CHEMISTRY YEAR 11 - MODULE 1 - LESSON 6

Physical Properties and Classification

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

A diamond and graphite are both pure carbon — same element, zero difference in chemical composition. Yet a diamond cuts glass while graphite crumbles into your fingers. The difference is entirely structural. This is IQ2 in a nutshell: structure determines properties.

- The five key physical properties used to classify substances in IQ2
- Why different bonding types produce different physical property profiles

2. Success Criteria

By the end, you should be able to:

- The five key physical properties used to classify substances in IQ2
- How these properties link to bonding and structural type
- The four main structural categories: ionic, covalent molecular, covalent network, metallic

3. Key Terms

Key idea
The central concept from Physical Properties and Classification.

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. Describe the relationship between electrical conductivity and structural type for each of the following: ionic compound, metallic element, and covalent molecular compound. In each case, explain why the substance does or does not conduct electricity.

BAND 3 3 MARKS

2. 7. A student is given three unknown solid substances (X, Y, Z) and measures: X — MP 801°C, no solid conductivity, conducts when dissolved; Y — MP 1085°C, excellent solid conductivity, malleable; Z — MP −115°C, no conductivity in any state, soft. Classify each structural type and justify.

BAND 4 4 MARKS

3. 8. Using your knowledge of structure and bonding, explain why diamond is extremely hard while graphite is soft enough to be used as a pencil lead, even though both consist entirely of carbon atoms.

BAND 5 4 MARKS

6. Extend: Apply the Idea

BAND 5/6 5 MARKS

A student gives a memorised answer about Physical Properties and Classification 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 Physical Properties and Classification?

☐ 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 Physical Properties and Classification?

☐ 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 five key physical properties used to classify substances in IQ2

BAND 3 2 MARKS

SUCCESS CRITERION 2

Prove that you can: How these properties link to bonding and structural type

BAND 4 3 MARKS

SUCCESS CRITERION 3

Prove that you can: The four main structural categories: ionic, covalent molecular, covalent network, metallic

BAND 5 4 MARKS

One thing I still need help with: