SCIENCE YEAR 9 - UNIT 2 - LESSON 9

Covalent Bonding and Molecular Substances

Use this worksheet after reading the lesson to practise the key ideas and prove you can meet the success criteria.

Name _____

Date _____

Class _____

1. Key Ideas

This lesson introduces the second major bonding model in the unit. Instead of electron transfer and ions, students now see atoms sharing electrons to achieve more stable outer shells, and use that model to explain common molecular substances and their properties.

- covalent bonding involves sharing electrons rather than transferring them
- shared electrons can help both atoms count a more stable outer shell

2. Success Criteria

By the end, you should be able to:

- covalent bonding involves sharing electrons rather than transferring them
- simple molecular substances include molecules such as H_2, H_2O and CO_2
- covalent substances often show different properties from ionic substances

3. Key Terms

Covalent bond
A bond formed when atoms share electrons.

Molecule
A group of atoms held together by covalent bonds.

Shared pair of electrons
The pair of electrons counted by both atoms in a covalent bond.

Simple molecular substance
A substance made of discrete molecules, such as water, oxygen or carbon dioxide.

Non-metal
An element that commonly forms covalent bonds by sharing electrons with other non-metals.

Structural formula
A simple way to show how atoms are connected in a molecule at the Stage 5 level.

4. Activity: Build the Lesson Map

Use the lesson to complete the table. Keep answers brief but specific.

Prompt	Your answer
Main concept	
Important example	
Common mistake to avoid	
How this links to the next lesson	

5. Short Answer Questions

1. Explain this lesson goal in your own words: "covalent bonding involves sharing electrons rather than transferring them". Use one specific example from the lesson.

CORE

2. Apply this idea to a new example: "simple molecular substances include molecules such as H 2 , H 2 O and CO 2". Show your reasoning clearly.

CORE

3. Analyse why this idea matters for understanding Covalent Bonding and Molecular Substances: "covalent substances often show different properties from ionic substances".

REASONING

6. Extend: Apply the Idea

A student says, "I understand Covalent Bonding and Molecular Substances because I memorised the definition."

Explain why memorising a definition is not enough. Use an example from the lesson to show deeper understanding.

7. Multiple Choice

1. What is the best first step when answering a question about Covalent Bonding and Molecular Substances?

☐ A. Identify the key concept being tested

☐ B. Write every fact from memory

☐ C. Ignore the command word

☐ D. Skip examples and evidence

2. Which answer would show stronger understanding of Covalent Bonding and Molecular Substances?

☐ A. An answer with accurate terms and reasoning

☐ B. A copied definition only

☐ C. A single-word response

☐ D. An answer with no example

3. What should you do if a question asks you to explain?

☐ A. Link the idea to a reason or cause

☐ B. List unrelated facts

☐ C. Only draw a diagram

☐ D. Write the shortest possible answer

8. Success Criteria Proof

Finish with evidence that you can do each success criterion.

SUCCESS CRITERION 1

Prove that you can: covalent bonding involves sharing electrons rather than transferring them

SUCCESS CRITERION 2

Prove that you can: simple molecular substances include molecules such as H_2, H_2O and CO_2

SUCCESS CRITERION 3

Prove that you can: covalent substances often show different properties from ionic substances

One thing I still need help with: