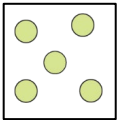
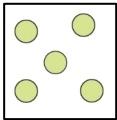
Instructions

1. Stick the structure strip in the margin of your exercise book/paper.
2. Follow the prompts in the structure strip and use your knowledge to write a summary of atoms and molecules:
 - Reflect on what you already know about atoms and molecules.
 - Where have you seen the key words before?
 - If you'd like more support, what other sources could you use to find the information, e.g. a textbook, online?
3. Complete the extension task to apply your knowledge of atoms and molecules to a new context.

Key words

Use these key words in your responses:

- atom • molecules • elements • compound

Atoms and molecules	Atoms and molecules	Atoms and molecules	Atoms and molecules	Atoms and molecules
What is the difference between molecules and single atoms?	What is the difference between molecules and single atoms?	What is the difference between molecules and single atoms?	What is the difference between molecules and single atoms?	What is the difference between molecules and single atoms?
This diagram represents five atoms of the same element.  Draw a diagram showing five atoms, three of one element and two of another. What is important to remember when drawing atoms?	This diagram represents five atoms of the same element.  Draw a diagram showing five atoms, three of one element and two of another. What is important to remember when drawing atoms?	This diagram represents five atoms of the same element.  Draw a diagram showing five atoms, three of one element and two of another. What is important to remember when drawing atoms?	This diagram represents five atoms of the same element.  Draw a diagram showing five atoms, three of one element and two of another. What is important to remember when drawing atoms?	This diagram represents five atoms of the same element.  Draw a diagram showing five atoms, three of one element and two of another. What is important to remember when drawing atoms?
Draw helium, He, which exists as single atoms. Now draw oxygen, O ₂ . Describe the difference between your diagrams.	Draw helium, He, which exists as single atoms. Now draw oxygen, O ₂ . Describe the difference between your diagrams.	Draw helium, He, which exists as single atoms. Now draw oxygen, O ₂ . Describe the difference between your diagrams.	Draw helium, He, which exists as single atoms. Now draw oxygen, O ₂ . Describe the difference between your diagrams.	Draw helium, He, which exists as single atoms. Now draw oxygen, O ₂ . Describe the difference between your diagrams.
Draw one molecule of water (H ₂ O) and one of carbon dioxide (CO ₂). Label the atoms in each diagram.	Draw one molecule of water (H ₂ O) and one of carbon dioxide (CO ₂). Label the atoms in each diagram.	Draw one molecule of water (H ₂ O) and one of carbon dioxide (CO ₂). Label the atoms in each diagram.	Draw one molecule of water (H ₂ O) and one of carbon dioxide (CO ₂). Label the atoms in each diagram.	Draw one molecule of water (H ₂ O) and one of carbon dioxide (CO ₂). Label the atoms in each diagram.
 What information does this model show about methane?	 What information does this model show about methane?	 What information does this model show about methane?	 What information does this model show about methane?	 What information does this model show about methane?

Extension task

Make a model of two different molecules. Describe what your models show about each molecule. You can choose a molecule mentioned in the structure strip, or another one you know of.