CHEMISTRY YEAR 11 - MODULE 1 - LESSON 9

Covalent Compounds: Molecular and Network

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

Water boils at 100°C. Diamond — made of a single element bonded identically to water's oxygen in terms of bond type — doesn't melt below 3550°C. Both are covalent. The difference isn't in the bonds themselves, but in whether those bonds form tiny isolated molecules or one giant interconnected structure spanning the entire crystal.

- The difference between covalent molecular and covalent network (lattice) substances
- Why covalent molecular substances have low MPs (break IMFs, not covalent bonds)

2. Success Criteria

By the end, you should be able to:

- The difference between covalent molecular and covalent network (lattice) substances
- Examples of each type and their key properties
- The role of intermolecular forces vs covalent bonds in determining properties

3. Key Terms

Key idea
The central concept from Covalent Compounds: Molecular and Network.

Evidence
Information, observations or calculations used to support an answer.

Explain
Give a reasoned answer that links cause and effect.

Apply
Use a learned idea in a new example, problem or scenario.

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. 6. Explain why iodine (I_2, BP 184°C) has a much higher boiling point than fluorine (F_2, BP −188°C), even though both are non-polar covalent molecular substances of the same type.

BAND 3 3 MARKS

2. 7. A student is given data on two unknown substances: Substance X (MP −22°C, no conductivity in any state, dissolves in water) and Substance Y (MP 1713°C, no conductivity in any state, insoluble in all solvents). Classify each substance and explain all of its listed properties in terms of structure and bonding.

BAND 4 5 MARKS

3. 8. Using your knowledge of intermolecular forces, explain why water (H_2O, MW = 18) has a boiling point of 100°C, which is dramatically higher than propane (C_3H_8, MW = 44, BP −42°C), even though propane is a larger molecule.

BAND 5 4 MARKS

6. Extend: Apply the Idea

BAND 5/6 5 MARKS

A student gives a memorised answer about Covalent Compounds: Molecular and Network but does not use evidence or reasoning.

Improve the answer by writing a stronger response that uses accurate terminology, a relevant example and a clear explanation.

7. Multiple Choice

1. What is the best first step when answering a question about Covalent Compounds: Molecular and Network?

☐ 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 Compounds: Molecular and Network?

☐ 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: The difference between covalent molecular and covalent network (lattice) substances

BAND 3 2 MARKS

SUCCESS CRITERION 2

Prove that you can: Examples of each type and their key properties

BAND 4 3 MARKS

SUCCESS CRITERION 3

Prove that you can: The role of intermolecular forces vs covalent bonds in determining properties

BAND 5 4 MARKS

One thing I still need help with: