PHYSICS YEAR 11 - MODULE 3 - LESSON 6

Diffraction 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

Waves do not always travel in straight lines past obstacles. They can spread into gaps and bend around edges. That spreading is diffraction, and it becomes most noticeable when the gap or obstacle size is similar to the wavelength.

- What diffraction is
- Why waves spread after passing through a narrow gap

2. Success Criteria

By the end, you should be able to:

- What diffraction is
- That all wave types can diffract
- That diffraction is strongest when gap size is comparable to wavelength

3. Key Terms

Work
The product of force and displacement in the direction of the force; W = Fd.

Energy
The capacity to do work, measured in joules (J).

Kinetic Energy
The energy of motion; KE = ½mv^2.

Potential Energy
Stored energy due to position or configuration.

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

Conservation of Energy
The principle that energy cannot be created or destroyed, only transformed.

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 why diffraction becomes strong when the gap size is similar to the wavelength.

BAND 3 3 MARKS

2. 8. A water wave has wavelength 3 cm. Compare the expected diffraction for gaps of 30 cm and 4 cm.

BAND 4 3 MARKS

3. 9. Explain why radio waves are often more noticeable than visible light in diffraction around buildings or obstacles.

BAND 5 4 MARKS

6. Extend: Apply the Idea

BAND 5/6 5 MARKS

A student gives a memorised answer about Diffraction 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 Diffraction 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 Diffraction 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: What diffraction is

BAND 3 2 MARKS

SUCCESS CRITERION 2

Prove that you can: That all wave types can diffract

BAND 4 3 MARKS

SUCCESS CRITERION 3

Prove that you can: That diffraction is strongest when gap size is comparable to wavelength

BAND 5 4 MARKS

One thing I still need help with: