

Momentum Synthesis

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

One bullet. One rifle. One block. One rough surface. Every Phase 3 formula in a single chain — and a connection back to Phase 2 at the end. This lesson maps how it all fits together.

- Key facts and terms for Momentum Synthesis
- How the main ideas in Momentum Synthesis connect

2. Success Criteria

By the end, you should be able to:

- Key facts and terms for Momentum Synthesis
- Where this lesson fits in Module 2
- How the main ideas in Momentum Synthesis connect

3. Key Terms

bullet

fired from a 4 kg rifle into a 2 kg stationary wooden block

mass

the most common error in multi-step momentum problems

block scenario

three completely separate stages

output of each stage

the input for the next

which stage type you

in — explosion, collision, or post-collision motion — before writing any equation

Energy and momentum

not separate topics — they are two accounting systems for the same physical events

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: "Key facts and terms for Momentum Synthesis". Use one specific example from the lesson.

BAND 3 **2 MARKS**

2. Apply this idea to a new example: "Where this lesson fits in Module 2". Show your reasoning clearly.

BAND 4 **3 MARKS**

3. Analyse why this idea matters for understanding Momentum Synthesis: "How the main ideas in Momentum Synthesis connect".

BAND 5 **4 MARKS**

6. Extend: Apply the Idea

BAND 5/6 **5 MARKS**

A student gives a memorised answer about Momentum Synthesis 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 Momentum Synthesis?

- 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 Momentum Synthesis?

- 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: Key facts and terms for Momentum Synthesis

BAND 3

2 MARKS

SUCCESS CRITERION 2

Prove that you can: Where this lesson fits in Module 2

BAND 4

3 MARKS

SUCCESS CRITERION 3

Prove that you can: How the main ideas in Momentum Synthesis connect

BAND 5

4 MARKS

One thing I still need help with:
