PHYSICS YEAR 11 - MODULE 2 - LESSON 9

Energy 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

A car on a hill. Six formulae. One coherent picture. This lesson connects every energy concept from Phase 2 into a single chain — and shows how each calculation feeds the next.

- All six Phase 2 formulae and their conditions
- Why each calculation in a chain feeds the next

2. Success Criteria

By the end, you should be able to:

- All six Phase 2 formulae and their conditions
- Three energy categories: stored, transferred, lost
- How each formula connects to adjacent formulae

3. Key Terms

friction
present and mechanical energy is not conserved

accounting for energy
the foundation of every dynamics problem

Energy
never created or destroyed — only converted

your final KE
less than the initial PE, the difference went somewhere

The formulae
not separate tools — they are different views of the same energy accounting system

Here
the full calculation chain for the car 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. Explain this lesson goal in your own words: "All six Phase 2 formulae and their conditions". Use one specific example from the lesson.

BAND 3 2 MARKS

2. Apply this idea to a new example: "Three energy categories: stored, transferred, lost". Show your reasoning clearly.

BAND 4 3 MARKS

3. Analyse why this idea matters for understanding Energy Synthesis: "How each formula connects to adjacent formulae".

BAND 5 4 MARKS

6. Extend: Apply the Idea

BAND 5/6 5 MARKS

A student gives a memorised answer about Energy 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 Energy 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 Energy 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: All six Phase 2 formulae and their conditions

BAND 3 2 MARKS

SUCCESS CRITERION 2

Prove that you can: Three energy categories: stored, transferred, lost

BAND 4 3 MARKS

SUCCESS CRITERION 3

Prove that you can: How each formula connects to adjacent formulae

BAND 5 4 MARKS

One thing I still need help with: