PHYSICS YEAR 11 - MODULE 2 - LESSON 12

Conservation of Momentum

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

Before a gun fires, the total momentum of the gun-bullet system is zero. After — the bullet races forward and the gun kicks back. Add them together: still zero. Momentum was conserved.

- Law of conservation of momentum
- Why Newton's Third Law leads to conservation

2. Success Criteria

By the end, you should be able to:

- Law of conservation of momentum
- Condition: closed system, no net external force
- Elastic, inelastic, perfectly inelastic definitions

3. Key Terms

total momentum
conserved in a closed system (no net external force)

the system
closed — no net external force acts

Gravity and friction
external forces that can violate conservation

but not all KE
lost unless the combined object is stationary

momenta after
equal and opposite

The two momenta
equal in magnitude and opposite in direction — they do NOT mean equal speeds

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: "Law of conservation of momentum". Use one specific example from the lesson.

BAND 3 2 MARKS

2. Apply this idea to a new example: "Condition: closed system, no net external force". Show your reasoning clearly.

BAND 4 3 MARKS

3. Analyse why this idea matters for understanding Conservation of Momentum: "Elastic, inelastic, perfectly inelastic definitions".

BAND 5 4 MARKS

6. Extend: Apply the Idea

BAND 5/6 5 MARKS

A student gives a memorised answer about Conservation of Momentum 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 Conservation of Momentum?

☐ 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 Conservation of Momentum?

☐ 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: Law of conservation of momentum

BAND 3 2 MARKS

SUCCESS CRITERION 2

Prove that you can: Condition: closed system, no net external force

BAND 4 3 MARKS

SUCCESS CRITERION 3

Prove that you can: Elastic, inelastic, perfectly inelastic definitions

BAND 5 4 MARKS

One thing I still need help with: