

Momentum and Impulse

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 cricket ball and a tennis ball hit at the same speed have similar momentums. But the cricket ball breaks the window and the tennis ball does not. The difference is impulse — and how quickly the momentum changes.

- $p = mv$ — momentum definition and unit
- Why momentum is a vector (direction matters)

2. Success Criteria

By the end, you should be able to:

- $p = mv$ — momentum definition and unit
- $J = F\Delta t$ — impulse definition and unit
- $J = \Delta p$ — the impulse-momentum theorem

3. Key Terms

Force

A push or pull acting on an object that can cause it to accelerate.

Newton

The SI unit of force; $1 \text{ N} = 1 \text{ kg}\cdot\text{m}/\text{s}^2$.

Weight

The force due to gravity acting on a mass; $W = mg$.

Normal Force

The perpendicular contact force exerted by a surface on an object.

Friction

A force that opposes relative motion between two surfaces in contact.

Net Force

The vector sum of all forces acting on an object.

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: " $p = mv$ — momentum definition and unit". Use one specific example from the lesson.

BAND 3 **2 MARKS**

2. Apply this idea to a new example: " $J = F\Delta t$ — impulse definition and unit". Show your reasoning clearly.

BAND 4 **3 MARKS**

3. Analyse why this idea matters for understanding Momentum and Impulse: " $J = \Delta p$ — the impulse-momentum theorem".

BAND 5 **4 MARKS**

6. Extend: Apply the Idea

BAND 5/6

5 MARKS

A student gives a memorised answer about Momentum and Impulse 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 and Impulse?

- 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 and Impulse?

- 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: $p = mv$ — momentum definition and unit

BAND 3 **2 MARKS**

SUCCESS CRITERION 2

Prove that you can: $J = F\Delta t$ — impulse definition and unit

BAND 4 **3 MARKS**

SUCCESS CRITERION 3

Prove that you can: $J = \Delta p$ — the impulse-momentum theorem

BAND 5 **4 MARKS**

One thing I still need help with:
