PHYSICS YEAR 11 - MODULE 3 - LESSON 15

Refraction of Light, Snell's Law and Total Internal Reflection

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

Light bends when it changes speed across a boundary, and that bending can be quantified. Snell's law links the angles and refractive indices, while total internal reflection explains how optical fibres and many precision devices keep light trapped inside a medium.

- What refractive index means
- Why light bends when its speed changes across media

2. Success Criteria

By the end, you should be able to:

- What refractive index means
- Snell's law for refraction of light
- The definition of critical angle

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 what refractive index tells us about a medium.

BAND 3 3 MARKS

2. 8. Light enters glass ($n = 1.50$) from air at an incidence angle of 30°. Find the refraction angle.

BAND 4 3 MARKS

3. 9. Define total internal reflection and state the two conditions required for it to occur.

BAND 5 4 MARKS

6. Extend: Apply the Idea

BAND 5/6 5 MARKS

A student gives a memorised answer about Refraction of Light, Snell's Law and Total Internal Reflection 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 Refraction of Light, Snell's Law and Total Internal Reflection?

☐ 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 Refraction of Light, Snell's Law and Total Internal Reflection?

☐ 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 refractive index means

BAND 3 2 MARKS

SUCCESS CRITERION 2

Prove that you can: Snell's law for refraction of light

BAND 4 3 MARKS

SUCCESS CRITERION 3

Prove that you can: The definition of critical angle

BAND 5 4 MARKS

One thing I still need help with: