

Grade 8

Physics

2nd Term Notes

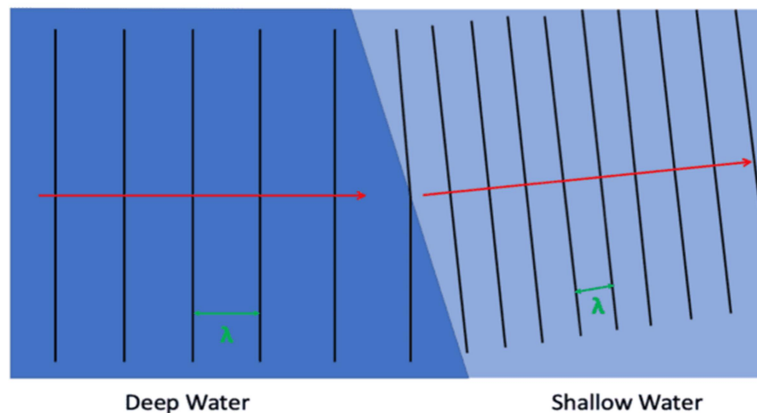
Chapter -14

PROPERTIES OF WAVES

Refraction

When waves enter a different medium, their speed can change. This effect is called refraction, and it can have two other effects:

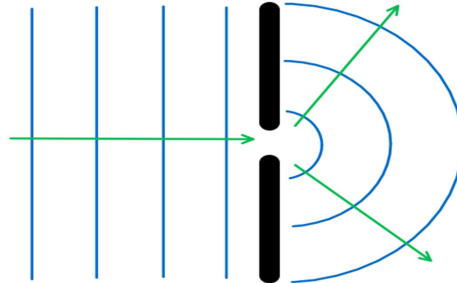
- The wavelength of the waves can increase or decrease.
- The waves can change direction.



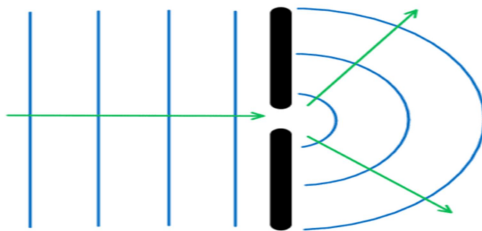
- If the waves slow down the waves will bunch together, causing the wavelength to decrease. The waves will also start to travel closer to the normal.
- If the waves speed up then they will spread out, causing the wavelength to increase. The waves will also turn slightly away from the normal.

Diffraction

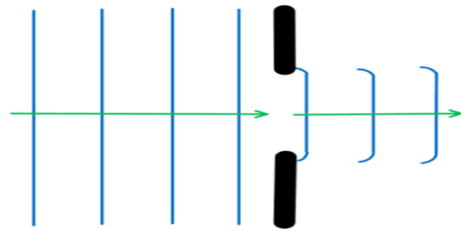
When waves pass through a narrow gap, the waves spread out. This effect is called diffraction.



- Diffraction, as shown above, only generally happens when the gap is smaller than the wavelength of the wave.
- As the gap gets bigger, the effect gradually gets less pronounced until, once the gap is much larger than the wavelength, the waves no longer spread out at all.



Wavelength > gap size



Wavelength << gap size

End-of-chapter questions

- 1 Copy and complete the following sentence, putting suitable words in the gaps.
A wave transfers from place to place without transferring

- 2 Copy the table and complete it by writing *transverse* and *longitudinal* in the correct boxes in the first column.

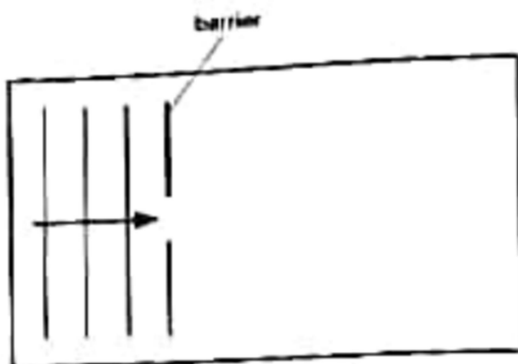
	describes a wave that varies from side to side, at right angles to the direction of travel
	describes a wave that varies back and forth along the direction of travel

- 3 The equation $v = f\lambda$ is used to calculate the speed of a wave. Copy the table and complete it to show what each symbol represents and what their units are.

Symbol	Quantity	Unit
v		
f		
λ		

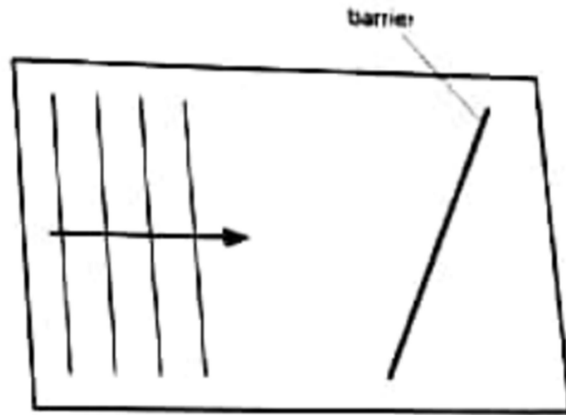
4)

Copy and complete the diagram to show how plane waves are diffracted as they pass through a narrow gap



5)

Copy and complete the diagram to show how plane waves are reflected by a straight barrier placed at an angle to their direction of travel.



6)

example of reflection, refraction, or diffraction.

On the right, waves are moving towards a harbour.

- What will happen to waves striking the harbour wall at A?
- What will happen to waves slowed by the submerged sandbank at B?
- What will happen to waves passing through the harbour entrance at C?
- If the harbour entrance were wider, what difference would this make?

