PHYSICS YEAR 11 - MODULE 3 - LESSON 5

Reflection and Refraction of Waves

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

When waves hit a boundary, they can reflect or refract. Reflection keeps the wave in the same medium. Refraction sends it into a new medium, where the speed changes and the path can bend.

- The law of reflection
- Why refraction is caused by a speed change

2. Success Criteria

By the end, you should be able to:

- The law of reflection
- What refraction means
- That frequency stays constant during refraction

3. Key Terms

angles
measured from the normal, not from the surface

Why refraction
caused by a speed change

Vectors and scalars
just different ways of writing the same thing

rate at which work
done or energy is transferred; P = W/t

Both angles
measured from the normal, which is the line perpendicular to the boundary

Reflection
why we see echoes, why mirrors work, and why ocean waves bounce back from harbour walls

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. 7. Explain the difference between reflection and refraction of waves.

BAND 3 3 MARKS

2. 8. A wave of frequency 6 Hz travels at 3.0 m/s in medium A and 1.5 m/s in medium B. Calculate the wavelength in each medium.

BAND 4 3 MARKS

3. 9. Explain why a wave bending toward the normal must be entering a slower medium, and why the frequency does not change.

BAND 5 4 MARKS

6. Extend: Apply the Idea

BAND 5/6 5 MARKS

A student gives a memorised answer about Reflection and Refraction of Waves 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 Reflection and Refraction of Waves?

☐ 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 Reflection and Refraction of Waves?

☐ 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 law of reflection

BAND 3 2 MARKS

SUCCESS CRITERION 2

Prove that you can: What refraction means

BAND 4 3 MARKS

SUCCESS CRITERION 3

Prove that you can: That frequency stays constant during refraction

BAND 5 4 MARKS

One thing I still need help with: